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10-K NAVIGATION GUIDE

A Primer on Reading Annual Reports

Financial statement analysis forms the basis of fundamental security analysis and, to that end, this report is our annual primer on understanding and analyzing 10-K disclosures. In the longest, but slowest economic expansion characterized by record profit margins, relatively expensive valuations, accelerating M&A, and political uncertainty, there is increased pressure to use aggressive accounting to meet Wall Street expectations. To assist investors in navigating lengthy annual reports, we analyze and explain over 40 10-K disclosures and identify important accounting risk areas.

- **Annual Reports are Due on March 2nd for Most U.S. Publicly Traded Companies.** For smaller companies with market capitalizations below $700 million (but above $75 million), annual 10-K reports are due on March 16, 2020 (and March 30 for recent IPOs).
- **Top Disclosures to Watch: Reverse Factoring, M&A Accounting, Leases, Taxes, Revenue Recognition and Cash Flow.** (1) Reverse factoring (RF) is short-term debt disguised as accounts payable and is artificially boosting cash flow. We find spotty disclosures, and RF could create a liquidity crisis in a worst-case scenario. (2) M&A accounting continues to be a broad area of accounting abuse and was an early warning signal at Kraft-Heinz. Merger accounting allows accounting policy 'cherry picking', valuation changes within 1 year, and ample opportunity to distort cash flow working capital levels. (3) Relatively new lease accounting rules skew debt levels across companies, valuation metrics, and create non-comparability with non-US companies. (4) Tax footnotes highlight unsustainably low cash tax rates due to 100% cap-ex expensing, 'excess' stock compensation tax benefits, and corporate tax reform. Tax footnotes may also identify hidden value at companies. (5) New revenue recognition rule changes were required in 2018 and provide ample opportunity to 'stuff the channel'. (6) Cash flow is potentially skewed more than at any point in this economic cycle due to reverse factoring, stock compensation benefits (from high stock prices), bonus depreciation, corporate tax reform, and pre-funding pension plan contributions.
- **Other Important Disclosures to Review in 2019 10-K's Include:** Voluntary accounting policy changes, cost capitalization, foreign currency inter-company transactions, accrued and capital lease cap-ex, interest rate risk disclosures, inventory, reserves, and stock-based compensation.
- **Earnings Quality and Cash Flow Analysis.** We highlight ways in which companies may manage earnings and cash flows and how to spot such practices when reading through 10-K filings. Our empirically predictive seven metric Earnings Quality (EQ) score is explained and used to avoid underperforming stocks or to find new short ideas.
- **Differences in U.S. GAAP and IFRS.** We summarize the key differences between U.S. GAAP and International Financial Reporting Standards ("IFRS").

Chris Senyek, CFA, CPA
(646) 845-0759
csenyek@wolferesearch.com

Adam Calingasan CFA, CPA
(646) 845-0757
acalingasan@wolferesearch.com

Chip Miller, CFA, CPA
(646) 845-0752
cmiller@wolferesearch.com

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INTRODUCTION

Graham and Dodd's seminal book, *Security Analysis*, popularized financial statement analysis as a critical component of investing. It fostered the notion that a thorough reading and understanding of a company's annual report would lead to identifying overlooked investment opportunities and potential risk exposures. In short, reading an annual report increased the odds of producing alpha. Perhaps even more so in a current environment dominated by 'one decision' momentum stocks, quantitative strategies, and passive investment flows. 10-K's are larger than ever before with complicated accounting principles underlying the figures and footnotes.

To assist investors in navigating through these lengthy documents, this report explains and interprets essential financial statement disclosures and GAAP accounting. We've arranged this report by key sections, following the typical 10-K progression, and wrote each section in such a way as each topic may be read individually.

FILING DEADLINES

For 10-K and 10-Q (quarterly reports) filing deadlines, the U.S. Securities and Exchange Commission ("SEC") rules classify companies as large accelerated filers, accelerated filers, or non-accelerated filers. Companies classified as large accelerated filers have a worldwide common public equity float of at least $700 million and have filed reports with the SEC for at least 12 months. Worldwide common public equity float is measured on the last day of the most recently completed fiscal second quarter. The 10-K filing deadline for large accelerated filers is 60 days after year-end.

Accelerated filers are defined as companies with a common public equity market float of $75 million to $700 million. The 10-K filing deadline for these companies is 75 days after year-end.

Non-accelerated filers is the third category of companies and is defined as a company with a public common equity float of less than $75 million or a company completing an initial public offering ("IPO") during the year. Non-accelerated filers' 10-K deadline is 90 days after year-end.

A company's filing deadline may fall on a Saturday or Sunday in which case the company has until the following Monday to file its 10-K. For a recent IPO, once a company has been subject to the Securities Exchange Act's reporting requirements for at least 12 calendar months and has filed at least one annual report, the co. is eligible for either large accelerated or accelerated filing status.

If a company can't file its annual report without "unreasonable effort or expense", it may seek temporary relief under SEC rule 12b-25. In these circumstances, the SEC allows a 15-calendar-day extension to the company's 10-K filing deadline. When this happens, the company files a Form 8-K or NT-10-K, explaining the reason for delay.

SEC Annual Report Filing Deadlines

SEC Classification	Definition[1]	Form 10-K Filing Deadline
Large Accelerated Filers	Public float of at least $700 million	60 days after year-end (March 2, 2020 for calendar year-end companies)
Accelerated Filers	Public float between $75 and $700 million	75 days after year-end (March 16, 2020 for calendar year-end companies)
Non-Accelerated Filers	Public float less than $75 million; recent IPOs	90 days after year-end (March 30, 2020 for calendar year-end companies)

(1) Market value float is based on the date of the most recent second quarter (June 30, 2019 for calendar year-end companies). Once a company becomes a Large Accelerated Filer, public float must fall below $500 million to return to Accelerated Filer status. To exit Accelerated Filer status, the public float must drop below $50 million.

Source: Wolfe Research Accounting & Tax Policy Research; SEC.

RECENT ACCOUNTING PRONOUNCEMENTS AND CHANGES

Disclosure of the financial impact of newly issued accounting standards (i.e., those not yet been adopted) is required under SEC Staff Accounting Bulletin No. 74 ("SAB 74"). This information is typically located following the summary of significant accounting policies section (many times, this is one of the first two footnotes after the financial statements). Under this SEC guidance, companies are required to describe the new accounting rule, adoption date, method of adoption (e.g. prospective/retrospective), known estimated financial statement impact, and related potential impact on other significant matters (e.g., debt covenants).

Some companies voluntarily choose to list all recently issued accounting standards not yet adopted even if they do not expect a material impact. Often, this disclosure is boilerplate language that contains only general information about the pending change. However, as the effective date draws closer, companies may disclose the financial impact of adopting the new rule.

Below are recent and upcoming accounting rule changes that may impact companies.

Change	Effective Date (1)	Description & Impact
Revenue recognition	**2018**	**Comprehensive new standard for recognizing revenues. Required for all companies, though size and type of impact difficult to quantify. Will depend on industry and business model. Generally biggest impact was to timing of revenue recognition, with revenue recognized earlier and more volatile, with less smoothing. Most impacted business models include telco, software, asset managers, distributors and those with long term service contracts. Similar requirements under both FASB and IFRS.**
Lease accounting	**2019**	**Companies required to record nearly all operating lease contracts as assets and liabilities on balance sheet. The capitalized amount is based on the present value of future minimum lease payments. Will impact leverage and return metrics. No changes made to income statement treatment in the US. Similar standard issued under IFRS, but income statement impacts will be more similar to capital lease treatment. Most impacted industries include retail, airlines, industrials.**
Financial assets: Impairment / loss reserves	**2020**	**Will require expected loss model when recording credit loss reserves for financial instruments (loans, HTM investments). Will result in higher and more volatile provisions and loan loss reserves and impairments vs. current incurred loss model. For AFS securities, new other than temporary impairment model that will allow reversal of impairment charges back through earnings. Primary impact on banks, insurers, lending institutions. Slightly different treatment under IFRS.**
Convertible Debt Accounting	**Pending**	**The FASB is deliberating proposed rule changes for convertible debt. Generally, cash settled convertible bonds would no longer be required to be bifurcated into debt and equity components. The entire amount would remain as debt, and interest expense would be based on that balance sheet amount (no longer a higher imputed amount based on the equity value component, which will no longer exist).**
Goodwill	**Pending**	**The FASB is in the early stages of deliberating changes to goodwill accounting. It has been performing stakeholder outreach on whether to change the current impairment model for an alternative, including potential to revert back to amortization, or some combination of both.**

(1) Most accounting changes allow for early adoption at company option.

REVIEW 10-K BLACKLINE COMPARISONS VS PRIOR YEARS

Analysts should always either begin or end their 10-K review with a blackline comparison vs. the previous one or two years' 10-K filings. This is a service most filing databases now provide. Not only does it flag major accounting and disclosure changes that have occurred, but perhaps more importantly, it can be used to ferret out smaller, more subtle wording changes. These changes may actually have more material implications than management wants to call attention to or could represent an emerging risk and / or opportunity ahead of the time it become a major investor focus.

While some sections will naturally have significant year-over-year changes (such as MD&A), areas such as the accounting policy sections, risk factors, related party and specific footnotes most impactful to the business should carefully be reviewed for unexpected wording changes.

10-K ANNUAL REPORT SECTIONS

The 10-K is divided into four main parts, of which we focus on interpreting and reviewing the footnotes and related disclosures. We also delve into other specific sections of the 10-K if they are applicable to investment analysis.

Part I

Item 1.	Business
Item 1A.	Risk Factors
Item 1B.	Unresolved SEC Comments
Item 2.	Properties
Item 3.	Legal Proceedings
Item 4.	Mine Safety Disclosures

Part II

Item 5.	Market for Registrant's Common Equity and Related Stockholder Matters
Item 6.	Selected Financial Data
Item 7.	Management's Discussion and Analysis of Financial Condition and Results
Item 7A.	Quantitative and Qualitative Disclosures About Market Risk
Item 8.	Financial Statements and Supplementary Data
Item 9.	Change in and Disagreements with Accountants on Accounting and Financial Disclosure
Item 9A.	Controls and Procedures
Item 9B.	Other Information

Part III (This section is usually included in a proxy statement and referenced in the Form 10-K)

Item 10.	Directors and Executive Officers of the Registrant
Item 11.	Executive Compensation
Item 12.	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters
Item 13.	Certain Relationships and Related Transactions
Item 14.	Principal Accountant Fees and Services

Part IV

Item 15.	Exhibits and Financial Statement Schedules
Item 16.	Form 10-K Summary (Optional)

REVIEW 10-K FOR UNRESOLVED SEC STAFF COMMENTS

Analysts should review Item 1B, "unresolved SEC staff comments," of the 10-K. Under the Sarbanes-Oxley Act of 2002, the SEC must review every public company's financial disclosures at least once every three years. The SEC will send companies "comment letters" based on these reviews, requesting additional disclosures or asking why certain disclosures were not included in their 10-Ks or 10-Qs. We find a relatively small number of companies typically have these comment letters left as "unresolved" in the 10-K filings so if you find one, pay close attention to it.

SEC comment letters may also lead to a deeper SEC investigation into a company's accounting practices if questionable or non-Generally Accepted Accounting Principles ("GAAP") are discovered. Unresolved SEC comments must be disclosed under the following circumstances:

- The SEC's written comment remains unresolved at the 10-K filing date;
- The SEC written comments are material; and
- The SEC comments were issued more than 180 days before the end of the fiscal year to which the annual report relates.

Given how seldom we see SEC comments left unresolved, a helpful exercise is to review any recently completed communications between the company and SEC. At least 20 days after the SEC review is finished, comment letters are publicly available on the SEC website and other data provides such as Edgar. The filing type appears as "UPLOAD" (the SEC's letter to the company) or "CORRESP" (the company's response to the SEC).

As an example, Masco disclosed a 10-K review by the SEC wherein they inquired about cash flows from Accounts Payable, and the company described a supply chain finance (reverse factoring) program. This led to more robust disclosures by the company in the following periods. As noted in the section of this report on reverse factoring, we suspect the SEC has or will be inquiring on quite a few companies regarding these transactions.

SEC 10-K Review: Masco Corp. (UPLOAD and CORRESP filing excerpt)

Form 10- K Year Ended December 31, 2018
Management's Discussion and Analysis of Financial Condition and Results of Operations
Liquidity and Capital Resources
Cash Flows, page 22

1. We note your "Accounts Payable days" are 71 days as of December 31, 2018. We further note your Accounts Payable days has increased substantially over the past ten years, with a low of 47 days in 2009, followed by a substantial increase to 63 days in 2011. Please tell us if you are engaging in supply chain finance operations and mechanisms, such as reverse factoring or similar methods to increase your Accounts Payable days. Otherwise, please explain how you have been able to achieve such extended accounts payable terms with your suppliers.

Response:

From 2009 through 2018, we increased our Accounts Payable days by executing a strategic initiative to extend payment terms with our suppliers. Through successful negotiations, principally by more directly leveraging our purchasing volume, we have significantly extended our payment terms with many of our suppliers. During 2012, we began to facilitate, through a third- party intermediary, a voluntary supply chain finance program between certain suppliers and several participating financial institutions, which to a lesser extent also improved Accounts Payable days. From 2012 through 2018, fewer than 3% of our suppliers utilized the program, and less than 10% of our direct material- related purchases were paid under the program in any given year. We retain our right to negotiate with the suppliers that elect to participate in the program and benefit from any negotiated pricing or credit terms. The amounts we pay

and our payment terms to the participating financial institutions are the same as if we paid our suppliers directly.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

PROPERTIES SECTION: LEASED OR OWNED?

Item 2 of the 10-K requires a description of the company's major properties and facilities, noting if they are leased or owned. This footnote will aid investors in understanding a company's mix of owned versus leased real estate and its physical location. It may also assist in identifying hidden asset values in land or other properties. There is no required standardized format and, therefore, disclosures do vary by company as some are several pages in length while others are only one or two paragraphs. As an example, below is the Item 2 disclosure for Masco Corp.

Owned Properties: Masco Corp.

The table below lists principal North American properties used by our continuing operations.

Business Segment	Manufacturing	Warehouse and Distribution
Plumbing Products	20	7
Decorative Architectural Products	8	16
Totals	28	23

Most of our North American facilities used by our continuing operations range from single warehouse buildings to complex manufacturing facilities. We own most of our North American manufacturing facilities, none of which is subject to significant encumbrances. A substantial number of our warehouse and distribution facilities are leased.

Our Masco Cabinetry business uses 8 manufacturing facilities and 3 warehouse buildings, each located within North America.

The table below lists principal properties used by our continuing operations outside of North America.

Business Segment	Manufacturing	Warehouse and Distribution
Plumbing Products	10	18
Decorative Architectural Products	—	—
Totals	10	18

Most of our international facilities used by our continuing operations are in China, Germany and the United Kingdom. We own most of our international manufacturing facilities, none of which is subject to significant encumbrances. A substantial number of our international warehouse and distribution facilities are leased.

There are no international properties associated with our Masco Cabinetry business.

We lease our corporate headquarters in Livonia, Michigan, and we own a building in Taylor, Michigan that is used by our Masco Technical Services (research and development) department. We continue to lease an office facility in Luxembourg, which serves as a headquarters for most of our foreign operations.

Each of our operating divisions assesses the manufacturing, distribution and other facilities needed to meet its operating requirements. Our buildings, machinery and equipment have been generally well maintained and are in good operating condition. We believe our facilities have sufficient capacity and are adequate for our production and distribution requirements.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

MANAGEMENT'S DISCUSSION AND ANALYSIS: CRITICAL ACCOUNTING POLICIES

SEC Regulation S-K requires a management's discussion and analysis ("MD&A") section. The MD&A section, among other items, is a narrative on a company's financial condition, results of operations, liquidity, and capital resources.

For financial reporting purposes, a critical accounting policy is one that requires significant and/or subjective management judgment. The summary of "significant accounting policies" section is a similar disclosure that overlaps with the critical accounting estimates section, typically located in the first or second 10-K footnote.

The summary of significant accounting policies includes both critical accounting policies and other material accounting policies. Both of these sections are important to uncover any year-over-year changes in accounting policies that impact earnings or signal possible other business issues. A reading of this section may help identify companies under/over earning. For example, the section may describe a very conservative accounting policy that is reducing current period earnings.

One of the first signs of a more aggressive accounting policy change may be a new one or two sentence disclosure in this section. Additionally, a company's accounting policies should be reviewed and compared against competitors' policies since differences may impact reported earnings and comparability.

Below is an example of select critical accounting policies disclosures for General Motors. Notably, the company reduced its pension expected return on plan assets at December 31, 2019 (see pension section for more discussion on what this means).

General Motors Critical Accounting Policies Excerpt

Critical Accounting Estimates The consolidated financial statements are prepared in conformity with U.S. GAAP, which requires the use of estimates, judgments and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses in the periods presented. We believe the accounting estimates employed are appropriate and the resulting balances are reasonable; however, due to the inherent uncertainties in developing estimates, actual results could differ from the original estimates, requiring adjustments to these balances in future periods. Refer to Note 2 to our consolidated financial statements for our significant accounting policies related to our critical accounting estimates.

Pension and OPEB Plans In December 2019 an investment policy study was completed for the U.S. pension plans. As a result of changes to our capital market assumptions the weighted-average long-term rate of return on assets decreased from 6.4% at December 31, 2018 to 5.9% at December 31, 2019. The expected long-term rate of return on plan assets used in determining pension expense for non-U.S. plans is determined in a similar manner to the U.S. plans.

Valuation of Deferred Tax Assets The ability to realize deferred tax assets depends on the ability to generate sufficient taxable income within the carryback or carryforward periods provided for in the tax law for each applicable tax jurisdiction. The assessment regarding whether a valuation allowance is required or should be adjusted is based on an evaluation of possible sources of taxable income and also considers all available positive and negative evidence factors. Our accounting for the valuation of deferred tax assets represents our best estimate of future events. Changes in our current estimates, due to unanticipated market conditions, governmental legislative actions or events, could have a material effect on our ability to utilize deferred tax assets. Refer to Note 17 to our consolidated financial statements for additional information on the composition of these valuation allowances.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

General Motors Critical Accounting Policies Excerpt (continued)

Product Warranty and Recall Campaigns The estimates related to product warranties are established using historical information on the nature, frequency and average cost of claims of each vehicle line or each model year of the vehicle line and assumptions about future activity and events. When little or no claims experience exists for a model year or a vehicle line, the estimate is based on comparable models.

We accrue the costs related to product warranty at the time of vehicle sale and we accrue the estimated cost of recall campaigns when they are probable and estimable, which is generally at the time of sale.

The estimates related to recall campaigns accrued at the time of vehicle sale are established by applying a paid loss approach that considers the number of historical recall campaigns and the estimated cost for each recall campaign. These estimates consider the nature, frequency and magnitude of historical recall campaigns, and use key assumptions including the number of historical periods and the weighting of historical data in the reserve studies. Costs associated with recall campaigns not accrued at the time of vehicle sale are estimated based on the estimated cost of repairs and the estimated vehicles to be repaired. Depending on part availability and time to complete repairs we may, from time to time, offer courtesy transportation at no cost to our customers. These estimates are re-evaluated on an ongoing basis and based on the best available information. Revisions are made when necessary based on changes in these factors.

The estimated amount accrued for recall campaigns at the time of vehicle sale is most sensitive to the estimated number of recall events, the number of vehicles per recall event, the assumed number of vehicles that will be brought in by customers for repair (take rate), and the cost per vehicle for each recall event. The estimated cost of a recall campaign that is accrued on an individual basis is most sensitive to our estimated assumed take rate that is primarily developed based on our historical take rate experience. A 10% increase in the estimated take rate for all recall campaigns would increase the estimated cost by approximately $0.3 billion.

Actual experience could differ from the amounts estimated requiring adjustments to these liabilities in future periods. Due to the uncertainty and potential volatility of the factors contributing to developing estimates, changes in our assumptions could materially affect our results of operations.

Sales Incentives The estimated effect of sales incentives offered to dealers and end customers is recorded as a reduction of Automotive net sales and revenue at the time of sale. There may be numerous types of incentives available at any particular time. Incentive programs are generally specific to brand, model or sales region and are for specified time periods, which may be extended. Significant factors used in estimating the cost of incentives include forecasted sales volume, product mix, and the rate of customer acceptance of incentive programs, all of which are estimated based on historical experience and assumptions concerning future customer behavior and market conditions. A change in any of these factors affecting the estimate could have a significant effect on recorded sales incentives. Subsequent adjustments to incentive estimates are possible as facts and circumstances change over time, which could affect the revenue previously recognized in Automotive net sales and revenue.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Since reading the MD&A for the results of operations is as much an art as it is a science, we discuss other important MD&A disclosures related to off-balance sheet entities, liquidity, and contractual obligations in the sections that follow.

OFF-BALANCE SHEET EXPOSURES

Off-balance sheet entities and disclosures are particularly important to review for many reasons. They may require cash funding, consolidation, and/or some type of subordinated support and this might impact debt covenants, balance sheet liquidity, and capital ratios (and in turn credit ratings). Although uncommon, off-balance sheet entities may also be used to hide losses and manage earnings.

Companies must disclose detail and terms of significant off-balance sheet arrangements in a separate section of MD&A. This section of the MD&A includes a discussion on joint ventures ("JVs"), debt guarantees, certain contract guarantees, retained interests, derivatives classified as equity, and variable interests ("VIEs") in unconsolidated entities (e.g., CDOs, SIVs, and commercial paper conduits). Off-balance sheet arrangements may also be disclosed in the debt footnote.

The accounting rules impart considerable subjectivity in assessing whether an entity should be consolidated and, therefore, allow flexibility in structuring entities for the desired off-balance sheet treatment. By finessing these complicated accounting rules, a company technically may not be required to consolidate an entity even though it retains a significant amount of risk. In 2010, companies adopted the Financial Accounting Standards Board's ("FASB") new Financial Accounting Standards ("FAS") 166 and FAS 167 rules. These stringent rules, now codified in ASCs 810 and 860, require consolidation of more off-balance sheet entities.

The most important disclosures, in our view, evaluate the loss probabilities of off-balance sheet entities and guarantees, the underlying credit quality of the off-balance sheet arrangement, and the probability of liquidity support for either contractual or reputational reasons. Investors should also review any year-over-year language changes in the disclosures. Below are a few key questions and items that we believe investors should consider when analyzing off-balance sheet entities:

1. Contingent events: What circumstances must occur for the contingent obligations to become a liability of the parent company? Would any cash funding be required?
2. Potential losses: What is the off-balance sheet entity's maximum exposure to loss? What events would need to occur to trigger the maximum losses? Companies may disclose "expected" losses from off-balance sheet entities, but we don't give much weight to these amounts since they are full of management assumptions, generally only reflect current market conditions, and are not sensitivity analyses to specific events. Also, note that the disclosure of maximum losses may not reflect losses currently deemed to be remote.
3. Liquidity: Reviewing the disclosure for liquidity triggers is important. We suggest reviewing the disclosures to see if there is a liquidity support agreement to the off-balance entity and if there are specific asset value triggers to fund it (asset values declining below a certain amount may require liquidity support). We also seek to identify if there are any additional cash funding requirements and, if available, review the credit quality of the underlying assets in the VIE.

4. Consolidation: It's important to review the off-balance sheet disclosures and/or use them as a basis in asking management under what circumstances the company would be required to consolidate the off-balance sheet entity. Under the FASB's consolidation rules, companies must evaluate off-balance sheet entities (e.g., variable interest entities) every quarter to assess whether they should be consolidated. When thinking about consolidation, we assess the following:
   - How would consolidation impact the financial ratios and position of the company?
   - Would consolidation violate debt covenants?
   - How would consolidation impact capital? (Under GAAP, if a "reconsideration event" occurs, a company may be required to consolidate an off-balance sheet entity.)
5. Voluntary Rescue: Even if a company is not legally obligated to provide financial or other support to an off-balance sheet entity, there may be circumstance under which the company would voluntarily choose to provide it. This would occur if the entity's failure would hurt the parent company's reputation or limit its access to an important input to its business. As an example, a parent company may choose to guarantee JV debt that wasn't legally guaranteed previously to keep the entity afloat if it was a key source of raw material inputs.

The disclosures should be also viewed with some caution since they don't take into account any offsetting financial instruments used to hedge these risks. These may be noted in a table footnote, but we've found disclosures to be spotty in this area. The actual location of off-balance sheet arrangements disclosures may vary by company. There may be some general disclosures within the MD&A section with more detailed explanations and tables in the footnotes to the financial statements.

Wells Fargo's MD&A and Footnote Off-Balance Sheet Entities Disclosures

In the ordinary course of business, we engage in financial transactions that are not recorded on the balance sheet, or may be recorded on the balance sheet in amounts that are different from the full contract or notional amount of the transaction. Our off-balance sheet arrangements include commitments to lend and purchase debt and equity securities, transactions with unconsolidated entities, guarantees, derivatives, and other commitments. These transactions are designed to (1) meet the financial needs of customers, (2) manage our credit, market or liquidity risks, and/or (3) diversify our funding sources.

Commitments to Lend and Purchase Debt and Equity Securities

We enter into commitments to lend funds to customers, which are usually at a stated interest rate, if funded, and for specific purposes and time periods. When we make commitments, we are exposed to credit risk. However, the maximum credit risk for these commitments will generally be lower than the contractual amount because a significant portion of these commitments is expected to expire without being used by the customer. For more information on lending commitments, see Note 6 (Loans and Allowance for Credit Losses) to Financial Statements in this Report. We also enter into commitments to purchase securities under resale agreements. For more information on commitments to purchase securities under resale agreements, see Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments) to Financial Statements in this Report. We also may enter into commitments to purchase debt and equity securities to provide capital for customers' funding, liquidity or other future needs. For more information, see the "Off-Balance Sheet Arrangements – Contractual Cash Obligations" section in this report and Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments) to Financial Statements in this Report.

Transactions with Unconsolidated Entities

In the normal course of business, we enter into various types of on- and off-balance sheet transactions with special purpose entities (SPEs), which are corporations, trusts, limited liability companies or partnerships that are established for a limited purpose. Generally, SPEs are formed in connection with securitization transactions and are considered variable interest entities (VIEs). For more information on securitizations, including sales proceeds and cash flows from securitizations, see Note 9 (Securitizations and Variable Interest Entities) to Financial Statements in this Report.

Guarantees and Certain Contingent Arrangements

Guarantees are contracts that contingently require us to make payments to a guaranteed party based on an event or a change in an underlying asset, liability, rate or index. Guarantees are generally in the form of standby letters of credit, securities lending and other indemnifications, written put options, recourse obligations and other types of arrangements. For more information on guarantees and certain contingent arrangements, see Note 15 (Guarantees, Pledged Assets and Collateral, and Other Commitments) to Financial Statements in this Report.

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

As an off-balance sheet disclosure example, we've reproduced a portion of Wells Fargo's 10-K, discussing the bank's maximum loss exposure in unconsolidated VIEs.

Wells Fargo's MD&A and Footnote Off-Balance Sheet Entities Disclosures (continued)

		Carrying value – asset (liability)				
(in millions)	Total VIE assets	Debt and equity interests (1)	Servicing assets	Derivatives	Other commitments and guarantees	Net assets
December 31, 2018						
Residential mortgage loan securitizations:						
Conforming (2)	**$1,172,833**	**2,377**	**13,811**	**—**	**(171)**	**16,017**
Other/nonconforming	**10,596**	**453**	**57**	**—**	**—**	**510**
Commercial mortgage securitizations	**153,350**	**2,409**	**893**	**(22)**	**(40)**	**3,240**
Collateralized debt obligations:						
Debt securities	**659**	**—**	**—**	**5**	**(20)**	**(15)**
Loans (3)	**—**	**—**	**—**	**—**	**—**	**—**
Asset-based finance structures	**304**	**205**	**—**	**—**	**—**	**205**
Tax credit structures	**35,185**	**12,087**	**—**	**—**	**(3,870)**	**8,217**
Collateralized loan obligations	**2**	**—**	**—**	**—**	**—**	**—**
Investment funds	**185**	**42**	**—**	**—**	**—**	**42**
Other (4)	**1,688**	**207**	**—**	**44**	**—**	**251**
Total	**$1,374,802**	**17,780**	**14,761**	**27**	**(4,101)**	**28,467**

	Maximum exposure to loss				
	Debt and equity interests (1)	Servicing assets	Derivatives	Other commitments and guarantees	Total exposure
Residential mortgage loan securitizations:					
Conforming	**$ 2,377**	**13,811**	**—**	**1,183**	**17,371**
Other/nonconforming	**453**	**57**	**—**	**—**	**510**
Commercial mortgage securitizations	**2,409**	**893**	**28**	**11,563**	**14,893**
Collateralized debt obligations:					
Debt securities	**—**	**—**	**5**	**20**	**25**
Loans (3)	**—**	**—**	**—**	**—**	**—**
Asset-based finance structures	**205**	**—**	**—**	**71**	**276**
Tax credit structures	**12,087**	**—**	**—**	**1,420**	**13,507**
Collateralized loan obligations	**—**	**—**	**—**	**—**	**—**
Investment funds	**42**	**—**	**—**	**—**	**42**
Other (4)	**207**	**—**	**45**	**158**	**410**
Total	**$ 17,780**	**14,761**	**78**	**14,415**	**47,034**

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

USING OFF-BALANCE SHEET VEHICLES TO HIDE DEBT, INVENTORY, AND/OR EXPENSES

To boost earnings or improve reported financial ratios, a company may choose to move inventory and debt into a joint venture or other off-balance sheet entity. A careful reading and analysis of joint venture disclosures will help identify whether a significant increase in inventory might have been shifted off-balance sheet. For example, a joint venture may produce and sell inventory to the parent company. The parent company may control the purchases of inventory from this entity. Therefore, financial analysis of the parent company's inventory balance may be obfuscated by inventory increasing on the balance sheet of the joint venture partner.

A company may also finance a joint venture with debt or with a parent company guarantee for all or a portion of the joint venture debt. This debt amount or debt guarantee would not appear on the parent's balance sheet but may be a real obligation and in substance debt. These types of debt arrangements or guarantees would typically be in the MD&A section.

Furthermore, JV arrangements typically mask underlying leverage levels at the parent company due to the equity method of accounting. In a JV arrangement, both companies usually account for an investment under the equity method of accounting instead of consolidating the JV entity. Under the equity method, the balance sheet contains a single line item, typically called "investments" or "equity method investments," classified under other long-term assets. On the liability side of the balance sheet, the JV's debt is not reported under the equity method. On the income statement, the company's proportion of the JV's income is recorded as equity income/loss and usually reported in other income. For financial analysis and ratios, we suggest analysts consolidate the portion of the joint venture's off-balance sheet debt amount as well as their percentage of any JV debt guarantees attributable to the company (e.g., 50%).

The creation of new JVs or off-balance sheet entities is another way to improve reported margins. If the business contributed to the new entity has lower overall margins, the remaining parent company will report higher margins since the business will be deconsolidated and be reported under the equity method of accounting. On the income statement, only one line "equity income/loss" is reported and typically shown separate from gross and operating income. In substance, nothing has changed.

Lear: Joint Venture Disclosures

As of December 31, 2019, we had fourteen operating joint ventures located in five countries. Of these joint ventures, five are consolidated, and nine are accounted for using the equity method of accounting. Net sales of our consolidated joint ventures accounted for approximately 7% of our net sales in 2019. As of December 31, 2019, our investments in non-consolidated joint ventures totaled $120 million. A summary of our non-consolidated operating joint ventures, including ownership percentages, is shown below. For further information related to our joint ventures, see Note 5, "Investments in Affiliates and Other Related Party Transactions," to the consolidated financial statements included in this Report.

Country	Name	Ownership Percentage
China	Beijing BHAP Lear Automotive Systems Co., Ltd.	50%
China	Guangzhou Lear Automotive Components Co., Ltd.	50
China	Jiangxi Jiangling Lear Interior Systems Co., Ltd.	50
China	Lear Dongfeng Automotive Seating Co., Ltd.	50
China	Changchun Lear FAWSN Automotive Seat Systems Co., Ltd.	49
China	Beijing Lear Dymos Automotive Systems Co., Ltd.	40
Honduras	Honduras Electrical Distribution Systems S. de R.L. de C.V.	49
India	Hyundai Transys Lear Automotive Private Limited	35
United States	Kyungshin-Lear Sales and Engineering LLC	49

Source: Wolfe Research Accounting & Tax Policy Research; Company filings. Note: Per 2019 10-K

CONTRACTUAL OBLIGATIONS AND FIXED CASH FLOW COMMITMENTS

Within the MD&A section, SEC rules require a table of contractual obligations. This table summarizes information usually contained in other sections of the 10-K and lists fixed debt and debt like commitments, such as long-term debt repayments, capital and operating lease payments, purchase obligations, and other long-term contractual liabilities. It should (but does not always) include material cash funding requirements for pension and OPEB plans, probable FIN 48 tax cash contingency payments, and cash interest expense. We find the disclosure to be a great summary of a company's future contractual cash outflows and a tool in evaluating a company's future liquidity needs.

Analysts should be mindful that not all contractual-type fixed payment arrangements are included in the table of contractual obligations. If a contractual arrangement may be cancelled without any material penalties, it may be excluded. Furthermore, the table does not include such items as salaries to employees or dividend payments. The next exhibit is an example of a contractual obligations table.

Also, note many companies will show their remaining transition (repatriation) taxes due from tax reform. Companies had the option of paying this tax over 8 years beginning in 2018.

Hanesbrands: Contractual Obligations Table

		Payments Due by Period			
	At December 28, 2019	Fiscal 2020	Fiscal 2021-2022	Fiscal 2023-2024	Fiscal 2025 and Thereafter
		(dollars in thousands)			
Operating activities:					
Interest on debt obligations[1]	$ 657,741	$ 136,011	$ 267,263	$ 194,017	$ 60,450
Inventory purchase obligations	493,403	485,968	7,435	—	—
Operating lease obligations	595,599	166,833	216,989	118,023	93,754
Marketing and advertising obligations	10,072	9,237	835	—	—
Defined benefit plan minimum contributions[2]	25,000	25,000	—	—	—
Tax obligations[3]	178,724	33,358	62,778	45,069	37,519
Other long-term obligations[4]	521,220	176,373	137,325	107,274	100,248
Investing activities:					
Capital expenditures	17,940	17,554	386	—	—
Financing activities:					
Debt	3,394,761	110,914	625,000	1,758,847	900,000
Notes payable	4,244	4,244	—	—	—
Total	$ 5,898,704	$ 1,165,492	$ 1,318,011	$ 2,223,230	$ 1,191,971

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Balance Sheet

The composition and location of cash and investments are often overlooked by analysts. To be classified as cash under GAAP, the instrument must have a maturity date of 90 days or less. Investments are classified as short-term or long-term depending on their maturity date.

CASH BALANCES MAYBE OVERSTATED DUE TO REPATRIATION (TRANSITION) TAX

A significant portion of some multinational companies' cash balances may be domiciled overseas and not historically accessible for distribution to shareholders or other payments due to taxes that would be due if repatriated. The 2017 TCJA has brought more clarity to the actual taxes due by forcing a "deemed repatriation" of those amounts through a transition tax. The transition tax is assessed at a rate 15.5% on built up foreign earnings held in cash and 8% if reinvested. Foreign tax credits would be available to offset the tax due.

However, the cash on balance sheet still cannot be viewed at face value as many companies have not yet fully paid the tax. The legislation provides the option to pay the tax over an 8-year period (8% of total each of the first 5 years, then 15%, 20%, 25% over the final 3). In companies' 10-Ks, companies disclose the amount of remaining taxes owed relating to this transition tax. These would be recorded as an accrued tax liability on the balance sheet. For valuation purposes, the gross cash amount reported on companies' balance sheets needs to be adjusted downward for any accrued owed over the next several years due to the repatriation tax. That will allow proper context for cash available on hand free for corporate / shareholder return purposes that was previously "locked up" in foreign entities.

Below, we show Hanes Brands disclosure of their transition tax accrual. When the tax bill was signed in Q4 2017, the company recorded tax expense of $360 million. The remaining actual cash tax due in 2019 (presumably due to offsetting foreign tax credits) totals $101 million, which will be paid over the remaining six years. This $101 million liability should be offset against balance sheet cash for valuation purposes.

Hanes Brands: Transition Tax

One-time Transition Tax

The Company recorded a provisional amount for the one-time transition tax liability for each of the Company's foreign subsidiaries, resulting in a transition tax liability of $359,938 at December 30, 2017. Upon further analysis of the Tax Act, notices, and regulations issued and proposed by the U.S. Department of the Treasury and the Internal Revenue Service ("IRS"), the Company finalized the calculations of the transition tax liability during 2018. The Company decreased the December 30, 2017 provisional amount by approximately $2,925, which is included as a component of income tax expense in 2018. The Company has elected to pay its transition tax over the eight-year period provided in the Tax Act. As of December 28, 2019, the remaining balance of the Company's transition tax obligation is $100,626, which will be paid over the next six years.

Note: Emphasis added. Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Below we summarize a number of inventory issues that may either optically improve reported gross margins or be indicative of slowing end-demand. We then discuss each in more detail.

- Change in inventory mix;
- Gains from reversing inventory reserves;
- Delaying inventory write-downs by under-reserving for obsolete or old items;
- LIFO vs. FIFO comparable company comparisons;
- LIFO liquidations;
- Change in inventory accounting methods;
- Large inventory write-downs followed by a recovery in the selling price in a subsequent period;
- Overproducing to lower average inventory cost

LARGE CHANGES IN THE MIX OF INVENTORY RELATIVE TO TOTAL INVENTORIES?

A calculation of the percentage of each inventory category (raw materials, work in progress, and finished goods) to total inventory will highlight any differences in the mix of inventory. While there are normal reasons for mix shifts, any large changes may suggest changes in the business. For example, if the finished goods balance materially increased relative to total inventory, it may presage slowing end demand for the company's product. At the same time, the total inventory balance may not have materially changed if the company decreased raw material purchases to offset slowing demand (finished goods increased, and raw materials decreased).

INVENTORY OBSOLESCENCE RESERVES AND CHANGES

Similar to our discussion in this note more generally on reserves and earnings management, many of the same warnings apply for the inventory reserve that is recorded on obsolete or potentially excessive inventory. Coverage ratios should be appropriate and any declines in reserve / inventory balance should be viewed skeptically as a potential indicator of a surprise future write-down.

LARGE INVENTORY RESERVE CHANGES MAY INFLATE PROSPECTIVE GROSS MARGINS

An analyst should review inventory for write downs to the lower of cost or market because in a quarter of poor results or at year-end, a company might excessively write-down its inventory as a one-time charge owing to a decrease in the inventory's selling prices. The inventory write-down is recorded in an inventory reserve account until the inventory is sold or scrapped (inventory reserves are required to be disclosed if material). If the sales price of inventory previously written-down recovers in value, and the product sells at the higher price, a company would record an inflated gross margin since it wrote-down the inventory in a prior quarter. The increase in gross margin is unsustainable since there is only a limited amount of inventory on the balance sheet at the lower value. The production of new inventory at its normal or higher cost will result in the company recording a lower, but normal gross margin in the income statement in the subsequent period. Below is an illustration for Teradyne and the company's sales of previously written down inventory which boosted gross margin. While recent sales have not been material, the cumulative previous write-downs of ~$100 million remain outstanding and may be either sold or scrapped in the future.

Teradyne: Inventory Write-Downs Followed by Subsequent Sale (per 2018 10-K)

During the years ended December 31, 2018, 2017 and 2016, we scrapped $7.0 million, $14.4 million and $15.2 million of inventory, respectively, and sold $6.7 million, $7.5 million and $10.0 million of previously written-down or written-off inventory, respectively. As of December 31, 2018, we had inventory related reserves for amounts which had been written-down or written-off totaling $100.8 million. We have no pre-determined timeline to scrap the remaining inventory.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

INVENTORY ACCOUNTING POLICY CHOICE: LIFO VS. FIFO

Inventory is accounted for using one of several methods including first-in, first-out (FIFO), average cost, last-in, first-out (LIFO) or specific identification. By far, the FIFO accounting costing method is the most common. However, to appease companies' concerns overpaying higher taxes on inflationary profits, LIFO accounting was created in a 1970's tax code change that allowed it to be used as an accounting cost flow assumption. Under the tax code's LIFO conformity rule, companies are required to use LIFO accounting for GAAP purposes if they use it for tax purposes. LIFO is not allowed under International Accounting Standards and is one of the major differences between U.S GAAP and IFRS. In a period of rising prices, LIFO accounting will generally result in higher costs and, therefore, lower earnings. However, the reported earnings under LIFO are closest to economic reality and reflective of the current business conditions than a company using FIFO accounting, where their cost of sales could reflect the cost of inventory purchased many years ago.

Analysts may adjust a company from LIFO accounting to FIFO to compare like kind margins. To adjust a company to FIFO, the LIFO company's cost of sales is decreased/(increased) by the increase/(decrease) in year-over-year (or quarter-over-quarter) LIFO inventory reserve balance. For balance sheet purposes, the FIFO inventory balance is an approximation of replacement cost and should be used for balance sheet ratios/analysis. The LIFO inventory balance is often outdated and may reflect prices paid for inventory many years ago.

The LIFO reserve and material amounts of LIFO liquidations are required 10-K disclosures. The LIFO reserve is the difference between the FIFO inventory balance and the LIFO inventory balance. It represents the cumulative difference between FIFO and LIFO inventory. Put another way, if the reserve is multiplied by the historical U.S. corporate tax rate, it is the amount of cash taxes cumulatively saved by the company.

HOW TO ADJUST LIFO TO FIFO INVENTORY

Analysts may adjust a company from LIFO accounting to FIFO to compare like kind margins. To adjust a company to FIFO, the LIFO company's cost of sales is decreased/(increased) by the increase/(decrease) in year-over-year (or quarter-over-quarter) LIFO inventory reserve balance. For balance sheet purposes, the FIFO inventory balance is an approximation of replacement cost and should be used for balance sheet ratios/analysis. Inventory on the balance sheet under a LIFO costing method is often outdated and may reflect prices paid for inventory many years ago. In a period of rising prices, LIFO accounting will generally result in higher costs and, therefore, lower earnings. However, the reported earnings under LIFO are closest to economic reality and reflective of the current business conditions than a company using FIFO accounting, where their cost of sales could reflect the cost of inventory purchased many years ago.

In the next exhibit, we illustrate the method of converting Caterpillar's gross margins (and earnings) from LIFO to FIFO based on the company's LIFO reserve disclosure. The company discloses a LIFO reserve of $2,086 million at 12/31/2019 compared to $2,009 million at 12/31/2018, or an increase of approximately $77 million during the fiscal year. To convert LIFO gross margin to FIFO gross margin, we use the change in the LIFO reserve. That is, the increase (decrease) in the LIFO reserve is subtracted from / (added to) cost of sales. As prices increased in 2019, we are effectively reversing the impact of those changes from the LIFO reported gross profit amount. From an economic standpoint, the initially reported LIFO income is likely more appropriate, but the adjustment to FIFO can be used to compare against another company.

Example of Adjusting LIFO to FIFO: Caterpillar ($ in millions)

"If the FIFO (first-in, first-out) method had been in use, inventories would have been $2,086 million and $2,009 million higher than reported at December 31, 2019 and 2018, respectively."

	For the Year Ended		
	As reported Dec. 31 2019	LIFO to FIFO Adjustment	Adjusted Dec. 31 2019
Net sales	53,800		53,800
Cost of goods sold	36,630	-77	36,553
Gross profit	17,170	77	17,247
% Margin	*31.9%*		*32.1%*
Selling, general and administrative expenses	8,880		8,880
Operating profit	8,290	77	8,367
Interest & other expense	478		478
Income before income taxes	7,812	77	7,889
Income tax expense	1,746	16	1,762
Other	28		28
Net income	6,094	61	6,127

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

HAVE THERE BEEN MATERIAL REDUCTIONS IN THE LIFO INVENTORY RESERVE?

For companies that use LIFO inventory accounting, changes in the LIFO reserve (the difference between FIFO inventory and LIFO inventory) can present several accounting issues that should be monitored. There are two LIFO inventory specific impacts that can occur:

1) LIFO Price Impacts or 2) LIFO Quantity Impacts.

LIFO Price Impacts: Companies often refer to increases in the LIFO inventory reserve as a "charge" since recently purchased inventory items are placed into the inventory balance at a higher cost than inventory purchased in a prior period. We don't view these as necessarily one-time charges since they are the normal cost of doing business — the company experienced higher costs in the current period and this reduced margins. Similarly, if there is a decrease in the LIFO reserve due to price changes and cost of sales are lower, we don't advise making any adjustments to normalize gross margins since input price changes are a normal part of the business. However, we do believe margins should be adjusted if current input prices are viewed as unsustainable or short-term aberrations. A company with volatile raw material and/or other input costs using LIFO inventory will experience more volatile and immediate gross margins changes than a company using FIFO.

LIFO Quantity Impacts: If a reduction in inventory quantity is the cause of the LIFO reserve decline, similar to any reserve reduction, there is a positive impact on earnings (in this case gross margins) — LIFO income or a gain. This gain is unsustainable since inventory quantities cannot be realistically reduced to zero. To normalize margins, we suggest removing the LIFO income effect by increasing reported cost of goods sold by the LIFO liquidation income amount. As shown below, TreeHouse Foods pre-tax earnings rose by $4.1 million due to LIFO liquidations during 2018.

TreeHouse Foods: LIFO Liquidation (2018 10-K)

Due in part to the closure of the Plymouth, Indiana pickle facility and lower overall inventory levels, the Company has reduced the quantity of LIFO inventory on hand during 2018, resulting in a liquidation of inventory carried at lower costs from prior years. The LIFO liquidation resulted in a reduction to Cost of sales of $4.1 million during 2018. There were no LIFO liquidations during 2017.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

INVENTORY ACCOUNTING POLICY CHANGES (E.G. LIFO TO FIFO)?

A change in an inventory costing method accounting policy is rare and, therefore, we view them with a high level of skepticism. To boost earnings, a company may choose to change from LIFO to FIFO inventory and we've observed this as most common (but still uncommon) accounting policy change. We've seen it among companies encountering rising raw material costs since earnings are higher under FIFO. A change in an inventory accounting policy is not generally allowed without good reason and requires a preferability letter from the company's auditor. Therefore, it piques our interest when we find them. More often than not, the change in inventory method will result in higher earnings for the recently reported period, while, the future impact is difficult to discern.

As an example, Eaton changed its inventory method policy from LIFO to FIFO for certain inventory amounts in Q4 2017, which boosted EPS by $.05. The impact on future results is unknown.

Change of Inventory Method – Eaton

During the fourth quarter of 2017, the Company changed its method of accounting for certain inventory in the United States from the last-in, first-out (LIFO) method to the first-in, first out (FIFO) method. The FIFO method of accounting for inventory is preferable because it conforms the Company's entire inventory to a single method of accounting and improves comparability with the Company's peers. All prior periods presented have been retrospectively adjusted to apply the new method of accounting.

	Year ended December 31, 2017				Year Ended December 31, 2016		
	As computed under	As reported under	Effect of change		As originally		
(In millions except for per share data)	LIFO	FIFO	TCJA	Other	reported	As adjusted	Effect of change
Consolidated Statements of Income							
Cost of products sold	$ 13,770	$ 13,756	$ —	$ (14)	$ 13,400	$ 13,409	$ 9
Income before income taxes	3,354	3,368	—	14	2,127	2,118	(9)
Income tax expense	391	382	(14)	5	202	199	(3)
Net income	2,963	2,986	14	9	1,925	1,919	(6)
Net income attributable to Eaton ordinary shareholders	2,962	2,985	14	9	1,922	1,916	(6)
Net income per ordinary share							
Diluted	$ 6.63	$ 6.68	$ 0.03	$ 0.02	$ 4.21	$ 4.20	$ (0.01)
Basic	$ 6.66	$ 6.71	$ 0.03	$ 0.02	$ 4.22	$ 4.21	$ (0.01)
Adjusted earnings							
Adjusted earnings	$ 2,964	$ 2,987	$ 14	$ 9	$ 1,925	$ 1,919	$ (6)
Adjusted earnings per ordinary share	$ 6.63	$ 6.68	$ 0.03	$ 0.02	$ 4.22	$ 4.21	$ (0.01)

A switch to FIFO typically boosts earnings in current and future periods

Source: Wolfe Research Accounting & Tax Policy Research; Company filing.

IS LOWER PRODUCTION DEPRESSING MARGINS FROM EXCESS OVERHEAD?

"Abnormal" amounts of idle facility expense, handling cost, freight, and spoilage must be expensed rather than capitalized as part of inventory on the balance sheet. One large fixed cost included in inventory is fixed overhead costs, namely facility depreciation expense. Allocation of fixed production overhead is calculated using the normal capacity of the plant or facility, where normal capacity is defined as the typical production expected over a number of periods or seasons. Prior to this guidance, companies accounted for these costs in different ways when there were low capacity levels. In a period of low or idled production, margins may receive a boost when production levels normalize as these currently expensed costs will be absorbed into inventory.

IS HIGHER PRODUCTION BOOSTING MARGINS?

Companies can overproduce inventory to increase gross margins by spreading the fixed overhead expenses across more units, thereby lowering the inventory's average cost per unit. Therefore, a company may boost margins simply by overproducing inventory for which there may not be enough end-market demand. We've observed this particularly in high fixed cost businesses. Both rising gross margins and inventory balances (days inventory outstanding or "DIO", calculated as [inventory / annualized cost of sales x 365] are suggestive of lower earnings quality. We'd prefer to see rising margins and a stable (or lower) DIO number.

ARE OTHER COSTS CAPITALIZED INTO INVENTORY?

A careful reading of the inventory footnote may identify other costs currently capitalized into inventory balances. Two examples of costs that are typically capitalized into inventory are pension and stock option expense. A portion of both expenses would be capitalized into inventory if it's a labor cost of producing inventory. Separately, inventory is an area where companies in the same industry group may capitalize different costs into the inventory balance.

INVENTORY: EARNINGS QUALITY – MONITOR DAYS INVENTORY OUTSTANDING

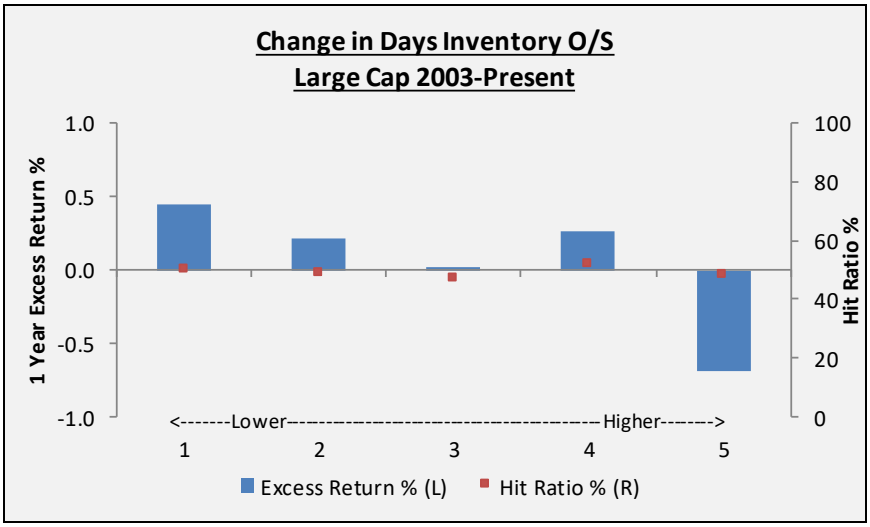
We strongly suggest investors continuously monitor days inventory balances as increases may presage slowing end demand and perhaps the need for an inventory write-down charge.

We've found the best way to observe and standardize these metrics is through the year-over-year percentage change in their levels.

- Percentage Change in Days Inventory is defined as Days Inventory Current / One-year Ago Days Inventory where Days Inventory = LTM Average Inventory / LTM COGS * 360

Based on our quantitative work, we've found that companies with the largest change (~increases) in DIO's, on a sector relative basis, tend to underperform (Quintile 5 below).

Relative Performance for Changes in Days' Inventory Balances



Note: Universe is 1000 largest U.S. market cap companies, ex. financials, utilities and telecom. Sector neutral. Year-over-year change in most recent quarter's LTM DIO (Average Inventory / Cost of Sales x 360). Annualized monthly returns through 2019. Rebalanced monthly.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings; Standard & Poor's; FactSet.

Companies may boost future earnings by changing PP&E depreciable lives, residual values, and/or depreciation methods. Over the years, we've found that these types of changes often signal trouble around the corner. Companies must disclose the depreciation period and method for each material asset group. GAAP requires that PP&E's cost to be allocated as depreciation expense in earnings over the asset's estimated useful life in a "systematic and rational manner." There are several allowable methods of depreciation including straight-line (most common) and other various forms of accelerated depreciation, such as sum of the year's digits and double declining balance. Below are the formulas used to calculate depreciation expense under each method.

Straight line = (Original cost – residual value) / depreciable life

Double declining balance = Depreciation in Year X = 2 / depreciable life x (asset book value at the beginning of Year X)

Sum of the years' digits = Depreciation in Year X = (original cost – salvage value) x (n – X + 1) / sum of years digits, where n = total useful life

Another rarely used depreciation method is "units of production" (UOP). We highlight it in this section since Whirlpool switched to the UOP method in 2009. Under this method, an asset is depreciated based on the assumed total production units over the asset's entire estimated life. Using this method will increase depreciation expense during periods of high production levels and reduce depreciation expense during low levels of production. In effect, it turns a fixed depreciation cost into a variable cost, reducing the volatility of gross margins and earnings. However, this method is likely to understate economic depreciation expense for a company in a mature industry or with a declining business as lower current year production defers depreciation expense into a future period. If product obsolescence or other items ultimately reduces the assets' estimated production units, it will necessitate a PP&E write-down and indicate that prior periods' earnings were overstated (too low depreciation expense).

We suggest reviewing the 10-K's accounting policy section for any changes or unusual depreciation policies. Over the years, we've observed that a change in an asset's depreciable life has sometimes been a precursor to deterioration in the company's business fundamentals. GAAP also requires disclosure of any material changes in depreciable lives, residual values, or depreciation methods. Oddly, PP&E's residual value amounts are not required disclosures. As an example of a company changing its depreciation policy, below is an excerpt from the filings of Weis Markets (WMK). In 2012, the company changed from an accelerated to straight-line depreciation method, resulting in a $0.06 increase to EPS in the quarter the change took place.

Example of Depreciation Methodology Change: Weis Markets

In the first quarter of 2012, the Company changed its accounting policy for property and equipment. Property and equipment continue to be recorded at cost. Prior to January 1, 2012, the Company provided for depreciation of buildings and improvements and equipment using accelerated methods. Effective January 1, 2012, the Company changed its method of depreciation for this group of assets from the accelerated methods to straight-line. Management deemed the change preferable because the straight-line method will more accurately reflect the pattern of usage and the expected benefits of such assets. Management also considered that the change will provide greater consistency with the depreciation methods used by other companies in the Company's industry. The change was accounted for as a change in estimate. The net book value of assets acquired prior to January 1, 2012 with useful lives remaining will be depreciated using the straight-line method prospectively. Depreciation expense in the first quarter 2012 would have been $2.9 million greater if the company had continued using accelerated methods. Had accelerated methods continued to be used, after considering the impact of income taxes, the effect would decrease net income by $1.6 million or $0.06 per share.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

CHANGES: TWO WAYS TO USE PP&E TO BOOST EARNINGS

Changing assumptions used to calculate depreciation expense is one method used to increase earnings and has been the underlying reason for numerous historical accounting restatements. Two ways to lower annual depreciation expense are to extend an asset's depreciation period or increase its residual value. Either of these changes should be viewed with a lot of skepticism.

To calculate depreciation expense, there are three primary inputs: depreciation method (straight line, accelerated depreciation, etc.), asset's residual value, and depreciable life. To lower annual depreciation expense and boost earnings, a company might change its assumptions by increasing residual values, extending depreciable lives or changing the depreciation method. Any of these changes are red flags, in our view. To identify these changes, we suggest reading through the financial filings as material changes in these items are required disclosures. The average depreciable life ratio is also helpful in spotting changes in assumptions (gross PP&E divided by LTM depreciation expense). Within a sector or industry group, comparing depreciation expense to sales assists in identifying companies with more lenient depreciation expense policies.

Under GAAP, residual value or depreciable life changes are accounted for prospectively. Increasing an asset's depreciable life does not change the total depreciation expense amount recognized. Instead, it defers a portion of current depreciation expense into future periods as a smaller annual amount of the asset is expensed over a longer time period. Similarly, an increase in an asset's residual value will reduce the depreciable amount of the asset and, therefore, lower depreciation expense. Historical examples where a change in depreciable lives was a precursor to deterioration in the business fundamentals include Yellow Roadway and Waste Management.

As an example, below, UPS disclosed an increase in depreciable lives of its assets beginning in 2018. The impact was a decline in depreciation (and increase in earnings) of $257 million in 2018 and $335 million expected in 2019.

UPS Change in PP&E Useful Lives (2018 10-K) (Emphasis added)

We evaluate the useful lives of our property, plant and equipment based on our usage, maintenance and replacement policies, and taking into account physical and economic factors that may affect the useful lives of the assets. As part of our ongoing investment in transformation in 2018, we revised our estimates of useful lives for building improvements, vehicles and plant equipment based on our current assessment of these factors. In general, these changes in estimate had the effect of lengthening the useful lives of vehicles, building improvements and plant equipment. The change in estimates for building improvements, vehicles and plant equipment was applied prospectively beginning in 2018 through depreciation expense.

Depreciation and amortization expense decreased $75 million in 2018 compared with 2017. The principal components of this change included:

• An increase in expense of $257 million arising from capital investments in several large facilities and other new projects coming into service. This had the effect of decreasing net income by $205 million or $0.24 per share on a basic and diluted basis in 2018; and

• A decrease in expense of $286 million resulting from prospective revisions to our estimates of useful lives for building improvements, vehicles and plant equipment as part of our ongoing investment in transformation. This had the effect of increasing net income by $228 million or $0.26 per share on a basic and diluted basis.

The changes to the estimated useful lives described above are expected to decrease 2019 depreciation and amortization expense by approximately $335 million as compared to 2018. However, this will be largely offset by approximately $330 million of additional depreciation expense related to the addition of numerous facility automation and capacity expansion projects, which are part of our multi-year transformation strategy.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

PP&E EARNINGS MANAGEMENT DETECTION

In addition to reading the accounting policy sections for any material changes, we recommend investors review a few financial ratios that help detect changing depreciation policies and residual values. Gross PP&E and Accumulated Depreciation balances may not always be readily available on a quarterly basis. However, 10-K annual reports provide the most detailed disclosures on PP&E balances and depreciation.

The ratios below should be analyzed in comparison to companies within the same industry as well as year-over-year changes to determine if there has been a more subtle *undisclosed* change in asset lives, mix shift in asset types, or aging of asset base.

The average asset depreciable life ratio is helpful in spotting changes in assumptions (either useful lives or residual values). Within a sector or industry group, comparing depreciation expense to sales assists in identifying companies with more lenient depreciation expense policies.

Detecting Potential Earnings Management through PP&E

$$Average\ Asset\ Depr.Life = \frac{Gross\ PP\&E}{Depreciation\ Expense}$$

Longer depreciable life = lower depreciation expense = higher earnings

$$Dep.to\ Sales\ Ratio = \frac{Depreciation\ Expense}{Total\ Sales}$$

Lower ratio when comparing two companies with similar profiles may indicate more aggressive depreciation policies / assumptions

$$\%\ of\ Assets\ Depreciated = \frac{Accumulated\ Depreciation}{Gross\ PP\&E}$$

Higher % of assets depreciated = more potential need for upcoming capex

$$Remaining\ Depreciable\ Years = \frac{Net\ PP\&E}{Depreciation\ Expense}$$

Fewer remaining depreciable years = greater potential need for upcoming capex

Source: Wolfe Research Accounting & Tax Policy Research.

IMPLICATIONS OF ACCELERATED DEPRECIATION

A reading of a company's PP&E footnote and accounting policy section may identify a company with a variant depreciation policy. One example of this is a company using accelerated depreciation for GAAP. If a company depreciates PP&E on an accelerated basis, uses low residual values, or uses short depreciable lives, the company's true earnings power may be understated (accounting depreciation might exceed the asset's true economic decline in value). In our review of 10-K disclosures over the years, we find this uncommon. However, other countries often use accelerated depreciation for GAAP (for tax reasons). The next exhibit is Northrop Grumman's disclosure of its accelerated depreciation policy ("declining balance methods") for fixed assets.

Northrop Grumman: Accelerated Depreciation

Property, Plant and Equipment

Property, plant and equipment are depreciated over the estimated useful lives of individual assets. **Most assets are depreciated using declining-balance methods, with the remainder using the straight-line method**. Depreciation expense is generally recorded in the same segment where the related assets are held. However, the additional depreciation expense related to the step-up in fair value of property, plant and equipment acquired through business combinations is recorded in unallocated corporate expense within operating income as such depreciation is not considered part of management's evaluation of segment operating performance. Major classes of property, plant and equipment and their useful lives are as follows:

		December 31	
Useful life in years, $ in millions	Useful Life	**2019**	2018
Land and land improvements	Up to 40[1]	**$ 619**	$ 636
Buildings and improvements	Up to 45	**2,575**	2,139
Machinery and other equipment	Up to 20	**6,997**	6,618
Capitalized software costs	3-5	**606**	603
Leasehold improvements	Length of Lease[2]	**1,965**	1,745
Property, plant and equipment, at cost		**12,762**	11,741
Accumulated depreciation		**(5,850)**	(5,369)
Property, plant and equipment, net		**$ 6,912**	$ 6,372

[1] Land is not a depreciable asset.

[2] Leasehold improvements are depreciated over the shorter of the useful life of the asset or the length of the lease.

Note: Per 2019 10-K. Emphasis added

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

EQUITY INVESTMENTS: HIDDEN ASSET VALUE?

Companies may hold significant investments in other assets. Depending on ownership levels and whether the assets are publicly traded, these investments often are not reported on the balance sheet at fair market value. Therefore, investors may find hidden balance sheet value by reviewing the 10-K for these types of inter-corporate investments.

Accounting for an investment in another company is based on the parent company's level of influence or control. GAAP measures this influence and control using voting equity stock ownership. Below we summarize the different ways of accounting for inter-corporate investments.

Accounting for Corporate Investments

Accounting Method	Ownership	Threshold	General FASB Codification Topic	Accounting Standard
Cost or Market	< 20%	Passive; no influence or control	ASC 320, Investments - Debt and Equity Securities	FAS No. 115
Equity Method	20-50%	Significant influence, but no control	ASC 323, Investments - Equity Method and JVs	APB No. 18
Consolidation	> 50%	Control	ASC 805, Business Combinations	FAS No. 141(R) / 167

Source: Wolfe Research Accounting & Tax Policy Research.

The above ownership percentages are guidelines. Where influence and/or control aren't equivalent to the equity voting ownership percentages, a company may use a different method in accounting for the investment (still very uncommon). To be sure, significant management judgment is required in evaluating whether a company exerts "significant" influence over the investee. To illustrate, a company may conclude that a 19% equity ownership interest constitutes "significant influence" if it had four out of seven seats on the board of directors.

Constellation Brands (STZ) is an example of a company with material equity investments accounted for using the equity method. The company's balance sheet does not reflect these investments at fair value. Below is the disclosure of its significant investments of Canopy accounted for under the equity method.

Constellation Brands: Investments in Equity Interests

Our equity method investments are as follows:

	February 28, 2019		February 28, 2018	
	Carrying Value	Ownership Percentage	Carrying Value	Ownership Percentage
(in millions)				
Canopy Equity Method Investment	$ 3,332.1	36.0%	$ —	—%
Other equity method investments	133.5	20%-50%	121.5	20%-50%
	$ 3,465.6		$ 121.5	

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

ACCOUNTING FOR EQUITY INVESTMENTS: < 20% OWNERSHIP

GAAP requires less than 20% equity ownership interests to be accounted for either under the cost or fair value market value method. The latter method is required when there is an active market for the investment (e.g., publicly traded). If the investment is privately held, it is almost always reported at historical cost on the balance sheet. In either case, the investment amount is categorized as a one-line item on the balance sheet typically under long-term investments in the other assets category.

Beginning in 2018, according to ASU 2016-01, if there is an active market for the equity security, it must be classified as trading and marked to market through earnings each period. Both realized and unrealized gains and losses from marking the security to market are recognized in earnings.

If there is not a public market for the security, the cost method is used to account for the investment. Under this method, the investment is recorded on the balance sheet as an asset at its initial cost. It is not marked to fair value on the balance sheet in each period, but the amount is tested for permanent impairment at least annually. Similar to a trading/available-for-sale security, dividend income is recorded in earnings each period as it is earned.

Circumstances change and there may be a public market valuation available for a less than 20% owned equity investment. In this scenario, a company would change from cost to market value accounting for the investment. Mechanically, in the first period in which the investee company goes public, the investment on the balance sheet (heretofore at amortized cost) is marked to fair value. Assuming there are no shares sold by the investee in the initial public offering, the resulting unrealized gain or loss is recorded directly in equity in the period in which the market value became available (other comprehensive income (net of a deferred tax liability)).

Prior to 2018, equity securities with an active market would either be classified as: (1) trading or (2) available-for-sale. Trading securities are recorded at fair value on the balance sheet based on the valuation at each period end. Both realized and unrealized gains and losses from marking the security to market are recognized in earnings each period. Available-for-sale securities are also marked to fair value on the balance sheet at each period end, too. However, only *realized* gains and losses are recorded in earnings; *unrealized* gains or losses are recorded directly in shareholder's equity as part of accumulated other comprehensive income. Any dividends received are recognized in earnings (e.g., other income) in the period in which it is earned, regardless of classification.

Ownership interests in investees of between 20% and 50% are accounted for under the equity method of accounting unless specific circumstances dictate otherwise. The equity method is typically used to account for 50%/50% joint ventures. Below we explain the equity method of accounting.

On the balance sheet under the equity method, a long-term asset is recorded at the amount paid for the initial investment in the equity of the entity. In each subsequent period, the investment account is increased (decreased) by the parent's percentage ownership of the investee's net income (loss). Notably, dividends received from the investee are not recorded in earnings of the parent company, but rather reduce its balance sheet equity investment account as they are viewed as a return of capital under GAAP. On the consolidated income statement, the parent company records a line item often entitled "equity income." This amount is equal to its percentage ownership in the income of the investee (e.g., 25% of the investee's net income).

It isn't well known that this equity income amount is adjusted for elimination of inter-company profits and depreciation/amortization due to a hypothetical step-up of the investee's net assets to fair market value on the date of the initial investment. In effect, on the date the equity investment occurs, a company will fair value all of the assets and liabilities of the investee and any intangible amortization or increased/decreased depreciation is recorded as an adjustment to the equity income amount that is recorded by the parent company. This is often why the equity income amount reported by a parent company does not equal the parent company's percentage ownership interest multiplied by the investee's net income that may be separately reported to the investee's shareholders. Inter-company profits arising from sales between the parent and subsidiary are eliminated based on the parent company's ownership percentage. Further, as a matter of convenience, GAAP and SEC rules allow companies to record the equity method investee's reported results of operations in the arrears by up to 3 months.

The cash flow statement reports the equity income (loss) amount as a non-cash item that is subtracted (added) from operating cash flow unless this equity amount was distributed as a dividend to the parent company. In the latter situation, there is no subtraction or, only a partial subtraction, reflecting the amount of equity income not received as dividends.

In certain extreme scenarios, significant losses at the investee level may reduce the parent company's equity investment to zero on the balance sheet. In this scenario, the parent company ceases recording equity investment losses in their income statement unless there are additional debt guarantees and/or other commitments for additional financial support or profitability was expected to re-occur soon. The parent company would begin recording equity income again once it reached the watermark on its investment (i.e., the unrealized losses were recouped).

FAIR VALUE OPTION AVAILABLE FOR EQUITY METHOD INVESTMENTS

Instead of using the equity method, companies may choose to elect the Fair Value Option for their significant influence investments upon the initial investment date. The election is irrevocable. However, certain circumstances may arise post investment that could allow a company to elect the fair value option. These circumstances are not perfectly prescribed in GAAP and it's based on a facts and circumstances test (e.g. a change such that they don't exercise significant influence and control over the investee anymore, or if they exercise significant influence and control, they could maintain that circumstances changed materially allowing the company another chance to elect the fair value option).

We would approach any changes to this fair value option with caution, as equity method losses would no longer be recorded in earnings, while mark-to-market changes in the fair value could be called out as a non-GAAP adjustment in quarterly earnings reports.

SEC and GAAP rules require specific disclosures for equity method investments. SEC Regulation S-X requires separate financial statements for equity method investments when they are deemed *individually* significant at a 20% level if either the investment or income test is met (as described below). In addition, summary information is required when equity method companies in the *aggregate* exceed 10% significance based on any of the three tests of significance.

The following summarized financial information is required (no explanatory notes are required) if any of the three significance tests are met at the 10% level individually or in the aggregate:

- Current assets
- Noncurrent assets
- Current liabilities
- Noncurrent liabilities
- Redeemable preferred stock
- Non-controlling interest
- Net sales
- Gross profit
- Income or loss from continuing operations
- Net income or loss

The three tests of significance are:

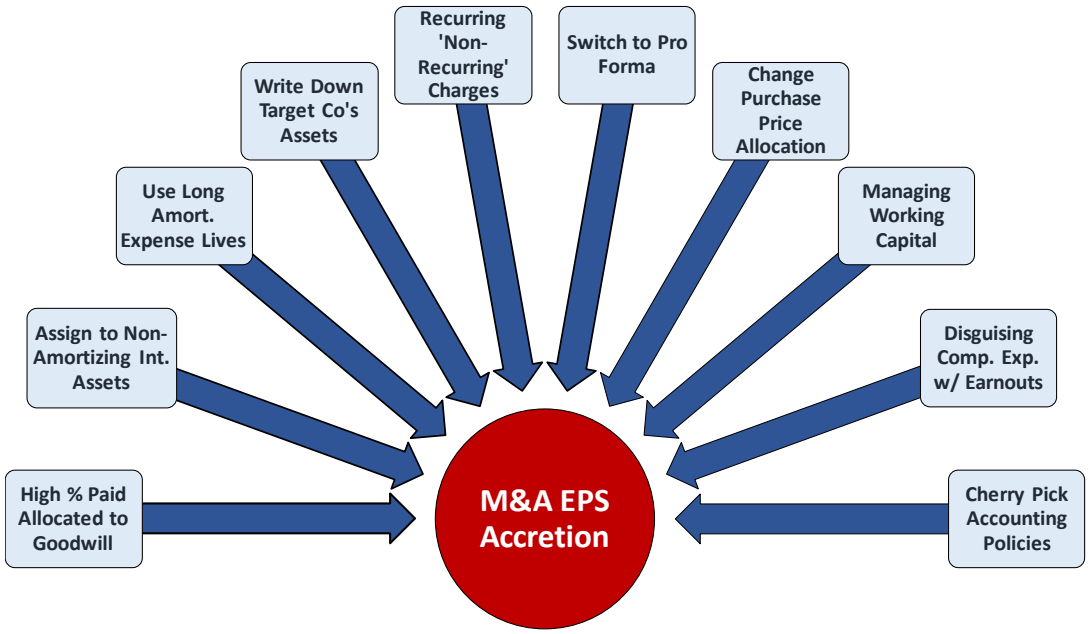
1. Assets - Total parent company's proportionate share of the total assets in investee(s) (after intercompany eliminations) compared to the total consolidated assets of the company.
2. Investment - The parent company's equity investment in the investee(s) (of which it owns 20% to 50%) compared to the total consolidated assets of the company.
3. Income - The parent company's equity income from the investee(s) [before income taxes, extraordinary items, and cumulative effect of accounting changes] compared to consolidated income from continuing operations before taxes, extraordinary items, and cumulative effect of accounting changes. There are also several items to keep in mind when using net income for purposes of this test.
   a. Impairment charges at the investee level are excluded from the income calculations.
   b. If the parent company's current year consolidated income (or absolute value of its loss) from continuing operations is at least 10% less than the average of the last five years, a five-year historical average of income should be used in the denominator for the parent's consolidated income from continuing operations.
   c. When testing whether entities are in the aggregate significant, no netting is allowed and, therefore, the income test should be separately calculated for investees with income and losses (aggregate all the entities with income and compare to consolidated income to determine if at least the 10% threshold is met for increased disclosures; similarly, aggregate all the entities with losses and compare the absolute value of this amount to consolidated income).

Full consolidation accounting is required when one company purchases an ownership interest large enough to control the target company (generally, >50%). Investors should carefully read the M&A purchase accounting disclosure. It's typically found in one of the first few financial statement footnotes, and GAAP / SEC rules require a company to disclose the amount of the purchase price allocated to the specific assets and liabilities of the target company. Importantly, the amounts assigned to individual asset and liabilities require a careful review and proper context.

Briefly, by way of background, in 2001, pooling of interests merger accounting was disallowed upon the issuance of FAS No. 141(R) *Business Combinations* (now codified as ASC 805). U.S. GAAP and IFRS now allow only purchase accounting for M&A transactions. The overall concept of ASC 805 is to mark all of the acquired company's assets and liabilities to fair market value on the acquisition date. Commonly, a target company is purchased at an equity value exceeding the fair market value of its net *tangible* assets. In this scenario, intangible assets and goodwill are recorded on the balance sheet. The "Day 2" accounting for intangible assets depends on if they are finite or indefinite life intangible assets. If intangible assets have a finite life they are expensed as amortization over each asset's expected life. Examples of such assets include customer lists, contract backlog, trademarks, and patents. By contrast, intangible assets with *indefinite* lives and goodwill are not expensed in earnings. Rather these amounts are tested for impairment at least annually. Prior to the issuance of FAS 141(R), both goodwill and all intangibles assets were amortized as expenses in earnings.

After the accounting rule changes in 2001, companies are highly incentivized to allocate a significant portion of the purchase price to goodwill and non-amortizable intangible assets. Since neither goodwill nor non-amortizable intangible assets are expensed, all else being equal, the combined company reports higher earnings after the acquisition (companies do expense amortizable intangible assets but may choose long asset lives to reduce the yearly amortization expense). Prior to 2001 when goodwill and intangible assets were expensed, there was less of a motive to allocate a larger percentage of the purchase price to such assets. Interestingly, the FASB is currently in early discussion debating returning to some form of goodwill amortization, though any implementation is likely to be years away. Below, we describe the common methods used to paint a more favorable earnings picture.

Acquisition EPS Accretion Antics: The Path to Higher M&A EPS Accretion



Source: Wolfe Research.

Acquisitions create pressure on management teams to show pro forma earnings accretion of the combined company and justify the financial terms of the transaction. This creates the perfect storm for earnings management and low earnings quality. In M&A accounting, the acquirer must mark all of the acquired company's assets and liabilities to fair market value on the acquisition date. It is important to review business combination disclosures to ascertain the reasonableness of the company's allocations.

1) SIGNIFICANT GOODWILL RECORDED UPON ACQUISITION

Management can boost earnings of the combined company by recording a significant amount of goodwill upon acquisition. As goodwill is not amortized, companies have an incentive to allocate a large portion of the acquisition price to goodwill on the balance sheet. If the acquisition doesn't pan out, goodwill is written off as a one-time impairment charge to earnings and typically excluded from analysts' net income calculations.

We believe that goodwill oftentimes is thought of as a "plug" figure (i.e., whatever is left over after allocating the purchase price to tangible and intangible assets), but it does contain informational content. First, a high level of goodwill as a percentage of the total purchase price amount indicates that the company is assigning a large amount to synergy value, signaling potential overpayment. Second, since goodwill is not amortized, the company may be under allocating the purchase price to tangible and intangible assets to increase earnings by avoiding higher post-acquisition depreciation / amortization expense. As a rule of thumb, we become concerned when a company allocates more than 60-70% of the purchase price to goodwill. This suggests that the company may have overpaid or is under allocating expenses, neither of which are positive signals.

2) SIGNIFICANT INDEFINITE LIFE INTANGIBLES RECORDED UPON ACQUISITION

Similar to goodwill, since *indefinite* life intangible assets are not amortized as an expense, there is an incentive for management to allocate a substantial portion of the intangible purchase price allocation to these assets. An indefinite life intangible asset is defined as one extending "beyond the foreseeable horizon" and used as a default if a company cannot ascertain an intangible asset's useful life. As an example, we would review and determine if a company allocated a portion of the purchase price to a "brand" indefinite life intangible asset that one does not expect to have longevity.

3) LONG (AND STRAIGHT LINE) AMORTIZATION PERIOD FOR INTANGIBLE ASSETS

To achieve higher earnings, management may select long useful lives for finite life intangible assets. Examples of such assets include customer lists, contract backlog, trademarks, and patents. As such, we suggest carefully reviewing their assigned amortization life for reasonableness. Alternatively, a company might use a very short period (1-2 years) and try to classify the expense as non-recurring.

Unfortunately, we have found no average period or benchmark against which to compare company amortization periods since they vary by industry group. However, assigning a useful life amortization period to a finite life intangible asset exceeding 15 years is very aggressive, in our view. Even better, (and rarer), we prefer to see an accelerated accounting method of intangible amortization.

On the next page, we show Kraft's purchase accounting disclosure of Heinz as an example where a material portion of the purchase price was allocated to goodwill, non-amortizable intangibles and long-lived intangibles as well as the use of very long amortization periods.

As an example of M&A disclosures, the next exhibit is the purchase accounting disclosure of the Heinz Kraft acquisition. The disclosure identifies the fair values at which the assets and liabilities of Kraft were recorded and how much of the acquisition was allocated to goodwill and intangible assets. We focus on three key items when analyzing this disclosure.

1. A significant portion of the purchase price was allocated to goodwill ($32.6B / $52.6B = ~60%).
2. In addition to goodwill, indefinite life intangible assets were valued at $39.7 billion, meaning there will be no periodic expense associated with it. Analysts would need to assess if this is reasonable or if the trademarks decline in value over time.
3. Additionally, a very long 29 year amortization period was assumed for customer relationships, which is among the longest we've ever seen. We'd prefer to see a shorter amortization period and an accelerated method of amortization.

Heinz-Kraft Purchase Accounting Disclosure

Kraft allocated substantially all of the purchase price to intangible assets and goodwill

The preliminary purchase price allocation to assets acquired and liabilities assumed in the transaction was:

	(in millions)
Cash	$ 314
Other current assets	3,893
Property, plant and equipment	4,215
Identifiable intangible assets	44,107
Other non-current assets	661
Trade and other payables	(3,370)
Long-term debt	(9,286)
Net postemployment benefits and other noncurrent liabilities	(4,731)
Deferred income tax liabilities	(15,812)
Net assets acquired	19,991
Goodwill on acquisition	32,646
Total consideration	52,637
Preliminary fair value of shares exchanged and equity awards	42,855
Total cash consideration paid to Kraft shareholders	9,782
Cash and cash equivalents of Kraft at Merger Date	314
Acquisition of business, net of cash on hand	$ 9,468

Very little was assigned to amortizing intangibles and, of those, very long lives were used for amortization expense

The preliminary purchase price allocation to identifiable intangible assets acquired was:

	Preliminary Fair Value	Weighted Average Life
	(in millions of dollars)	
Indefinite-lived trademarks	$ 39,710	
Definite-lived trademarks	1,594	23
Customer relationships	2,803	29
Total identifiable intangible assets	$ 44,107	

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

4) HAVE THERE BEEN MATERIAL CHANGES IN PURCHASE PRICE ALLOCATIONS?

GAAP allows companies up to one year after the acquisition closing date to adjust the recorded fair market valuations of the target company's balance sheet. We suggest reviewing the business combinations footnote for any large changes in the fair market value amounts allocated to the acquired net assets since the initial purchase price allocation. To be sure, initial estimates may be tentative as asset valuations may take many months to complete and yet quarterly and annual financial statements must be filed. GAAP requires amounts to be trued-up in the following quarter(s) as valuations are finalized. Review large changes in purchase price allocations for reasonableness and the possible underlying cause(s). Large purchase price accounting adjustments are rare and we view them as a red flag, particularly if they benefit future earnings. Mechanically, when a subsequent purchase price accounting adjustment is recorded, the other entry of the adjustment is to increase or decrease goodwill (assuming goodwill was recorded).

Below is a summary of the post close purchase price allocation adjustments as made by Rockwell Collins after its purchase of BE Aerospace The net adjustments resulted in an increase in goodwill of ~$550 million and decrease in amortizable intangible assets of ~$800. (To be fair, the assumed life of those intangible assets did decline which would offset change in expense in the early years)

Rockwell Collins – B/E Aerospace Acquisition Accounting

Preliminary

(in millions)	April 13, 2017
Cash and cash equivalents	$ 104
Receivables, net	496
Inventories, net [1]	556
Other current assets	56
Property	253
Intangible Assets	2,381
Other Assets	59
Total Identifiable Assets Acquired	3,905
Accounts payable	(251)
Compensation and benefits	(75)
Advance payments from customers	(62)
Accrued customer incentives	(48)
Product warranty costs	(117)
Other current liabilities [2]	(361)
Long-term Debt, Net	(2,119)
Retirement Benefits	(12)
Deferred Income Tax Liability	(521)
Other Liabilities [2]	(448)
Total Liabilities Assumed	(4,014)
Net Identifiable Assets Acquired, excluding Goodwill	(109)
Goodwill	6,645
Net Assets Acquired	$ 6,536

The Intangible Assets included above consist of the following:

	Weighted Average Life (in years)	Fair Value (in millions)
Developed technology	12	$ 723
Airline customer relationships	10	1,450
OEM customer relationships	13	208
Total	11	$ 2,381

Final

(in millions)	April 13, 2017
Cash and cash equivalents	$ 104
Receivables, net	485
Inventories, net [1]	542
Other current assets	45
Property, net	271
Intangible Assets	1,586
Other Assets	53
Total Identifiable Assets Acquired	3,086
Accounts payable	(231)
Compensation and benefits	(75)
Advance payments from customers	(62)
Accrued customer incentives	(48)
Product warranty costs	(117)
Other current liabilities [2]	(366)
Long-term Debt, Net	(2,119)
Retirement Benefits	(12)
Deferred Income Tax Liability	(287)
Other Liabilities [2]	(433)
Total Liabilities Assumed	(3,750)
Net Identifiable Assets Acquired, excluding Goodwill	(664)
Goodwill	7,200
Net Assets Acquired	$ 6,536

The Intangible Assets included above consist of the following:

	Weighted Average Life (in years)	Fair Value (in millions)
Developed technology	9	$ 435
Seating customer relationships	6	860
Other customer relationships	8	291
Total	7	$ 1,586

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

5) LOWERING FUTURE EXPENSES THROUGH WRITE-DOWNS – "THE MAGIC OF M&A ACCOUNTING"

A few acquisition accounting antics center on lowering post-acquisition costs by incurring them prior to the closing date of the acquisition or by recording big bath accounting write-downs when valuing the target company's net assets. One way of increasing a company's post-acquisition earnings is by excessively writing down the target company's PP&E or inventory in purchase accounting. In so doing, depreciation expense or cost of sales is lowered since the new starting asset balance is lower. One way of spotting this is to review the company's purchase price allocations' financial statement footnote. Still another way of lowering the future expense is recording significant pre-acquisition restructuring costs by the target company. These expenses would be accrued as a liability on the balance sheet of the target company prior to the acquisition and, therefore, treated as an assumed liability in purchase accounting.

Below is an example of Rockwell Collins' purchase accounting of B/E Aerospace. The most recent pre-M&A balance sheet of B/E showed $1.3B of inventory, vs. only $556 million that was recorded upon acquisition! While some time did lapse between these two dates, at least some of the difference was due to the write-off of capitalized development costs that were previously held in inventory on B/E's balance sheet. These amounts will never be subject to future expense.

Rockwell Collins – B/E Aerospace Acquisition Accounting

Pre-acquisition

Inventories are stated at the lower of cost or market. Cost is determined using FIFO or the weighted average cost method. Finished goods and work-in-process inventories include material, labor and manufacturing overhead costs. In accordance with industry practice, costs in inventory include amounts relating to long-term contracts with long production cycles and inventory items with long procurement cycles, some of which are not expected to be realized within one year. Work-in-process inventories include costs and estimated earnings in excess of billings on uncompleted contracts of $106.0 and $87.7 and capitalized development costs on long-term seller furnished equipment contracts of $517.3 and $438.1 as of December 31, 2016 and December 31, 2015, respectively. Inventories consist of the following:

	December 31, 2016	December 31, 2015
Purchased materials and component parts	$ 358.2	$ 322.7
Work-in-process	845.2	722.7
Finished goods	55.5	46.5
	$ 1,258.9	$ 1,091.9

Watch for write off of capitalized or other amounts that will never be subject to future expense

M&A Accounting Value

(in millions)	April 13, 2017
Cash and cash equivalents	$ 104
Receivables, net	496
Inventories, net [1]	556
Other current assets	56
Property	253
Intangible Assets	2,381
Other Assets	59
Total Identifiable Assets Acquired	3,905
Accounts payable	(251)
Compensation and benefits	(75)
Advance payments from customers	(62)
Accrued customer incentives	(48)
Product warranty costs	(117)
Other current liabilities [2]	(361)
Long-term Debt, Net	(2,119)
Retirement Benefits	(12)
Deferred Income Tax Liability	(521)
Other Liabilities [2]	(448)
Total Liabilities Assumed	(4,014)
Net Identifiable Assets Acquired, excluding Goodwill	(109)
Goodwill	6,645
Net Assets Acquired	$ 6,536

(1) Inventories, net includes a $74 million adjustment to state Work in process and Finished goods inventories at their fair value as of the acquisition date. The inventory fair value adjustment is being amortized as a non-cash increase to Cost of sales ratably over the estimated inventory turnover period. $44 million of the fair value adjustment was recognized in Cost of sales in the three months ended June 30, 2017.

(2) As of the acquisition date, the Company made adjustments totaling $457 million related to acquired existing long-term contracts with terms less favorable than could be realized in market transactions as of the acquisition date. The adjustments were primarily recognized within Other current liabilities and Other Liabilities based upon estimates regarding the period in which the liabilities will be amortized to the Condensed Consolidated Statement of Operations as non-cash reductions to Cost of sales. $42 million of the acquired contract liabilities were recognized in Cost of sales in the three months ended June 30, 2017.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

6) MOVEMENT TO "PRO FORMA" EARNINGS REPORTING FOR ACQUISITION RELATED ITEMS

Switching to the use of pro forma earnings after the acquisition is another way to boost earnings. Many companies add back intangible asset amortization for Non-GAAP reporting metrics. In general, we believe that intangible amortization expense should *not* be added back to an adjusted earnings measure as we view intangible asset amortization as a reasonable proxy for the economic cost of the wasting asset (similar to depreciation) and required annual reinvestment in the business. Furthermore, by amortizing intangibles as an expense, it allows greater comparability to other companies choosing to build their own assets internally (through higher R&D expense). For earnings purposes, if the cash cost of purchasing the R&D is never reflected as a GAAP cost, the true economic earnings of the asset are overstated (higher net income divided by invested capital).

7) RECURRING "NON-RECURRING" CHARGES

Highly acquisitive companies may take special charges each year to align the businesses, while calling out non-GAAP earnings that exclude these charges. For companies that rely on these acquisitions to maintain revenue growth, it may be appropriate to consider these amounts costs of doing business and not add them back.

There may be justifiable reasons for reporting under an earnings measure that excludes certain non-recurring costs, such as restructuring. For example, GAAP requires the expensing of all restructuring costs post-acquisition during the period in which they are incurred. If a company is expected to report only several quarters of restructuring costs, viewing an earnings metric excluding such costs is most appropriate, in our view. However, since the costs chosen to be excluded are subject to significant judgment and there is pressure to show post-acquisition earnings accretion, earnings quality deteriorates as the frequency and amount of such excluded items increases.

As an example of both items above, below we show Quanta Services' non-GAAP earnings reconciliation. In total, non-GAAP adjustments added $.91 per share in 2018, primarily from "non-recurring" costs (which were similar in both 2017 and 2018), intangible amortization and stock-comp add backs (which we will discuss in a subsequent Demystifying Accounting note).

Quanta Services Non-GAAP Earnings ($ thousands)

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Reconciliation of adjusted net income:				
Net income attributable to common stock (GAAP as reported)	$ 56,816	$ 113,561	$ 293,346	$ 314,978
Adjustments:				
Acquisition and integration costs	1,048	1,535	17,233	10,579
Asset impairment charges (a)	49,375	58,057	52,658	59,950
Severance and restructuring costs (b)	—	—	1,326	—
Change in fair value of contingent consideration liabilities	(3,575)	(5,171)	(11,248)	(5,171
Impact of the Tax Act (c)	38,106	(70,129)	33,067	(70,129
Impact of income tax contingency releases (d)	(2,108)	(1,753)	(8,049)	(7,223
Income tax impact entity restructuring and recap efforts (e)	—	(18,224)	1,842	(18,224
Income tax impact of adjustments (f)	(12,891)	(20,402)	(18,649)	(24,197
Adjusted net income before certain non-cash adjustments	126,771	57,474	361,526	260,563
Non-cash stock-based compensation	12,681	12,096	52,484	46,448
Amortization of intangible assets	12,459	10,170	43,994	32,205
Income tax impact of non-cash adjustments (f)	(6,569)	(8,230)	(25,219)	(28,877
Adjusted net income attributable to common stock	$ 145,342	$ 71,510	$ 432,785	$ 310,339
Earnings per share attributable to common stock:				
Diluted earnings per share attributable to common stock (g)	$ 0.38	$ 0.72	$ 1.90	$ 2.00
Adjusted diluted earnings per share (g)	$ 0.96	$ 0.45	$ 2.81	$ 1.97

Source: Wolfe Research Accounting & Tax Policy Research; Company filings. Per company press release – see actual filing for footnote details.

8) WAS WORKING CAPITAL MANAGED AT THE TIME OF THE MERGER?

M&A accounting provides an opportunity for companies to boost cash flow by materially altering working capital prior to the close of the transaction. A simple illustration is for the target to push off collecting receivables until after the transaction closes (high days sales outstanding "DSOs" when transaction closes) and then decrease to a "normal level". Alternatively, on the liability side of the balance sheet, a target company might choose to reduce accounts payables (low days payable ratio) prior to an acquisition (a cash outflow) and then rebuild accounts payable amounts (a cash inflow) after the acquisition closes. Mechanically, if a cost is prepaid prior to the merger, it appears on the target company's balance sheet as a prepaid asset and there is a cash outflow in the period in which the cost is prepaid. When the merger closes, the prepaid asset carries over to the acquired company's balance sheet. In turn, as the prepaid asset is recorded as an expense in earnings, the reduction in the prepaid asset increases operating cash flow. However, if the prepaid costs at closing are recurring costs of the company, in a subsequent period after the prepaid asset is drawn down, there will need to be a replenishment of the asset. This will necessitate a cash outflow as the cost is paid again in cash.

9) DISGUISING FUTURE COMPENSATION AS EARN-OUTS OR OTHER ONE-TIME PAYMENTS

Some acquisition structures include future contingent consideration or "earn-out" payments to prior shareholders or employees based on targets of future sales, earnings, or other operating metrics. This structure tends to be used in the acquisition of a private company in which there are only a few shareholders. Often, senior management of the acquired co. will move to the acquiring firm and assume similar roles. One way of reducing subsequent compensation cost of these employees is to structure their future compensation in the form of an earn-out since these payment amounts are not expensed through earnings (some are marked through earnings if their initial value changes).

10) CHERRY PICKING ACCOUNTING POLICIES

Lastly, acquisitions provide the opportunity for companies to change to more favorable accounting policies. Under the guise of "harmonizing" different policies, there may be a switch (benign or otherwise) in depreciation policies, classification of expenses, taxes, revenue recognition, and cost capitalization, among other items. Any changes may fall under the radar given the acquisition but boost future earnings of the company.

ARE INTANGIBLE ASSETS AND GOODWILL TAX-DEDUCTIBLE?

There may be different accounting for goodwill and intangibles under GAAP and the Internal Revenue Code (IRC). GAAP requires companies to disclose whether acquisition related goodwill and/or intangible assets are tax deductible under the tax code. Specifically, for asset acquisitions, IRC Section 197 allows goodwill and intangible assets to be deducted (amortized) as expenses ratably over a 15-year period even if such amounts are not expensed under GAAP. This has implications for a company's prospective cash tax rate and the tax shield is a hidden asset that may not be fully reflected in the share price of the company.

To be sure, our experience is that companies and their bankers incorporate such assets into the valuation of the target company. This often manifests itself when investors are comparing the prices paid for acquisitions as a buyer would be in a position to pay more in a transaction structured as a taxable purchase of assets (goodwill and intangible assets are tax deductible). To compare the purchase price multiples across companies, we suggest separately valuing this tax shield (similar to a NOL valuation) on an NPV basis and reducing the target's enterprise value by this amount.

Apart from tax net operating loss carryforwards, some acquisitions are structured to create future tax-deductible goodwill and intangible amortization expense (goodwill/intangibles are amortizable over 15 years under IRC Section 197). This asset will not be reflected on the company's balance sheet or in 10-K tax footnote table of deferred tax assets. We suggest valuing this asset separately and treating it similar to a NOL for valuation purposes. Later in this report, we explain how to value NOLs.

Scotts Miracle-Gro: Tax Deductible Goodwill from Acquisitions

Sunlight Supply

The valuation of the acquired assets included (i) $5.3 million of cash, prepaid and other current assets, (ii) $19.3 million of accounts receivable, (iii) $84.3 million of inventory, (iv) $64.4 million of fixed assets, (v) $11.7 million of accounts payable and other current liabilities, (vi) $151.1 million of finite-lived identifiable intangible assets, and (vii) **$146.4 million of tax-deductible goodwill.**

Can-Filters

On October 11, 2017, the Company's Hawthorne segment completed the acquisition of substantially all of the U.S. and Canadian assets of Can-Filters Group Inc. ("Can-Filters") for $74.1 million. Based in British Columbia, Can-Filters is a wholesaler of ventilation products for indoor and hydroponic gardening and industrial market customers. The valuation of the acquired assets included (i) $1.5 million of cash, prepaid and other current assets, (ii) $7.7 million of inventory and accounts receivable, (iii) $4.4 million of fixed assets, (iv) $0.7 million of accounts payable and other current liabilities, (v) $39.7 million of finite-lived identifiable intangible assets, and (vi) **$21.5 million of tax-deductible goodwill.**

Note: Per 201910-K. Emphasis added.

Source: Wolfe Research Accounting & Tax Policy Research.

HOW MUCH WAS PP&E UNDERVALUED ON THE TARGET COMPANY'S BALANCE SHEET?

The amount of the purchase price allocated to PP&E and operating leases may provide detail into the amount by which they were undervalued. One quick way to analyze the undervaluation would be to compare the amount allocated to PP&E from the purchase accounting disclosure to the standalone target companies' PP&E amount.

It's also not well understood that operating leases are marked to fair value in purchase accounting, so rent expense reflects current market rents existing at the acquisition's closing date. Under purchase accounting, if the lease is undervalued, an operating lease intangible asset ("favorable lease") is recorded. Conversely, if the lease is overvalued, an accrued lease liability is recorded. In turn, after the acquisition closes, the operating lease asset or (liability) recorded in purchase accounting increases or (decreases) future GAAP rent expense. This non-cash item is added back to operating cash flow, so the cash rental expense amount is unchanged.

IS M&A ACCOUNTING SKEWING CASH FLOW?

It can be dangerous to compare the cash flow of a company that underwent a large M&A transaction to another company without acquisitions. In fact, the amortization of intangible assets makes it difficult to compare companies on an "apples-to-apples" basis as amortization expense is added back as a non-cash item to operating cash flow. This may create the appearance of 'free money' since most investors do not deduct acquisitions from free cash flow calculations. In our mind, this is a financial analysis shortcoming and results in an unfair comparison to another company's cash flow which is reduced by the expensing of the "costs of building" through marketing and internal research.

For analytical purposes, we would adjust cash flow to include the ongoing cost of the M&A in some form. One way is to include the acquisition cost as investing cash outflow, similar to capex, when calculating free cash flow metrics. This may be practical in limited circumstances (company is a serial acquirer and/or there is more focus on free cash flow as opposed to operating cash flow). Another option is to adjust operating cash flow to include the non-cash amortization expense as a cash cost. In a way, this may estimate the ongoing marketing, research, and other costs that would otherwise be necessary for the company to achieve the growth in the top line that it "purchased." Still another way is to "amortize" the cost of the acquisition from free cash flow over some future (e.g. 5-year) period. We prefer the second or third of the aforementioned methods.

As an example, below is SiteOne, which has acquired multiple companies over the last several years. The company reported $31 and $26 million of intangible asset amortization in 2018 and 2017, which was ~40% and ~100+% of operating cash flow, respectively. Cash paid for acquisitions has been $148 and $83 million the last two years.

SiteOne Cash Flow Statement

$ Mln.	For the year January 1, 2018 to December 30, 2018	For the year January 2, 2017 to December 31, 2017	For the year January 4, 2016 to January 1, 2017
Cash Flows from Operating Activities:			
Net income	74	55	31
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	22	18	14
Stock-based compensation	8	6	5
Amortization of software and intangible assets	31	26	23
Amortization of debt related costs	3	3	3
Loss on extinguishment of debt	1	0	2
(Gain) loss on sale of equipment	(0)	1	
Deferred income taxes	(7)	(17)	(10)
Other	(1)	0	(0)
Changes in operating assets and liabilities, net of the effects of acquisitions:	(52)	(75)	7
Net Cash Provided By Operating Activities	78	16	73
Cash Flows from Investing Activities:			
Purchases of property and equipment	(15)	(15)	(9)
Purchases of intangible assets	(5)	(2)	
Acquisitions, net of cash acquired	(148)	(83)	(66)
Proceeds from the sale of property and equipment	4	0	0
Net Cash Used In Investing Activities	(164)	(99)	(75)

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

IMPAIRMENT INDICATOR: GOODWILL & INTANGIBLES / MARKET CAPITALIZATION

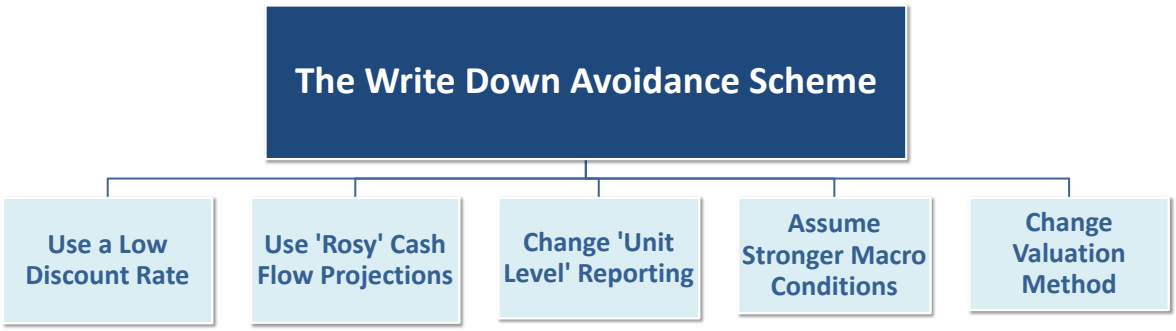
We found that a high ratio of goodwill/intangibles to a company's market capitalization is a leading indicator of a future impairment charge. That is, the higher the level as a percentage of market capitalization, the greater the probability that the implied fair value calculation of goodwill and/or intangibles will be less than its current balance sheet amount. This is a useful ratio to screen for impairments at the aggregate company level since we don't have enough detail to calculate the goodwill amounts at the "reporting unit" level. Historically, we've found that the goodwill/intangible-to-market capitalization ratio in the quarter before a goodwill impairment charge occurred averaged ~40%. However, we've seen companies maintain this ratio well above 40% without taking write-down charges for extended periods of time due to company specific factors or where goodwill is recorded at the 'unit' level of the company. Therefore, this metric is best used as a baseline.

GOODWILL & INTANGIBLE IMPAIRMENTS – WRITE DOWN AVOIDANCE

Goodwill and/or intangible write-downs may be a bitter pill for management to swallow as it may acknowledge a poor acquisition or an overall deterioration in the company's business fundamentals. Companies will go to great lengths to avoid goodwill and intangible asset write-downs as it may impact executive compensation, or even violate debt covenants.

Below we describe the common methods used to avoid goodwill and intangible write-downs. We expect companies to only gradually write-down these assets unless there are accounting rule changes (nothing on the horizon), greater auditor enforcement, or a serious economic downturn.

Goodwill/Intangible Write-Down Avoidance Scheme



Source: Wolfe Research.

THE GOODWILL WRITE-DOWN TEST: MECHANICS

GAAP requires goodwill to be recorded at the reporting "unit" level. GAAP defines a reporting unit as an operating segment or one level below an operating segment. This leaves management discretion in assigning goodwill to a reporting unit since one company might assign goodwill at the higher segment level while another company might assign goodwill to a lower business unit level. Assigning goodwill to a higher segment level leaves more room for a buffer in avoiding a potential future write-down as an increase in a business value in one area of an operating segment might offset weakness in another. After goodwill is recorded, it is required to be tested at least annually for impairment or if circumstances warrant, more frequently (should be tested at the same time each year).

Companies may use a preliminary qualitative assessment first to determine the need for a quantitative impairment test. Based on qualitative events or circumstances (e.g. macroeconomic conditions, industry considerations, changes in input cost factors, financial performance, entity specific events, sustained decrease in share price), management will use more likely than not threshold (50%+) as to whether the fair value of a reporting unit is greater than the carrying value. If not, the quantitative test must be performed. There are two steps in GAAP's quantitative goodwill impairment test (NOTE: As discussed shortly, the goodwill impairment test has been simplified, required to be adopted beginning in 2020.)

1. Compare the reporting unit's fair market value to its carrying amount (book value). If the fair market value of the reporting unit is greater than its book value, the impairment test is finished and there is no goodwill impairment.

   To complete Step 1 of the test of goodwill impairment, a company must calculate the fair market value of the reporting unit using fair value accounting guidance contained in ASC 820, *Fair Value Measurement and Disclosures*. There's usually no readily available market value for a reporting unit. As a result, management will hire an external valuation firm to calculate fair value and/or use an internal valuation model based on DCF or multiples of comparable companies, if available. To be sure, there is significant subjectivity.

2. In Step 2, if the fair value of the reporting unit is less than its book value, a company must estimate the new fair market value of goodwill or what is known as the implied goodwill amount. To calculate this amount, the company completes a hypothetical purchase accounting allocation under which the newly calculated reporting unit's fair market value is allocated to the individual tangible and intangible assets (excluding goodwill). The amount by which the reporting unit's fair market value amount exceeds the fair market value of its net assets is goodwill's implied fair market value. In the last calculation, the calculated implied goodwill amount is compared to the goodwill amount recorded on the balance sheet at that same unit level. The resulting goodwill impairment charge is the reporting unit's existing goodwill amount less its newly calculated implied fair market value.

In the following exhibit, we walk through the mechanics of a goodwill impairment test. In this example, we assume book value of assets of $350, goodwill of $450, liabilities of $275, and equity of $525.

Step 1 of a goodwill impairment test compares the fair market value of a reporting unit to its carrying value. The fair market value is determined using various valuation methodologies such as discounted cash flow analysis, market multiples, or the cost approach. The assumed $450 fair value of the reporting unit is less than its $525 carrying value, indicating that an impairment exists. Since the reporting unit's fair value is less than its carrying value, proceed to Step 2.

In Step 2 of a goodwill impairment test, the fair market value of tangible and intangible assets is calculated, and the implied fair value of goodwill becomes apparent. Goodwill's implied fair market value of $350 is calculated based on an assumption of $450 of assets (the sum of all tangible and identifiable intangible assets) and $275 of liabilities. A $100 goodwill impairment charge (fair market value of $350 less book value of $450), runs through the income statement as a loss.

Goodwill Impairment Testing Example

Reporting unit assumptions

Assets	350	Liabilities	275
Goodwill	450	Book value of equity	525
Total assets	**800**	**Total liabilities + equity**	**800**

Step 1: Compare the fair value of reporting unit to the carrying amount

Fair value of reporting unit[1]	450
Book value of reporting unit	525
Excess carrying value	**(75)**

Since the reporting unit's fair value is less than its book value, proceed to Step 2.

Step 2: Compare the implied value of goodwill to the carrying amount of goodwill

Fair value of reporting unit[1]		450
Fair value of tangible and identifiable intangible assets	375	
Less: fair value of liabilities	(275)	
Fair value of net identifiable assets	100	(100)
Implied value of goodwill (a)		350
Carrying value of goodwill (b)		450
Goodwill impairment (a) - (b)		**(100)**

(1) Fair value based on a reasonable valuation methodology such as DCF analysis, market multiples, cost to recreate, etc.

Source: Wolfe Research Accounting & Tax Policy Research.

HOW TO ESTIMATE POSSIBLE GOODWILL IMPAIRMENT CHARGES

GAAP requires goodwill to be recorded and analyzed for impairment at the reporting unit level. However, there is often limited disclosure on a reporting unit level available in public filings. As a result, in order to assess the possibility and size of a potential goodwill impairment charge, we must make a number of assumptions. In the first step of the goodwill impairment test, the fair value of the reporting unit is compared to its book value. If the fair value is greater than the book value, the impairment testing ceases. If it's not, the test proceeds to Step 2. As a substitute for the reporting unit value, we use the fair value of the company's market capitalization to the company's shareholder's equity balance.

In Step 2, the fair value of all tangible and identifiable intangible assets and liabilities are allocated to the fair value of the reporting unit. In this part of the analysis, we assume the asset and liability amounts recorded on the GAAP balance sheet are equal to their fair values. The book value of the non-goodwill assets ("net identifiable assets") is calculated by subtracting goodwill from shareholder's equity. The implied fair value of goodwill is, in turn, calculated by comparing the company's market capitalization (our proxy for fair value of the reporting unit) to the book value of the net identifiable assets (our estimate of net identifiable assets' fair value). Next, the implied goodwill fair value amount is compared to the amount of goodwill on the company's balance sheet. If the implied fair value of goodwill is less than the balance sheet amount, there is high risk of an impairment. Impairment charges are recorded in earnings as a noncash charge, reducing equity at its tax-effected amount.

GOODWILL IMPAIRMENT TESTING SIMPLIFIED

The FASB recently changed the impairment testing for goodwill with ASU 2017-04. Beginning in 2020 (early adoption was allowed beginning 2017), Step 2 of the test was eliminated. Instead, once Step 1 is completed, the goodwill impairment will be calculated as the excess of the carrying value of the report unit vs. the fair value. As a result, the impairment charge may be more or less than otherwise had Step 2 been completed, but still cannot be more than the actual goodwill recorded.

LONG LIVED ASSET IMPAIRMENT TESTING: THE RULES AND MANAGEMENT'S SUBJECTIVITY

Long-lived assets (including intangibles) may also necessitate a write-down. ASC 360, *Property, Plant, and Equipment* (formerly FAS No. 144), requires companies to test long lived assets, such as PP&E for impairment when indicators exist. Under the accounting guidance in ASC 360, the impairment test is performed when "events or changes in circumstances indicate that its carrying amount may not be recoverable". Indicators would include items, such as significant decreases in the asset's market price, adverse changes in the extent or manner that the assets are being used, a change in legal factors or the business climate that may impact asset's value, or recent cash flow and/or operating losses.

A two-step test is performed if an impairment test is necessary. In Step 1, the company compares the total undiscounted estimated future cash flows of the asset to its carrying value. If the asset's carrying value exceeds the *undiscounted* cash flows, there is an impairment loss. This loss is measured as the difference between the asset's carrying value and fair value (where fair value would be measured on a *discounted* cash flow basis or through other fair value measurements). Readers will recognize that in light of the inherent management subjectivity in this impairment test, companies have a lot of flexibility in the amount and timing of long-lived asset write-downs.

NEW CREDIT LOSS RULES FOR FINANCIAL INSTRUMENTS

- Accounting for potential credit losses is one of the most important aspects of analyzing the proper valuation of financial instrument investments (loans, receivables, securities portfolio, etc). Known as "impairment", new rules for US GAAP are required beginning in 2020.
- The most impactful component of the new rule is the recognition of financial assets' impairment, which includes loan loss reserves. Under prior GAAP rules, impairment and loan loss reserves were based on an 'incurred' loss model, which has been criticized as delaying recognition of losses as it only considers current and historical information to determine if a credit loss exists. The new rules require a current expected credit loss (CECL) model. This CECL model reflects credit losses based on estimates of cash flows that the lender does not expect to collect, which incorporates historical information, current conditions, and reasonable forecasts of collectability. Generally, prior accounting only recognized credit losses when "probable" (>70% chance) while the new rules will allow for recognition of the company's best estimate of *expected* losses across the life of the asset.
- In addition to loans, the CECL impairment rules would apply to held-to-maturity debt securities. However, the new rules would not apply to Available for Sale (AFS) securities (currently marked to market each period through other comprehensive income). Instead, AFS securities would be subject to a modified "Other than temporary impairment" analysis that would now allow for *reversals* of impairment charges back through earnings.
- The IASB separately issued IFRS 9 *Financial Instruments*, which had an effective date of 2018. The primary difference in the final international vs. the US rules is the impairment "bucket" approach maintained by the IASB. Instead of full lifetime expected credit losses being recognized up-front as in the US, the international rules require initial recognition of only a 12-month portion of expected credit losses. Full lifetime expected losses will only be recognized subsequently upon a significant increase in credit risk. All else being equal, this results in non-US banks with more pro-cyclical loan loss reserving.

FINANCIAL STATEMENT / SECTOR-INDUSTRY IMPACT

- Specifically, on the financial statements, a larger allowance for credit losses will be recorded (assuming expected credit losses > incurred losses) for any given financial instrument, lowering book value. Recording impairment and loan-loss reserves on more of an expected basis vs. incurred will result in more volatile earnings impacts. Earnings will generally be lower as credit losses are recognized earlier (assuming a financial institution is growing its loan book).
- The primary impact of the aforementioned changes will be on banks, insurers and other lending institutions. The new rules will apply to any company holding a financial instrument covered in the proposal. Importantly, non-banks that make loans or hold longer term receivables (e.g. captive finance subsidiaries) will also be impacted. Trade receivables technically would fall under the scope of the rules too, though our sense is that there should not be large scale impacts unless the receivables are longer-term. Generally, the longer term the financial instrument, the more impact there is likely to be as expected credit losses would deviate from the historically accounted incurred.

- The summarized impacts on financial instruments is as follows:

Financial Instrument Treatment Compared: Current and Proposed Accounting Rules

Financial Instrument	Prior Accounting	New Accounting
Loans	Held at amortized cost	Held at amortized cost
Loan loss /credit reserve	Estimated on *incurred* loss model	Estimated on *expected* loss model
Trading securities	Marked to market through earnings	Marked to market through earnings
Available for sale securities	Marked to market through OCI	Marked to market through OCI
Impairment of AFS	Other than temporary impairment analysis not reversible when once impaired	Other than temporary impairment analysis as allowance, not permanent writedown
Equity securities	Available for sale treatment allowed	Required to be trading - marked to market
Held to maturity	Held at amortized cost	Held at amortized cost
Impairment of HTM	Other than temporary impairment analysis	Estimated on *expected* loss model

OCI= other comprehensive income (part of shareholder's equity on the balance sheet).

Source: Wolfe Research Accounting & Tax Policy Research; FASB/IASB.

STATUS / TRANSITION / EFFECTIVE DATE

- The new US rules are required beginning in 2020. Early adoption was allowed in 2019, though we note very few, if any, companies with material financial instrument exposure did so.
- The transition method upon adoption for the expected credit loss impairment model is a cumulative-effect approach. Under this approach, companies would record a one-time cumulative-effect ("catch up") adjustment to the beginning loan loss reserve and equity balances during the first period the standard is effective. In most cases, the catch-up adjustment would cause the loan loss reserve to increase, offset by a decline in equity (net of deferred taxes).

In this next section, we review in more detail the accounting rules for marketable securities. ASC 320, *Investments – Debt & Equity Securities* (formerly FAS No. 115, *Accounting for Certain Investments in Debt and Equity Securities*) categorizes investments in debt and equity securities into:

(1) Trading, (2) Available-for-Sale ("AFS"), and (3) Held-to-Maturity ("HTM").

Trading securities are classified as such based on the intent of the investor – to potentially sell these securities in the near-term (all equity security investments will be trading). Held to maturity is the opposite, as the name demonstrates, and the company must have both the intent and ability to hold the security until maturity. Anything that does not fit into trading or HTM will be AFS, which is the largest category on corporate balance sheets.

Under GAAP, trading and AFS securities are recorded at fair value on the balance sheet. Conversely, HTM securities are recorded on the balance sheet at amortized cost. Since trading and AFS securities are marked to market each period even though they may not have been sold, GAAP requires different classification of unrealized gains and losses. Trading securities' unrealized gains and losses are recorded in earnings each period. Available-for-sale securities' unrealized gains or losses are not recorded through earnings, but instead recorded in shareholder's equity in the other comprehensive income ("OCI") account. Held-to-maturity securities' unrealized gains or losses are not recorded on the balance sheet since they are not marked to fair value.

GAAP requires companies to assess AFS investments for other-than-temporary impairments each period. While many companies hold debt securities, this issue is most germane to financial institutions holding large securities' portfolio. The OTTI rules (ASC 320-10-35, formerly FSP FAS No. 115-2 and FAS No. 124-1) require an unrealized loss for AFS to be recognized as a permanent write-down through earnings if any of the following conditions are met:

(a) The company has the intent to sell the debt security;

(b) There is a greater than 50% chance that the company will be required to sell the debt security before its anticipated recovery in value; or

(c) The company does not expect to recover the security's entire amortized cost basis (credit loss).

Under the OTTI impairment model, a company will always record an impairment loss related to the credit component of the marketable debt security's unrealized loss in earnings. The other portion of the unrealized market security loss (that is due to non-credit, such as liquidity) is recorded in earnings only if either (a) or (b) of the aforementioned criteria is met. Otherwise, the unrealized loss stays in equity in other comprehensive income until the security is sold or otherwise disposed of.

The GAAP test for ascertaining if there is a credit loss is expected cash flow. Under this test, FASB rules require the company to compare the present value of the cash flows that are expected to be collected from the security to its amortized cost basis. The expected cash flows are discounted at the effective interest rate implicit in the security at acquisition date. Under GAAP, the difference between the present value of cash flows expected to be collected and the security's amortized cost basis is recorded as the credit loss. This test is highly subjective and difficult for auditors to assess since it's based on management's expectations of future cash flow. Consequently, this allows companies wide latitude in pushing out impairment losses into future periods.

Beginning in 2020, any AFS impairment losses will be recorded as an allowance and may be reversed if the estimated credit loss decreases in future periods. Held to maturity investments are subject to the overall CECL impairment rules (they were previously subject to OTTI rules).

A careful reading of the 10-K footnotes is important in searching for signs of improper cost capitalization and accounting policy choices that may impact earnings comparability across companies. Improperly capitalizing normal operating costs on the balance sheet has been one of the most common areas of accounting misstatements. The incentives are large. By capitalizing costs and expensing them over time in earnings, a company reports higher earnings in the short-term. One of the classic illustrations of improper cost capitalization was WorldCom. The company improperly capitalized "line costs" as capital expenditures in PP&E on the balance sheet instead of expensing them as operating costs. In turn, the line costs were depreciated as an expense over a longer period of time. On the cash flow statement, these "line costs" were shown as capital expenditures and "other" amounts within the investing section of the cash flow statement. This resulted in permanently overstated operating cash flow since the capital expenditures are expensed as depreciation and the latter is added back to operating cash flow when it occurs.

COST CAPITALIZATION: COMPARABILITY

Expenditures for long-lived assets are typically "capitalized" into the asset's cost on the balance sheet if they are expected to provide future benefits more than one year. The accounting theory behind this concept is the matching principle, which attempts to match revenues with costs incurred to generate the revenues. Cost capitalization does not need to be improper to impact comparability and GAAP actually requires cost capitalization in certain situations. However, there are grey areas where companies may have a choice of cost capitalization.

Mechanically, capitalizing (accumulating) a cost on the balance sheet increases an asset account, such as PP&E or other current/non-current assets. By capitalizing costs, the company's reported earnings are higher since all these costs are not expensed through earnings in the current period. The cash outflow associated with the asset increase is reported on the cash flow statement as a cash outflow either in the operating, investing, or financing section. If the cash outflow for the capitalized cost is classified in operating cash flow, cost capitalization does not distort operating cash flow (another reason to analyze cash flow rather than earnings). On the other hand, if the cash flow effect of the asset increase is shown as an investing cash outflow on the cash flow statement, this classification permanently overstates operating cash flow.

Subsequently, when capitalized costs are expensed (as depreciation or other costs), this lowers earnings, but the expense is non-cash in the current period and is added back to operating cash flow. Therefore, operating cash flow remains unchanged. This is one of the shortcomings with alternative measures of cash flow, such as EBITDA or even operating cash flow. Free cash flow is the only measure correcting for different cost capitalization practices across companies. Even with free cash flow measures, analysts need to be careful in deducting other investing cash outflows that may be cap-ex substitutes or other recurring investing cash outflows (e.g., software capitalization).

EXAMPLE: CAPITALIZING COSTS VS. EXPENSING IMMEDIATELY

The next exhibit is an illustration of the financial statement impact of improperly capitalizing costs in PP&E instead of expensing them. We illustrate this with the scenario of a $500 expense capitalized as a 5-year asset, assuming straight line depreciation.

In Year 1, expense capitalization increases earnings and operating cash flow compared to the company immediately expensing costs. However, free cash flow is the same under either scenario. In Year 2, under the cost capitalization scenario, earnings are lower from $100 of non-cash depreciation expense compared with $0 of depreciation expense under the immediate expensing scenario (the entire amount was expensed in Year 1). Both operating cash flow and free cash flow are the same in Year 2 under both scenarios. The same dynamic will occur in Years 3 through 5 (not shown).

Example: Cost Capitalization vs. Immediate Expensing

	CAPITALIZE		EXPENSE	
	Year 1	**Year 2**	**Year 1**	**Year 2**
Income Statement				
Revenue	$1,000	$1,000	$1,000	$1,000
Expenses	0	0	500	0
Depreciation	100	100	0	0
Net income	**900**	**900**	**500**	**1,000**
Statement of Cash Flow				
Depreciation	100	100	0	0
Cash flow from operations	**$1,000**	**$1,000**	**$500**	**$1,000**
PP&E	(500)	0	0	0
Cash flow from investing	**($500)**	**$0**	**$0**	**$0**
Free cash flow	**$500**	**$1,000**	**$500**	**$1,000**

Capitalization of costs will temporarily boost earnings and permanently overstate cash flow from operations

Source: Wolfe Research Accounting & Tax Policy Research.

Cost capitalization does not need to be improper to impact comparability, and GAAP actually requires cost capitalization in certain situations. However, there are grey areas where companies may have a choice of cost capitalization. Below we discuss some of the primary areas where cost capitalization occurs within the confines of GAAP, but comparability is nonetheless impacted.

INTEREST COST

Interest cost on debt used to construct long term assets is capitalized as part of the asset's cost. Since cash is fungible, there is subjectivity in specifically assigning debt to long-term projects and, thus, its capitalization. Further, some companies may choose to fund projects with internally generated cash flow or finance the assets differently. This impairs comparability across companies.

Capitalized interest will never be recognized under the interest expense caption on the income statement; instead, it's recognized through depreciation expense on the long-term asset. Therefore, reported GAAP interest expense will be artificially low relative to cash interest expense. On the cash flow statement, the initial cash interest expense outflow will be included as capital expenditures in investing cash flow. This is why creditors also focus on cash interest expense in calculating debt coverage ratios since reported interest expense in the income statement is understated if interest costs are capitalized. When using operating cash flow or net income metrics, there will also be non-comparability across companies when one chooses to finance long-term assets with debt while another company finances assets with equity or cash.

The capitalization of interest cost will be most important during the first period capitalization occurs or when there is a large change in the amounts being capitalized. As shown below, the amount of interest UPS capitalized on its balance sheet (resulting in delayed earnings recognition) has increased from $1 to $35 to $48 million over the last 3 years. This had the impact of boosting operating income and operating cash flow in each of the last two years.

UPS: Interest Expense / Capitalized Interest

"Interest incurred during the construction period of certain property, plant and equipment is capitalized until the underlying assets are placed in service, at which time amortization of the capitalized interest begins, straight-line, over the estimated useful lives of the related assets. Capitalized interest was $97, $49 and $14 million for 2018, 2017, and 2016, respectively."

$ millions	2016	2017	2018
EBIT	$7,688	$7,529	$7,024
Interest expense	$381	$453	$605
Cash from operations	$6,473	$1,479	$12,711
Cash paid for interest (net of capitalized)	$373	$428	$595
Capitalized interest (y/y change)	$1	$35	$48
% of EBIT	0.0%	0.5%	0.7%
% of Cash from operations	0.0%	2.4%	0.4%

Source: Wolfe Research Accounting & Tax Policy Research; Company filings (2017-2018 10-K).

SOFTWARE DEVELOPMENT FOR EXTERNAL SALE

GAAP requires capitalization of external use software development once so-called technological feasibility is reached (ASC 985-20, *Costs of Software to be Sold, Leased, or Marketed* [formerly FAS No. 86]). While this may sound simple, there is considerable discretion in identifying the point at which technological feasibility is reached.

We find this dynamic currently among the video game companies. Electronic Arts (EA) expenses all software development costs and discloses that technological feasibility occurs very late in the software development process. Other competitors maintain that they reach technological feasibility earlier in the video game development phase and capitalize a larger amount of software development costs. This impacts the comparability of earnings across the industry group. When the changes in software development assets are shown in operating cash flow, cash flow is comparable across the companies. However, not all companies classify changes in the software development cost asset in operating cash flow. In the next exhibit, we show how Synopsys' capitalized software development costs are classified in investing cash flow. We believe such costs should be reclassified as a cash operating cost in operating cash flow. As this example demonstrates, it is critically important to review all the line items within investing cash flow as managements might separately categorize certain expenses that should be included in free cash flow calculations.

Synopsys (SNPS): Statement of Cash Flows – Investing Section ($ in thousands)

	Year Ended October 31,		
	2019	2016	2015
Cash flows from investing activities:			
Purchases of property and equipment	(198,129)	(66,909)	(86,965)
Cash paid for acquisitions and intangible assets, net of cash acquired	(36,605)	(60,056)	(340,153)
Capitalization of software development costs	(4,259)	(4,131)	(3,682)
Other	—	—	900
Net cash used in investing activities	(235,877)	(142,675)	(559,629)

Source: Wolfe Research Accounting & Tax Policy Research; Company filings. Per 2019 10-K

INTERNAL USE SOFTWARE

GAAP requires internal use software costs to be capitalized as an asset and amortized over their useful life typically 3 to 5 years (ASC 350-40, *Internal-Use Software* [formerly Statement of Position 98-1]). Training costs are always immediately expensed. ASC 350-40 classifies internal use software development costs into three separate stages:

(1) Preliminary Project Stage: The first stage includes the conceptual formulation and evaluation of alternatives leading up to the determination that the development of the software will begin. Costs incurred during this stage are expensed immediately.

(2) Application Development Stage: Once the second stage begins, costs are capitalized on balance sheet. Such costs/activities include but are not limited to design, coding, hardware installation, and testing. Once the software is ready for its intended use and substantial testing is completed, companies move to the Post-Implemental Operating Stage.

(3) Post-Implementation Operation Stage: When the Post-Implementation/Operation Stage begins, maintenance costs are expensed while upgrades that add functionality are capitalized into the asset account.

OTHER COSTS CAPITALIZED INTO INVENTORY

A careful reading of the inventory footnote may identify other costs currently capitalized into inventory balances. Two examples of costs that are typically capitalized into inventory are pension and stock option expense. While each of these have their own respective recognition issues in themselves (contact us for more details), a portion of both expenses would be capitalized into inventory if deemed to be labor cost of producing inventory. Separately, inventory is an area where companies in the same industry group may capitalize different costs into the inventory balance. As an example, Boeing has reported material differences between calculated pension cost and that actually reported in earnings over the last several years (e.g. cost > amount included in earnings would indicate some amount is capitalized on balance sheet to be recognized in a future period).

Boeing – Pension cost vs. Amount Included in Earnings

$ millions	2016	2017	2018	2019
Net periodic benefit cost (income)	$523	$312	$320	($372)
Amount included in earnings	$1,584	$393	$170	($61)

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

LOSS RESERVES

A company may encounter an uncertain loss or other potential liability and, therefore, a careful reading of the 10-K's loss contingency footnote disclosures may highlight potential future legal and other losses. This footnote is typically qualitative and vague. Under GAAP, the loss is recorded as an accrued liability (reserve) if it is both probable (generally interpreted to mean at least a 70% chance of occurring) and reasonably estimable (ASC 450 formerly FAS 5 *Accounting for Contingencies*). We find that unexpected negative surprises occur more often when a loss reserve isn't recorded because it's not probable and estimable. In this scenario, GAAP requires the following:

- If a range of possible losses exists, the most probable loss is recorded as an expense and accrued liability.
- In a scenario when losses are not estimable with any certainty or contain an equal probability of occurring, GAAP requires an accrued liability to be recorded for the lowest contingency amount within the range of possible outcomes.
- If amounts are not estimable, a company must disclose this fact.
- If a loss is only reasonably possible (<70%), GAAP requires a qualitative disclosure of the loss and an estimate or range of the potential loss. No loss reserve is recorded on the balance sheet.

Management teams try to shift blame and don't often record losses until a lawsuit is resolved. Therefore, this section should be reviewed for unexpected, large cash outflows associated with unfavorable lawsuit outcomes.

Arconic: Environmental Remediation Contingent Liability Reserve

Environmental Matters. Arconic participates in environmental assessments and cleanups at more than 100 locations. These include owned or operating facilities and adjoining properties, previously owned or operating facilities and adjoining properties, and waste sites, including Superfund (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)) sites.

A liability is recorded for environmental remediation when a cleanup program becomes probable and the costs can be reasonably estimated. As assessments and cleanups proceed, the liability is adjusted based on progress made in determining the extent of remedial actions and related costs. The liability can change substantially due to factors such as the nature and extent of contamination, changes in remedial requirements, and technological changes, among others.

Arconic's remediation reserve balance was $266 at December 31, 2018 and $294 at December 31, 2017 (of which $81 and $41, respectively, was classified as a current liability), and reflects the most probable costs to remediate identified environmental conditions for which costs can be reasonably estimated. In 2018, the Company has seen higher expenditures with the start of construction related to the Grasse River project. Arconic expects that trend to continue for 2019 as reflected by the increase in the portion of the reserve that is considered a current liability. Payments related to remediation expenses applied against the reserve were $32 in 2018 and $26 in 2017 and includes expenditures currently mandated, as well as those not required by any regulatory authority or third party.

2018 10-K. Emphasis added.

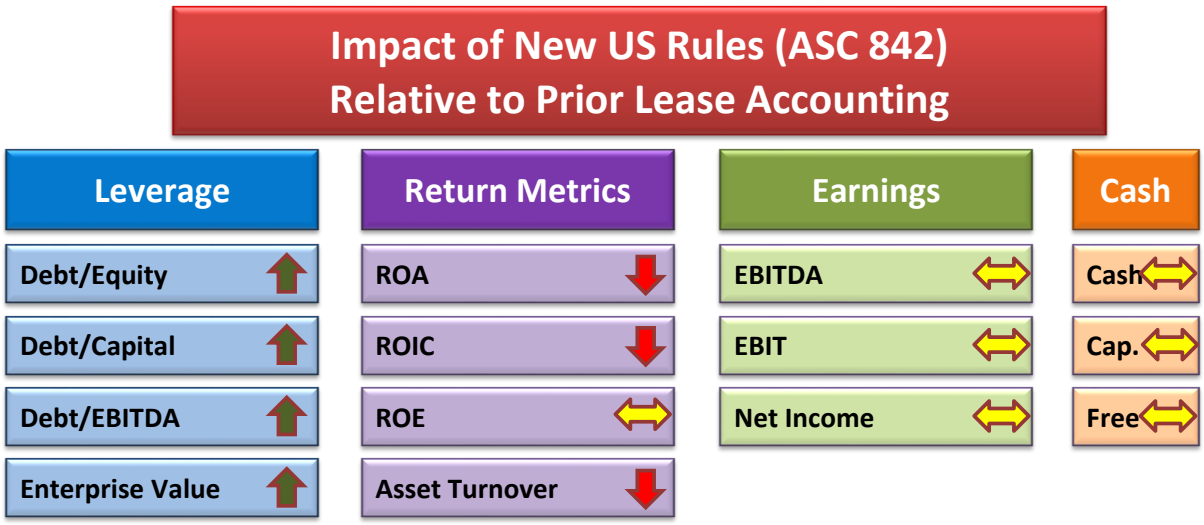
Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

NEW LEASE ACCOUNTING: MORE DEBT / ASSETS; NO EARNINGS / CASH FLOW IMPACT; IFRS DIVERGENCE

Beginning in 2019, companies were required to adopt new lease accounting rules. The new rules addressed long held concerns in the investment community (ourselves included) that the old GAAP accounting for leases was a broken and flawed model. While the economics of "operating" and "capital" leases are similar, the mechanical nature of prior operating vs. finance lease accounting offered significant management flexibility to achieve a desired outcome. Previously, the bright line rules allowed managements to structure leases designed to fit specific accounting purposes. Most management teams decided to structure leases as off-balance sheet operating leases (we've estimated that <10% of all leases are classified as finance leases), resulting in lower leverage ratios and better return metrics (ROA, ROIC) for the company.

Under the new rules, off-balance sheet operating lease accounting has been eliminated. The new rules require capitalization of most leases on balance sheet as an intangible asset (right to use property) and debt. The intangible assets are based on the present value of future minimum lease payments. Renewal options are only included if it is "reasonably certain" they will be exercised (90-95% probability) and variable rental expense will only be included if it's tied to an index or rate (e.g. CPI). We believe this precludes the majority of percentage of sales type variable lease payments to which many retailers are subject (so those would remain effectively off balance sheet).

Operating leases are still recognized as a single total straight-line lease expense – the same as prior treatment. The income statement treatment for finance leases includes amortization of the intangible lease asset and interest expense on the liability just as it was under the prior rules.



Any company using leases was impacted by the new rules. Industries most impacted include retail, restaurants, airlines, air freight and certain Industrials' sector companies.

MECHANICS OF NEW CAPITALIZATION AND EXPENSE RECOGNITION

The new rules capitalize leases on balance sheet as an intangible asset (right to use property) and debt and eliminate off-balance sheet operating lease accounting. Most leases are now capitalized, but for practical purposes, very short term (<12 month) leases and service contracts may be excluded. Under the new rules, when capitalizing the lease, the lessee records a "right of use" lease asset and a corresponding lease debt obligation on the balance sheet. This occurs upon inception of the lease. The asset and the debt amount are calculated as the present value of the future lease payments plus any initial direct costs incurred by the lessee.

The discount rate used to calculate the lease's present value is based on the company's incremental borrowing rate on the date of the lease or the rate the lessor charges the lessee, if it can be readily determinable. Incremental borrowing rate is defined as the interest rate that, on the day of inception, the lessee would pay to borrow the funds necessary to purchase a similar underlying asset, over a similar time period. If the discount rate changes in a subsequent period, no remarking of the asset/liability would occur, unless there is a change in the lease term. The right of use asset is separately disclosed on the balance sheet and evaluated for impairment similar to other long-lived assets. The liability to make lease payments is presented as a liability on the balance sheet.

Importantly, very little changed for lease expense recognition. Finance (capital) leases record interest expense on the lease obligation (under the effective interest method) and amortization on the asset (typically will be straight-line). The interest expense and amortization expense are recorded separately on the income statement and cash flow statement within the line item expenses of related nature. Operating leases continue to have a straight-line rental lease expense based upon the total undiscounted future minimum lease payments and the lease term. The total lease expense is, in effect, a combination of an interest component and an amortization component. However, amounts are shown as one combined lease expense item on the income in operating expenses and on the cash flow statement — the same as how operating lease rental expenses were previously classified.

The prior bright-line rules to determine whether a lease is a "finance lease" (~capital lease) or "operating lease" remain the same. If a lease meets at least one of the following four tests, then it's classified as a finance / capital lease. Under US GAAP, this delineation will not analytically impact the balance sheet, but will impact the income statement and (second order) cash flow statement items.

1. The lease conveys ownership to the lessee at the end of the lease term;
2. The lessee has the option to buy the asset at a bargain price at the end of the lease term;
3. The term of the lease is 75% or more of the asset's economic life; and/or
4. The present value of the minimum lease payments is at least 90% of the asset's market value.

VARIABLE LEASE PAYMENTS AND RENEWAL OPTIONS

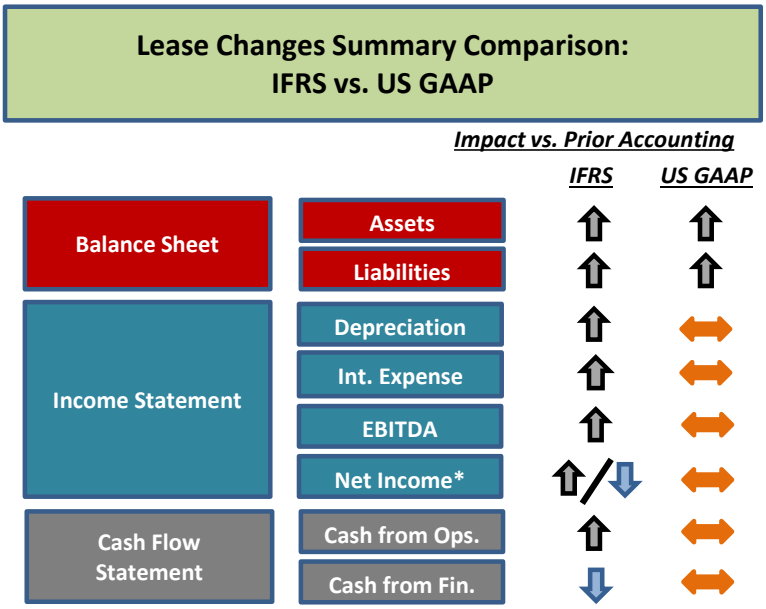
Generally, variable lease payments (contingent rents such as % of sales) are NOT included as part of the lease asset / obligation. Certain exceptions include if they are 1) based upon a predefined index or rate (e.g. CPI) or 2) in-substance fixed lease payments. This precludes the majority of percentage of sales type variable lease payments to which many retailers are subject.

The lease term includes the non-cancelable period of the lease and only includes renewal options if it is "reasonably certain" the option will be exercised; that is, the lessee has a "significant economic incentive" to exercise that option. Whether significant economic incentive to renew a lease option exists is a subjective assessment based on several qualitative factors. Those factors include contract-based factors (e.g. terms and conditions of option periods, including bargain renewal options), asset-based factors (e.g. significant leasehold improvements the lessee made that retain value), market-based factors (e.g. cost to end lease and find/negotiate a new lease) and entity-specific factors (e.g. importance of asset to lessees operations, historical practice, management intent, common industry practice). Likewise, if the lessee has the option to terminate a lease early, the additional periods (after the termination date) are included in the lease term only if there is significant economic incentive not to terminate the lease. The high bar of a reasonably certain threshold results in many retailers and restaurants *not* likely to include renewal option periods as part of the lease term.

IFRS RULES CHANGE THE INCOME AND CASH FLOW STATEMENT

New lease rules were effective beginning in 2019 for companies using international financial reporting standards (IFRS) as well. The new international rules differ from the U.S. rules in one substantial regard – under IFRS *all* leases will be treated as finance (capital) type leases. Therefore, unlike the U.S. rules, even "operating" leases would receive income statement treatment similar to finance leases comprising of asset depreciation expense and interest expense, not straight-line rental expense. A larger total lease expense (depreciation + interest expense) would be recognized in the earlier years of a lease's life, creating comparability issues between companies that use US GAAP and IFRS. In short, for companies growing their leases, an IFRS reporting company will report lower earnings than a U.S. GAAP company, all else being equal.

Financial Impacts of IFRS vs. US Lease Accounting Rule Changes



*Net income impact based on average lease age and whether depreciation + interest expense is greater or less than current lease rental expense.

Source: Wolfe Research Accounting & Tax Policy Research; FASB.

Below, we've reproduced Kansas City Southern's lease footnote disclosure. Based on the future remaining maturities of operating lease contracts and a discount rate of 3.9%, the recorded operating lease liability is $131.1 million. The company also has a smaller amount of finance leases.

Kansas City Southern: Future Minimum Lease Payments Disclosures

Lease Term and Discount Rate	Weighted-Average Remaining Lease Term *(years)*	Weighted-Average Discount Rate
Operating leases	4.9	3.9%
Finance leases	3.9	11.1%

Remaining Maturities of Lease Liabilities

Year Ending December 31 (*in millions*),	Operating Leases	Finance Leases
2020	$ 50.3	$ 2.7
2021	31.0	2.7
2022	22.0	2.7
2023	16.2	2.4
2024	13..7	0.1
Thereafter	8.4	—
Total lease payments	141.6	10.6
Less imputed interest	10.5	1.9
Total	$ 131.1	$ 8.7

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Below is the disclosure of Kansas City Southern's lease assets and liabilities classification on the balance sheet. The $131.1 million liability is classified as $45.4 short-term (accrued) and $85.7 long-term. The operating lease right of use asset is $158.4 million. Oftentimes, the right of use asset and lease liability may not be equivalent. This is due to timing differences between when lease payments must be made (which drives the liability) and rental expense recorded being recorded on a straight-line basis (which will drive the asset).

Kansas City Southern: Balance Sheet Classification Lease Disclosures

Leases	Classification	December 31, 2019 (*in millions*)
Assets		
Operating	Operating lease right-of-use assets	$ 158.4
Finance	Property and equipment (including Concession assets), net	8.7
Total leased assets		$ 167.1
Liabilities		
Current		
Operating	Accounts payable and accrued liabilities	$ 45.4
Finance	Long-term debt due within one year	1.9
Noncurrent		
Operating	Long-term operating lease liabilities	85.7
Finance	Long-term debt	6.8
Total lease liabilities		$ 139.8

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Below is Kansas City Southern's disclosures of operating lease cost and cash flow statement classification. Lease costs of $43 million and $10.7 million are in operating expense line items, while the finance lease impacts flow through D&A and interest expense.

Cash flow from operations will reflect operating lease payments (~cash rental expense) and the interest component of finance leases. The liability paydown component of a finance lease will be recorded in financing activities.

Kansas City Southern: Leases Impact on Income Statement and Cash Flow Statement

Lease Cost	Classification	Year ended December 31, 2019 (*in millions*)
Operating lease cost:		
	Equipment costs	$ 43.0
	Materials and other	10.7
Finance lease cost:		
Amortization of finance lease assets	Depreciation and amortization	2.7
Interest on lease liabilities	Interest expense	1.1
Total lease cost		$ 57.5

Cash Flow Information	
Cash paid for operating leases included in operating activities	$ 58.7
Cash paid for finance leases included in operating activities	1.1
Cash paid for finance leases included in financing activities	2.7
Right-of-use assets obtained in exchange for operating lease liabilities	35.2

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Regardless of operating or finance lease treatment, there is no cash flow / cash flow statement impact at lease inception. Under finance lease accounting, a lease obligation and related asset are recorded. The leased asset is depreciated over its useful life as a non-cash depreciation expense. There is a corresponding obligation payment each period consisting of interest expense and reduction in lease obligation principal (similar to a typical amortizing loan payment). The principal portion of the lease obligation is recorded as a cash outflow from financing, while the interest expense lowers a company's earnings and cash flow from operations.

Compared to either operating lease treatment or companies traditionally buying assets as capital expenditures, finance leases skew reported EBITDA and free cash flow metrics because interest and depreciation are added back to EBITDA. Finance leases are more similar to an asset purchase financed with debt, resulting in a financing cash inflow.

Since GAAP understates capital expenditures (no cash outflow shown on the cash flow statement) for companies using finance leases, we suggest adding new finance leases to capital expenditures. In doing this, we believe that the cash flows will be more comparable, irrespective of a company's financing policy, and that you arrive at a better free cash flow number.

Next, we compare Amazon.com's new finance leases versus the company's capital expenditures and calculate the adjusted cap-ex numbers over the past eight years. Companies are required to disclose supplemental cash flow information in their 10-K (and to a more limited extent, 10-Q) filings, otherwise known as significant non-cash activities. This schedule may be found at the bottom of the cash flow statement or in the 10-K footnotes and includes (among other things) the additional PP&E added under finance leases entered into during the year.

Amazon.com: Supplemental Cash Flow Information

	Year Ended December 31,		
	2017	2018	2019
SUPPLEMENTAL CASH FLOW INFORMATION:			
Cash paid for interest on long-term debt	$ 328	$ 854	$ 875
Cash paid for operating leases	—	—	3,361
Cash paid for interest on finance leases	200	381	647
Cash paid for interest on financing obligations	119	194	39
Cash paid for income taxes, net of refunds	957	1,184	881
Assets acquired under operating leases	—	—	7,870
Property and equipment acquired under finance leases	9,637	10,615	13,723
Property and equipment acquired under build-to-suit arrangements	3,541	3,641	1,362

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Next, we show the material difference between Amazon.com's free cash flow when new finance leases are treated as capex. We calculate free cash flow to the firm using the traditional method of operating cash flow less capex plus after-tax interest expense, and then adjust by deducting new finance leases signed over the same time period. Amazon.com's new finance leases have been nearly the same level as reported capital expenditures each of the last several years.

Amazon.com: Free Cash Flow Adjusted for Finance Leases ($ in millions)

	2017	2018	2019
Capital expenditures	$10,058	$11,323	$12,689
New finance leases	9,637	10,615	13,723
Adjusted capital expenditures	**19,695**	**21,938**	**26,412**
New finance leases / cap-ex	***96%***	***94%***	***108%***

	2017	2018	2019
Operating cash flow	$18,434	$30,723	$38,514
Less: cap-ex	(10,058)	(11,323)	(12,689)
Reported free cash flow	**8,376**	**19,400**	**25,825**
Less: new finance leases	9,637	10,615	13,723
Adjusted free cash flow	**(1,261)**	**8,785**	**12,102**
Adj. FCF / Reported FCF	***-15%***	***45%***	***47%***

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

SHIFTING FROM OPERATING LEASES TO FINANCE LEASES WILL BOOST OPERATING CASH FLOW

The determination of whether a lease is classified as operating or finance is driven by four mechanical bright line accounting rules – therefore, it's fairly simple for companies to structure new leases as either finance or operating without altering the economics of the lease. As a result, some management teams may choose to increase cash flow from operations and free cash flow by using finance leases instead of operating leases.

Assuming that one company's operating lease payments (sometimes referred to as rent expense) approximate another company's finance lease payments, their operating cash flows are not comparable since a different amount of expense is recorded under each scenario. Only the interest portion of a finance lease payment reduces operating cash flow, whereas, under an operating lease, operating cash flow is reduced by the entire cash lease payment. Therefore, while capex is also understated for companies with operating leases, the difference is lower due to the entire lease payment included in operating cash flow.

Below, we've reproduced Amazon's lease commitments' footnote disclosure. This schedule should be reviewed relative to prior years' to ascertain any mix shift in total operating vs finance lease classified contracts.

Amazon.com: Commitments, Contingencies, and Guarantees

	Year Ended December 31,						
	2020	2021	2022	2023	2024	Thereafter	Total
Debt principal and interest	$ 2,202	$ 2,009	$ 2,603	$ 2,273	$ 4,084	$ 26,019	$ 39,190
Operating lease liabilities	3,757	3,630	3,226	2,900	2,605	15,845	31,963
Finance lease liabilities, including interest	9,878	7,655	4,060	1,332	989	4,961	28,875
Financing obligations, including interest	142	146	148	150	152	2,452	3,190
Unconditional purchase obligations (1)	4,593	3,641	3,293	3,103	3,000	2,358	19,988
Other commitments (2)(3)	3,837	2,274	1,770	1,439	1,389	12,186	22,895
Total commitments	$ 24,409	$ 19,355	$ 15,100	$ 11,197	$ 12,219	$ 63,821	$ 146,101

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Now that operating leases are recorded as a liability on balance sheet, the context of analytically adjusting leases has slightly changed. In some ways, it has become more complex and nuanced. In our view, the two most important questions for properly analyzing leases include:

1) IS THE APPROPRIATE AMOUNT OF "ECONOMIC" LIABILITY RECORDED ON BALANCE SHEET?

The recorded operating lease liability is based on the present value of contractual future minimum lease payments, which do not include cancelable leases or contingent rentals. Therefore, the liability will be understated if a company uses renewable short-term leases or contingent rentals based on future revenue. These nuances make minimum lease payment comparability an issue; different companies with different types of leases may report vastly different minimum lease payment numbers in their footnotes. Since future minimum lease payment disclosures exclude contingent rentals and don't assume lease renewal options, in some cases it will make sense to continue to adjust debt by using the classic method of capitalizing leases based on 6-8x total rent expense, as it enhances comparability across companies using different lease terms.

2) SHOULD EBITDA BE ADJUSTED FOR LEVERAGE / VALUATION RATIOS?

Now that operating leases are included as debt in the balance sheet, it's important to consider the impact on overall leverage calculations (net debt or EV to EBITDA). Some companies may begin reporting leverage ratios by adding back rent expense to EBITDA for debt-to-EBITDAR or EV-to-EBITDAR valuation calculations. In so doing, this generally would reduce — but not fully mitigate — the impact of including operating leases as on-balance sheet debt.

Insofar as the proper amount of lease liability is analytically captured per (1) above, it may be fair to add back the reported rental expense to compute an EBITDA-R denominator. Analysts should ensure that the amounts added back to R are consistent and reflect the same full cost of ownership that are capitalized in the numerator as debt. That is, if the lease liability recorded only reflects short term leases with no contingent rental amounts capitalized, do not add back the contingent rental component as R to the denominator.

The ability to tap the credit markets can be the lifeblood of many companies for accessing capital. An understanding of the type, amount and terms of debt outstanding provides information on future cash flows and the outlook for potential new issuance or refinancing options, if necessary. The debt footnote includes a summary table of the debt instruments (including the interest rate and maturity of each), the upcoming debt maturity profile, and any outstanding lines of credit.

Analysts should also review the debt footnote for any material or restrictive debt covenants. If any of these financial covenants are breached, it could result in an accelerated repayment schedule or restrict access to further capital if a waiver from the lender cannot be obtained. Often, the disclosure of financial covenants in 10-Ks is light on specific details/calculation mechanics. Much more information is available directly in the source document of the debt, such as the filed loan agreement or bond indenture.

Below and on the next page are General Mills' debt disclosures. First, they describe the outstanding short-term notes payable and available credit facilities. On the following page is a schedule of the company's long-term outstanding bonds issued, which includes the maturity date, stated interest rate and current book value. Underneath, there is a disclosure of the next five years of expected principal payments based on contractual maturities.

General Mills: Notes Payable and Credit Facilities ($ in millions)

NOTES PAYABLE

The components of notes payable and their respective weighted-average interest rates at the end of the periods were as follows:

	May 26, 2019		May 27, 2018	
In Millions	**Notes Payable**	**Weighted-Average Interest Rate**	Notes Payable	Weighted-Average Interest Rate
U.S. commercial paper	**$ 1,298.5**	**2.7%**	$ 1,213..5	2.2%
Financial institutions	**170.2**	**9.0**	336.3	6.2
Total	**$ 1,468.7**	**3.4%**	$ 1,549.8	3.1%

To ensure availability of funds, we maintain bank credit lines sufficient to cover our outstanding notes payable. Commercial paper is a continuing source of short-term financing. We have commercial paper programs available to us in the United States and Europe. We also have uncommitted and asset-backed credit lines that support our foreign operations.

The following table details the fee-paid committed and uncommitted credit lines we had available as of May 26, 2019:

In Billions	**Facility Amount**	**Borrowed Amount**
Credit facility expiring:		
May 2022	$ 2.7	$ -
June 2019	0.2	-
Total committed credit facilities	2.9	-
Uncommitted credit facilities	0.7	0.2
Total committed and uncommitted credit facilities	$ 3.6	$ 0.2

The credit facilities contain covenants, including a requirement to maintain a fixed charge coverage ratio of at least 2.5 times. We were in compliance with all credit facility covenants as of May 26, 2019.

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Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

General Mills: Long-term Debt ($ in millions)

In March 2019, we issued €300.0 million principal amount of 0.0 percent fixed-rate notes due January 15, 2020. We may redeem the notes if certain tax laws change and we would be obligated to pay additional amounts on the notes. These notes are senior unsecured obligations that include a change of control repurchase provision. We used the net proceeds, together with cash on hand, to repay our €300.0 million floating rate notes.

In February 2019, we repaid $1,150.0 million of 5.65 percent fixed-rate notes with proceeds from commercial paper.

In April 2018, we issued $4,800.0 million principal amount of fixed-rate notes. Interest on the notes is payable semi-annually in arrears. We may redeem the notes in whole, or in part, at any time at the applicable redemption price. The notes are senior unsecured obligations that include a change of control repurchase provision. The net proceeds were used to finance a portion of the Blue Buffalo acquisition. The principal amounts of these fixed-rate notes were as follows:

In Millions		May 26, 2019		May 27, 2018
4.2% notes due April 17, 2028	**$**	**1,400.0**	$	1,400.0
5.65% notes due February 15, 2019		**-**		1,150.0
3.15% notes due December 15, 2021		**1,000.0**		1,000.0
3.7% notes due October 17, 2023		**850.0**		850.0
Floating-rate notes due April 16, 2021		**850.0**		850.0
4.0% notes due April 17, 2025		**800.0**		800.0
3.2% notes due February 10, 2027		**750.0**		750.0
4.7% notes due April 17, 2048		**650.0**		650.0
3.2% notes due April 16, 2021		**600.0**		600.0
Euro-denominated 2.1% notes due November 16, 2020		**560.1**		582.6
Euro-denominated 1.0% notes due April 27, 2023		**560.1**		582.6
Euro-denominated floating-rate notes due January 15, 2020		**560.1**		582.6
4.55% notes due April 17, 2038		**500.0**		500.0
2.6% notes due October 12, 2022		**500.0**		500.0
5.4% notes due June 15, 2040		**500.0**		500.0
4.15% notes due February 15, 2043		**500.0**		500.0
3.65% notes due February 15, 2024		**500.0**		500.0
2.2% notes due October 21, 2019		**500.0**		500.0
Euro-denominated 1.5% notes due April 27, 2027		**448.1**		466.1
Floating-rate notes due October 17, 2023		**400.0**		400.0
Euro-denominated 0.0% notes due January 15, 2020		**336.1**		-
Euro-denominated floating-rate notes due March 20, 2019		**-**		349.6
Euro-denominated 2.2% notes due June 24, 2021		**224.0**		232.8
Medium-term notes, 2.36% to 6.59%, due fiscal 2022 or later		**104.2**		104.2
Other, including debt issuance costs and capital leases		**(71.4)**		(81.7)
		13,021.3		14,268.8
Less amount due within one year		**(1,396.5)**		(1,600.1)
al long-term debt	**$**	**11,624.8**	$	12,668.7

Principal payments due on long-term debt and capital leases in the next five years based on stated contractual maturities, our intent to redeem, or put rights of certain note holders are as follows:

In Millions		
2020	**$**	**1,396.5**
2021		**2,114.4**
2022		**1,224.1**
2023		**1,060.2**
2024		**1,750.0**

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

LONG-TERM DEBT – OTHER ITEMS TO WATCH FOR

After reading through a company's 10-K debt disclosures for customary items such as debt covenants, debt terms, and debt maturities we suggest reviewing it for the following items:

- Does the company account for its debt under fair value accounting? GAAP requires revaluation of the target company's debt to fair value at the acquisition date. As part of this process, a new effective interest rate on the debt is calculated on which interest expense is calculated. This creates a scenario where the cash interest expense on the debt may be materially different than the GAAP interest expense. Separately, companies have the option to account for their debt at fair value under GAAP with changes in fair value reported in earnings each period. We find this more common in financial institutions than in other industries.
- Does the debt contain a cross payment default provision? Under this provision, creditors of a material amount of debt may elect to declare that a default has occurred under their debt indenture and accelerate the principal amounts due (regardless if the original default resulted in acceleration).
- Does the debt contain a cross accelerated provision? This provision permits a bondholder to declare default on a second debt instrument only if a default on the first debt instrument occurs and the first debt instrument is, in fact, accelerated.
- Does the debt have a subjective acceleration clause? This debt term allows bondholders to accelerate the maturity of debt if certain events occur that are not objectively determinable (or defined).

FLOATING RATE DEBT?

In today's low short-term interest rate environment, many companies have swapped fixed rate debt into floating rate debt. When (if) interest rates increase, companies could be faced with higher borrowing costs. To assess the amount of debt swapped into floating rates, we suggest a review of the interest rate risk disclosure, which is found either in the MD&A section or in financial instruments/derivative footnote.

Companies are required to disclose the amounts of interest rate swap agreements designated as fair value hedges and the related swap maturity dates (an interest rate swap from fixed to floating is categorized as a "fair value" hedge under the accounting rules since it hedges the debt face amount outstanding). The exhibit below is an excerpt from Honeywell's 10-K indicating that the company has swapped $3.9 billion of 2.87% fixed rate debt to LIBOR based floating rate debt.

Honeywell: Long-Term Debt Excerpt

Interest Rate Risk Management—Financial instruments, including derivatives, expose the Company to market risk related to changes in interest rates. The Company uses a combination of financial instruments, including long-term, medium-term and short-term financing, variable-rate commercial paper, and interest rate swaps to manage the interest rate mix of our total debt portfolio and related overall cost of borrowing. At December 31, 2019 and 2018, interest rate swap agreements designated as fair value hedges effectively changed $3,950 million and $2,600 million of fixed rate debt at 2.87% and 2.93% to LIBOR based floating rate debt. Our interest rate swaps mature at various dates through 2029.

Note: Per 2019 10-K. Emphasis added.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

CONVERTIBLE DEBT

Convertible bond accounting has become complicated in recent years due to increasingly complex instruments and a desire to massage the terms of the instruments to achieve a favorable accounting result (i.e., avoid including shares in EPS calculations). Two economically similar instruments may be accounted for in different ways across companies depending on how the convertible debt is settled upon conversion. Convertible bonds are now accounted for in one of two ways depending on their terms, specifically how the convertible bond is settled upon conversion. (Note: As of early 2020, the FASB appears close to finalizing rules that will change some of the convertible bond accounting discussed below. Please see discussion later in this section for more detail).

1. **Plain vanilla straight convertible bonds.** Bonds that are solely convertible into stock or may be converted into stock and/or cash at the company's option are accounted for under the "if converted" method for diluted EPS calculations. We discuss the EPS treatment for convertible bonds later in this section. For balance sheet purposes, the convertible debt is recorded on the balance sheet at its issuance price (generally par) and interest expense is recorded in earnings at the convertible bond's coupon rate. This was fairly simple accounting until a new innovation appeared in the convertible bond market in 2005.
2. **Cash settled (net-share settled) principal convertible bonds.** In 2005, a new innovation appeared in the convertible bond market as companies began issuing cash-settled principal convertible bonds (also referred to as treasury stock bonds or net share settled bonds). Cash settled principal convertible bonds' indenture require that, upon conversion or at maturity, the bond's principal amount must be settled in cash and the excess amount of the conversion value (stock price x # shares convertible into) over the bond's principal amount *may* be settled in either stock or cash at the company's option. One of the reasons for their increased usage was the favorable accounting EPS benefits afforded to them as the more favorable "treasury stock method" is used to calculated diluted EPS rather than the "if-converted" method.

Over concerns that companies were issuing these instruments at low interest rates due to the conversion feature and including no shares in diluted EPS until the bond was converted, FASB changed the accounting rules for cash settled principal convertible bonds at the beginning of 2009. The rules did not change for convertible bonds that are solely convertible into stock. New FSP APB 14-1 changed the accounting treatment for cash-settled principal convertible debt by requiring "bifurcation accounting". The new rules require GAAP interest expense to be calculated based on a company's non-convertible debt interest rate (straight rate). The old GAAP and plain vanilla convertible bond accounting records interest expense at the cash (effective) interest rate. The rules did not change the diluted share count treatment for convertible bonds or change the accounting for convertible preferred stock. Also, the change more closely aligns with International Financial Reporting Standards ("IFRS"), which already require convertible debt to be bifurcated and accounted for as debt and equity on the balance sheet.

The mechanics of "bifurcation" accounting for cash-settled principal convertible bonds are as follows:

1. A convertible bond's value is calculated excluding its equity conversion feature (considering all other embedded features, such as other calls and puts by the company). Simplistically, the value of debt is calculated based on the company's non-convertible debt borrowing rate on the date upon which the convertible bond is issued. Since a company's straight debt rate is invariably higher, the net present value of the bond's cash flows and other conversion features results in a value lower than the convertible bond's principal amount. This amount is recorded as discounted debt on the company's balance sheet.

2. In the next step, the company must calculate its prospective interest expense, which will include both non-cash accretion and cash interest. The debt discount amount is accreted up to the bond's par amount over the expected life of the bond as additional non-cash interest expense. Interest expense is calculated using the effective yield method. (Multiply the beginning of the period debt balance by the bond's effective yield that was calculated on the issuance date. The non-cash accretion increases the debt amount. In the next period, this higher debt amount is multiplied by the same effective interest rate and so forth.). By using the effective yield method, interest expense is recorded in earnings at the company's straight date rate. In the event that the bond is redeemed early, the un-accreted bond discount is accounted for as a loss on debt extinguishment.
3. The equity conversion option is calculated as the difference between the bond's issuance price (e.g., par) and the calculated straight debt value (step 1 value). This equity amount is recorded in APIC in shareholder's equity and is not changed until the bond matures or is redeemed.

The next exhibit illustrates and compares the plain vanilla convertible bond and cash settled principal convertible bond accounting. Assume a company issues a $1,000 convertible bond for cash and the equity conversion option is $226 (pre-tax). Under cash settled principal bond accounting, on the balance sheet, there is a $136 ($226 x (1 – 40% tax rate)) increase in shareholder's equity, $226 lower total debt and a $90 deferred tax liability. On the income statement, the company reports $27 higher interest expense. Cash flow from operations is the same under both methods of accounting since the non-cash portion of interest expense is added back to operating cash flow.

Example: Issuing $1,000 in Convertible Debt for Cash

Balance Sheet: Convertible Bond Issuance Date

Plain Vanilla			Cash Settled		
Debit: Cash	1,000		Debit: Cash	1,000	
Credit: Convertible debt		1,000	Credit: Convertible debt		774
			Credit: Deferred tax liability[1]		90
			Credit: Equity conversion feature (net of taxes)[2]		136

Income Statement: Year 1

Plain Vanilla		Cash Settled	
Operating income (assumption)	150	Operating income (assumption)	150
Interest expense	20	Interest expense	47
Taxes	52	Taxes	41
Net income	**78**	**Net income**	**62**

Statement of Cash Flows - Cash from Operations: Year 1

Plain Vanilla		Cash Settled	
Net income	78	Net income	62
Interest expense	0	Interest expense	27
Deferred taxes	0	Deferred taxes	(11)
Cash from operations	**78**	**Cash from operations**	**78**

(1) The tax effected amount of $226 allocated to equity at 40%.; (2) $226 allocated to equity less deferred taxes of $90.
Note: Assumed the deduction of interest expense on the tax return at the cash coupon rate.

Source: Wolfe Research Accounting & Tax Policy Research.

GAAP INTEREST EXPENSE OVERSTATES ECONOMIC INTEREST EXPENSE

Since the convertible's principal must be settled in cash, it is debt! As such, accountants maintain that the income statement should reflect interest expense at the company's normal borrowing rate and not the cash coupon rate. Therefore, this creates a material difference between the interest expense reported in earnings and the actual cash interest expense. The non-cash difference reported in earnings is added back to operating cash flow. There's an argument to be made to add back the non-cash interest to EPS, particularly if an investor believes the company will be able to continue to borrow in the future at the existing lower cash coupon rate.

Below, using Tesla, we illustrate a typical convertible bond disclosure for cash settled principal bonds. Both the coupon and effective interest rate are disclosed, the latter of which is used to calculate interest expense in earnings (i.e., the straight debt rate). Recall that the effective interest rate is based on the date on which the bond is issued and does not change each period. In respect of the $660 million 2018 Convertible Senior Notes, Tesla is paying a 1.5% cash coupon rate and reporting interest expense on the income statement at a 4.29% interest rate.

Tesla: Convertible Debt Excerpt

2018 Notes, Bond Hedges and Warrant Transactions

In May 2013, we issued $660.0 million in aggregate principal amount of 1.50% Convertible Senior Notes due in June 2018 in a public offering. The net proceeds from the issuance, after deducting transaction costs, were $648.0 million.

Each $1,000 of principal of the 2018 Notes is initially convertible into 8.0306 shares of our common stock, which is equivalent to an initial conversion price of $124.52 per share, subject to adjustment upon the occurrence of specified events. Holders of the 2018 Notes may convert, at their option, on or after March 1, 2018. Further, holders of the 2018 Notes may convert, at their option, prior to March 1, 2018 only under the following circumstances: (1) during any quarter beginning after September 30, 2013, if the closing price of our common stock for at least 20 trading days (whether or not consecutive) during the last 30 consecutive trading days immediately preceding the quarter is greater than or equal to 130% of the conversion price; (2) during the five-business day period following any five-consecutive trading day period in which the trading price of the 2018 Notes is less than 98% of the product of the closing price of our common stock for each day during such five-consecutive trading day period or (3) if we make specified distributions to holders of our common stock or if specified corporate transactions occur. Upon conversion, we would pay cash for the principal amount and, if applicable, deliver shares of our common stock (subject to our right to deliver cash in lieu of all or a portion of such shares of our common stock) based on a daily conversion value. If a fundamental change occurs prior to the maturity date, holders of the 2018 Notes may require us to repurchase all or a portion of their 2018 Notes for cash at a repurchase price equal to 100% of the principal amount plus any accrued and unpaid interest. In addition, if specific corporate events occur prior to the maturity date, we would increase the conversion rate for a holder who elects to convert its 2018 Notes in connection with such an event in certain circumstances.

In accordance with GAAP relating to embedded conversion features, we initially valued and bifurcated the conversion feature associated with the 2018 Notes. We recorded to stockholders' equity $82.8 million for the conversion feature. The resulting debt discount is being amortized to interest expense at an effective interest rate of 4.29%.

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

CONVERTIBLE DEBT AMOUNT ON BALANCE SHEET OFTEN NOT THE TRUE LIABILITY

One important valuation issue with the accounting for cash settled principal convertible bonds is that the liability reported on the balance sheet (for convertible debt) is not the true liability due at redemption. The exhibit below is WWE's convertible debt footnote wherein they disclose the outstanding principal, equity component, and net debt carrying amounts. The balance sheet amount for their convertible debt was $188 million at 12/31/2019 compared to $215 million of principal amount outstanding and the conversion feature of ~$36 million was recorded in equity. For valuation and financial analysis, we believe the outstanding principal amount should be used as debt rather than the balance sheet value.

WWE: Long-Term Debt Excerpt (continued)

The Convertible Notes consisted of the following components:

	As of December 31, 2019	As of December 31, 2018
Debt component:		
Principal	$ 215,000	$ 215,000
Less: Unamortized debt discount	(22,738)	(27,629)
Less: Unamortized debt issuance costs	(3,595)	(4,281)
Net carrying amount	$ 188,667	$ 183,090
Equity component (1)	$ 35,547	$ 35,547

(1)Recorded in the Consolidated Balance Sheets within additional paid-in capital.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

NEW CONVERTIBLE DEBT ACCOUNTING POSSIBLY ON THE WAY

As of early 2020, the FASB is in final deliberation stages for new rules that will impact convertible debt accounting. While final rules are still to be determined, the proposal would effectively end the bifurcation of many cash-settled convertible bonds. The principal value of the bond would remain on balance sheet as a liability (no requirement to break out an "equity" component", while reported interest expense would be much closer to the coupon rate). Additionally, the market value of the entire convertible would be required to be disclosed.

Below we discuss the EPS accounting treatment for convertible bonds. The EPS accounting is predicated on how the convertible bond's principal amount is required to be settled and, accordingly, is calculated under one of two methods:

1. **If-Converted Method:** Used when the convertible bond's principal amount is *not required* to be settled in cash.

   Mechanics:

   Under the if-converted method, the bond is assumed to have been converted at the beginning of the quarter, year, or, if later, the issuance date. Since it is assumed to be converted into shares, there is both a numerator and denominator adjustment in the diluted EPS calculation (note that this diluted EPS calculation is disclosed in the financial statement footnotes). First, the total number of shares underlying the convertible bond is added to the diluted share count. Second, there is also an adjustment to net income since if the bond converted, the company would not be paying interest expense. Accordingly, net income is adjusted higher by the after-tax interest expense on the convertible bond. In some extreme scenarios, doing the aforementioned adjustment actually increases EPS and the convertible bond is not dilutive if converted. If this occurs, GAAP requires the company to exclude the shares and not make the related after-tax interest expense adjustment.

   One common belief is that a convertible bond needs to be in the money to be included in the diluted share count. This is simply not true as the calculation is mechanical. If the above calculation results in a dilutive EPS effect, the adjustments are made.

2. **Treasury stock method:** This method is used when the convertible bond's principal amount is cash-settled (note that the terms may be such that amounts above the bond's principal amount may be settled in cash or shares at the company's option).

   Mechanics:

   Under the treasury stock method, there is only EPS dilution from the convertible bond when its in-the-money since the principal amount must be cash-settled. The number of shares included in the company's share count is the number of shares of stock required to settle the in-the-money amount of the convertible bond's conversion spread (convertible bond – par value). There are no shares included in the share count if the bond is not in the money.

To illustrate this method, assume a share price of $10 and that a $1,000 convertible bond is convertible into 200 shares of stock. The current conversion value of the bond is equal to the $10 current share price multiplied by 200 shares or $2,000.

Under the treasury stock method, diluted EPS is calculated as follows:

Conversion value amount:	$2,000 ($10 x 200 shares)
Less: bond's par value:	1,000 (assumed)
Excess	1,000
Divided by average share price	$10 (assumed)
Equals:	100 shares included in diluted EPS share count

Accounting for convertible debt is far from perfect and, therefore, analysts should consider several adjustments for financial analysis and valuation. For a plain vanilla convertible bond, if the current stock price or the analyst's target share price is greater than the convertible bond's exercise (strike) price, we believe the underlying shares into which the bond may be converted should be included in the diluted share count. Conversely, if the convertible bond is currently out-of-the-money and the analyst believes that it is unlikely to become in-the-money (a true busted convertible), we suggest that the convertible bond be treated similar to straight debt and, accordingly, do *not* include any shares (underlying the convertible) in the diluted share count. If a bond is out of the money and is never likely to be in the money again, we believe that current GAAP does not reflect the real economics of the transaction. This is a situation where the if-converted method of accounting is overly conservative and arrives at the wrong economic answer.

Below, we use Old Republic's diluted share count calculation as an example. ORI has a convertible bond outstanding accounted for under the "if converted" method. From reading this disclosure, we find the company is including 5.4 million shares in diluted EPS calculations. (Note: in today's low interest rate environment, the if-converted method will almost always result in the inclusion of shares in diluted EPS calculations beginning at the date of issuance.) Since the overwhelming majority of convertible bonds are ultimately redeemed for cash, we suggest removing the shares from diluted EPS and treating the instrument as debt unless one believes the bond will be converted into stock.

Old Republic Diluted Share Count Disclosure ($ in million except per share)

Years Ended December 31:	2018	2017	2016
Numerator:			
Net income (loss)	$ 370.5	$ 560.5	$ 466.9
Numerator for basic earnings per share - income (loss) available to common stockholders	370.5	560.5	466.9
Adjustment for interest expense incurred on assumed conversion of convertible notes	3.1	14.0	14.6
Numerator for diluted earnings per share - income (loss) available to common stockholders after assumed conversion of convertible notes	$ 373.6	$ 574.5	$ 481.5
Denominator:			
Denominator for basic earnings per share - weighted-average shares (a)	294,248,871	262,114,533	259,429,298
Effect of dilutive securities - stock based compensation awards	1,398,329	1,589,286	1,260,094
Effect of dilutive securities - convertible notes	5,368,876	35,683,554	35,689,859
Denominator for diluted earnings per share - adjusted weighted-average shares and assumed conversion of convertible notes (a)	301,016,076	299,387,373	296,379,251
Earnings per share: Basic	$ 1.26	$ 2.14	$ 1.80
Diluted	$ 1.24	$ 1.92	$ 1.62

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

For cash-settled principal convertible bonds, we advise classifying the principal amount as debt and the amount in excess of the principal, if any, as equity. If the bond is out-of-the-money and the analyst does not expect the bond to increase in price to be in-the-money, we suggest treating the convertible debt's par amount as debt. This reflects the company's obligation to pay the debt off at par value or, if it's higher, we use the put value (e.g., bonds may be puttable at 102%, etc.).

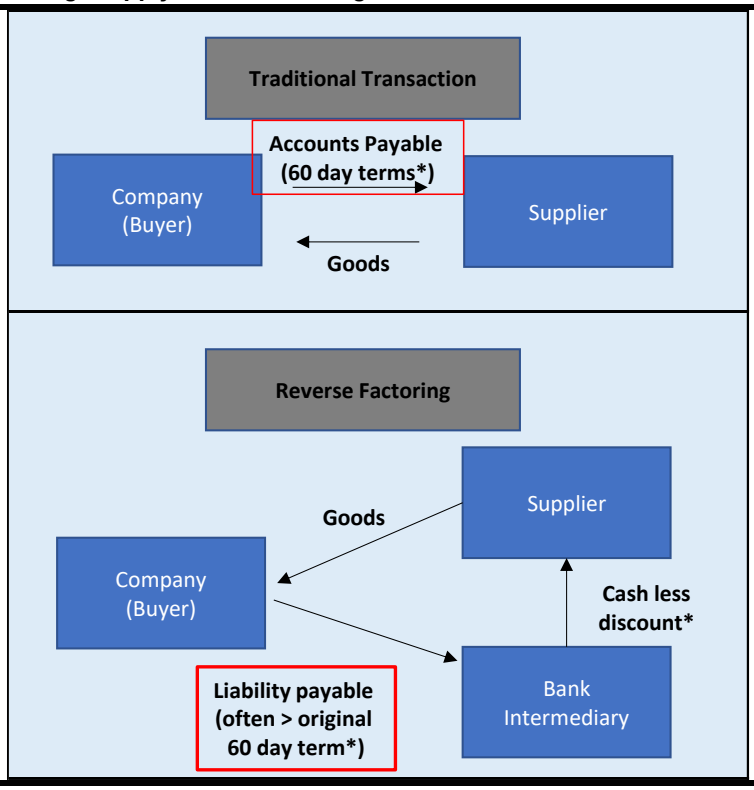
Investors should read 10-K footnotes to see if a company is engaging in reverse factoring (RF), which has the effect of boosting operating cash flow. It's the inverse to traditional factoring transactions. Under the latter, a company sells its receivables to a third-party entity, accelerating the cash it receives from customers on otherwise normal terms. Under RF, it's the company, as the customer / buyer of a product, that effectively transfers its accounts payable owed to its supplier to a bank / financial intermediary. That is, the vendor is selling its receivable to the bank, collecting cash, but the company continues to have a payment outstanding. There may be economic benefits to these transactions – the supplier will accelerate its cash receipts, the company oftentimes will receive extended payment terms (presuming positive credit standing), and the bank will receive a discount on cash paid to the supplier, thereby taking on any credit risk from the company. However, as discussed shortly, the current accounting and disclosure for these transactions is full of shortcomings.

As illustrated below, in a traditional transaction, a company purchases from a vendor and accounts payable (A/P) arrangement exists. The A/P terms are driven by buyer-supplier relationship (as an example, 30 or 60 days), and may provide some slight discount for quicker payment (e.g., within 10 days). However, in some cases, the supplier may prefer quicker payment while the company prefers extended payment terms.

In a reverse factoring transaction, both may be possible with a bank intermediary. In such arrangement, the bank pays the supplier immediately (or within 10 days to receive the early pay discount). In turn, the company then owes the bank the original accounts payable amount. Terms of the payment from the company to the bank are typically beyond the initial accounts payable term (e.g., 180 days or even 364 days) and longer than the supplier would have otherwise accepted. In effect, the company has taken out short term debt with the financial intermediary, while the A/P balance will grow to potentially a multiple of the normalized amount. For example, a normal 60 day payment window for purchases of $100, could turn into an outstanding balance of $300 at triple the payment cycle of 180 days (or $200 of "excess" cash flow that is really financed).

Accounts Payable Reverse Factoring: Supply Chain Financing Illustration

Extended payment terms under reverse factoring may mask short-term leverage under the guise of improved working capital….
In effect, a $100 A/P balance in a "normal" 60-day payment cycle will become $300 under 180-day reverse factoring terms.



Source: Wolfe Research Accounting & Tax Policy Research. *Illustrative example purposes only. Exact structure transaction specific.

Reverse factoring may afford the following benefits to the company and supplier:

Company:

1) Increases cash flow if extended payment terms are provided by the bank
2) Exerts more control on supply chain
3) Easier administration as pay one party (bank)
4) No financial statement disclosure
5) Liability to bank remains accounts payable on balance sheet

Supplier:

1) Increases liquidity as payments received sooner than normal payment terms
2) Potentially more cost effective than borrowing against accounts receivables
3) Lowers credit risk on receivables

Since terms usually have early pay discounts (e.g., within 10 days), the company benefits by paying the supplier earlier. And the effective interest cost of the discount to the supplier may be less than the interest cost if they borrowed against the A/R as the discount is driven by the credit quality of the company, not the supplier. It follows that reverse factoring makes the most economic sense when the company is very credit worthy (A-rated and above) relative to the supplier, and it's arbitraging this interest rate (and today's low rate environment makes this possible). From the bank's perspective, if the terms are 364 days or less, the risk weighted assets to the bank are low, too.

Other structures vary, too. If a reverse factoring structure is set up by the company, the supplier may accept long original payment terms (180+ days) as they have the ability to monetize them earlier. At their most aggressive iterations, Moody's has noted that some companies/buyers actually require suppliers to participate in them as part of the purchasing relationship.

LIQUIDITY RISK

Next, we explain the liquidity risk inherent in reverse factoring type of transactions. RF arrangements are, in effect, financing transactions and the cash flow generated to the supplier cuts both ways. If the reverse factoring facility was curtailed, it could result in an immediate cash outflow to close out and unwind the facility since, after all, it's a financing arrangement with the bank. This would most likely occur in situations in which there's significant stress in the company's business. The bank may no longer pay suppliers on behalf of the buyer due to increased credit risk, at which point suppliers could demand more normal payment terms (60 days) or even shorter than usually terms (e.g., 10 days). This could create a liquidity crunch at the worst possible time. It follows that we see added liquidity risk when a company using a reverse factoring arrangement is lower credit rated as cash may be tight, access to financial markets more limited and back up credit facilities less likely.

To illustrate using our prior example, if the extended credit amount with the bank was $300, this would be the amount owed to fully unwind the facility. Likely at a time of when the company is otherwise under stress, it would be responsible for paying this to the bank, then relying on trade terms with vendors to hopefully bringing the payable balance to a more normalized $100. However, going forward, the suppliers may not be wiling or able to provide these typical trade terms, as they have been used to getting the quicker 10-day payments from the bank, along with heightened scrutiny of the company's liquidity given the reasons that contributed to the end of the RF agreement.

The key accounting question for reverse factoring transactions: should the transfer of liability to a bank with different payment terms be considered debt and an operating cash outflow?

While the economics of reverse factoring may be beneficial to all parties involved, disclosure in financial statements is mostly non-existent and the accounting is suboptimal. Shockingly, despite scenarios that could, at worst, create a liquidity crisis, there are no clear accounting rules for reverse factoring and the accounting treatment is divergent across companies.

From what we understand and have found in our own research, most companies treat RF situations as 'non-events' from the perspective of the financial statements. That is, amounts owed will continue to be classified as accounts payable (some companies may disclose as an "other operating accrued liability"). If extended payment terms are available (e.g. 120 days), then operating cash flow will improve as the payable grows. This is despite the existence of a new intermediary, the financial institution, which facilitates the payment of cash to the supplier and, in turn, to which the company then pays. Since most companies' interpretation of the accounting rules is that these are not financing arrangements, operating cash flow is improved from extending payables.

In substance, we believe RF are financing transactions and, as such, should generally be classified as an operating cash outflow (payment of A/P), and a financing cash inflow (short-term debt borrowing). Our view is that an account payable due to a supplier that can be negotiated has a different liquidity profile compared to a liability due to a bank on a certain date. This is especially true under transactions where the company actually ends up with payment terms to the bank longer than would otherwise be due to the supplier. Below, we compare how a reverse factoring transaction is economically equivalent to taking out a bank loan to pay suppliers; however, the accounting applied is very different as the reverse factoring does not typically result in debt or financing cash flows.

Reverse Factoring vs. Traditional Transaction Accounting Treatments

Two economically equivalent transactions from the company perspective receive vastly different accounting treatments

	Traditional Transaction Financed by Credit Facility	Reverse Factoring
Balance Sheet	Accounts payable decrease & Short-term debt increase	Either remain as accounts payable or reclassified to accrued / other current liabilities No debt recorded
Cash Flow Statement	Operating cash outflow & Financing cash inflow	No impact on initiation Operating cash inflow when payment terms extended

Source: Wolfe Research Accounting & Tax Policy Research. Exact structure transaction specific.

Below are excerpts from company filings we found discussing or alluding to reverse factoring programs. It's unclear across these companies on the actual transaction structures, and whether the amounts are classified in accounts payable, other liabilities somewhere else on the balance sheet, or operating vs. financing cash flow.

Reverse Factoring Disclosures

Masco (MAS)

As part of our ongoing efforts to improve our cash flow and related liquidity, we work with suppliers to optimize our terms and conditions, including extending payment terms. We also facilitate a voluntary supply chain finance program (the "program") to provide certain of our suppliers with the opportunity to sell receivables due from us to participating financial institutions at the sole discretion of both the suppliers and the financial institutions. A third party administers the program; our responsibility is limited to making payment on the terms originally negotiated with our supplier, regardless of whether the supplier sells its receivable to a financial institution. We do not enter into agreements with any of the participating financial institutions in connection with the program. The range of payment terms we negotiate with our suppliers is consistent, irrespective of whether a supplier participates in the program.

All outstanding payments owed under the program are recorded within accounts payable in our consolidated balance sheets. The amounts owed to participating financial institutions under the program and included in accounts payable for our continuing operations were $29 million and $35 million at December 31, 2019 and 2018, respectively. We account for all payments made under the program as a reduction to our cash flows from operations and reported within our (decrease) increase in accounts payable and accrued liabilities, net, line within our consolidated statements of cash flows. The amounts settled through the program and paid to participating financial institutions were $164 million, $117 million, and $186 million for our continuing operations during the years ended December 31, 2019, 2018, and 2017, respectively. A downgrade in our credit rating or changes in the financial markets could limit the financial institutions' willingness to commit funds to, and participate in, the program. We do not believe such risk would have a material impact on our working capital or cash flows, as substantially all of our payments are made outside of the program.

Keurig Dr Pepper (KDP)

Structured Payables

The Company entered into an agreement with a supply chain payment processing intermediary, for the intermediary to act as a virtual credit card sponsor, whereby the card sponsor will pay amounts on behalf of the Company and sell the amounts due from the Company to a participating financial institution. The card sponsor will then bill the Company the original payment amount, plus interest for a term not to exceed one year. The agreement permits the Company to utilize the third party and participating financial institutions to make a broad range of payments, including commercial payables to suppliers, business acquisitions, purchases of property, plant and equipment, and employee-related payments. Structured payables have equal priority with accounts payable and are treated as non-recourse obligations. The Company records interest for the period the structured payables obligation is outstanding and reflects the proceeds and payments related to these transactions as a financing activity on the Consolidated Statements of Cash Flows.

Graphic Packaging (GPK)

GRAPHIC PACKAGING HOLDING COMPANY
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Other Accrued Liabilities:

In millions	2018	2017
Dividends Payable	$ 22.5	$ 23.3
Deferred Revenue	14.0	11.6
Accrued Customer Rebates	30.2	15.5
Fair Value of Derivatives, current portion	1.3	1.2
Other Accrued Taxes	44.4	29.8
Accrued Payables	30.3	25.7
Liabilities Payable to a Financial Institution	62.6	—
Other	35.4	38.2
Total	$ 240.7	$ 145.3

Source: Company filings; Wolfe Research.

There are situations in which a company purchases capital expenditures but has not yet paid for them in cash. The balance sheet impact is to increase property, plant, and equipment and increase an accrued liability. Since no cash has been expended for the property, there is not a cash outflow shown as capex on the cash flow statement. Rather, the company records capex on the cash flow statement (an investing cash outflow) when the amounts are actually paid in cash in a later period.

This timing difference may under/over state capital expenditures in a particular period and would be one method for a company to temporarily reduce capital expenditures on the cash flow statement. Supplemental disclosure of accrued purchases of property, plant, and equipment is a required GAAP disclosure and either shown at the bottom of the cash flow statement (under "non-cash investing and financing activities") or in the financial statement footnotes. In the next exhibit, we provide an illustration of a footnote with this information from Hexcel's (HXL) 10-K filing. Over the last several years, accrual basis additions to PP&E have been approximately the same level as capex, implying that actual capex should be roughly double the size as reported on the cash flow statement.

Hexcel: Cash Flow Statement Excerpt

(In millions)	2019	2018	2017
Cash flows from operating activities			
Net cash provided by operating activities	**491.1**	421.4	428.7
Cash flows from investing activities			
Capital expenditures	**(204.1)**	(184.1)	(278.1)
Acquisitions and Investments in affiliated companies	**(163.2)**	(3.4)	(76.0)
Net cash used for investing activities	**(367.3)**	(187.5)	(354.1)
Cash flows from financing activities			
Net cash used for financing activities	**(91.4)**	(257.3)	(58.3)
Supplemental data:			
Accrual basis additions to property, plant and equipment	**$ 191.0**	$ 179.1	$ 284.4

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

OTHER ASSETS AND LIABILITIES

SEC rules require additional disclosure of certain balance sheet accounts if materiality thresholds are met. We suggest reviewing these disclosures for large or unusual increases and/or decreases. In particular, a careful review of the other current or non-current assets is warranted as a company might capitalize costs into a non-current asset account rather than expensing such amounts. Annual disclosure of the following is required:

- Any other current assets greater than 5% of total current assets;
- Any other non-current assets greater than 5% of total assets;
- Deferred costs greater than 5% of total assets;
- Any other current liabilities greater than 5% of total current liabilities; and
- Any other non-current liabilities greater than 5% of total liabilities.

In order to avoid what it deemed unnecessary earnings volatility, the FASB decided to exclude certain items from current period earnings. To that end, accumulated other comprehensive income ("AOCI") was created to "hold" certain gains or losses within shareholder's equity. AOCI has no other conceptual basis or theoretical justification except to smooth earnings.

Analysts should review AOCI activity in the current period for large and unusual changes. Given the nature of the items accounted for in AOCI, we expect to see volatile year-over-year changes. The four items included in AOCI include (1) pensions, (2) unrealized gains/losses on marketable securities, (3) unrecognized gains/losses on cash flow hedges, and (4) foreign currency translation effects. Below we discuss each of these AOCI items and how it relates to General Dynamics' 2019 Form 10-K disclosure (on the following page)

1. Pensions and OPEB: Under ASC 715, *Compensation - Retirement Benefits* (formerly FAS No. 158), companies must record the economic funded status of pension and other post-retirement plans ("OPEB") as either an asset (if overfunded) or liability (if underfunded). Since GAAP allows (and most companies choose to) defer actuarial gains/losses and smooth investment gains/losses on pension plans, the change in a company's unfunded pension amount is recorded as a decrease/increase to AOCI. Most pension plans are underfunded due to a decline in discount rates the last several years. Companies with defined benefit plans usually have large unrecognized balances in AOCI (the balance sheet impact is to reduce equity, net of a deferred tax asset, while increasing the pension liability). Since pension plans are generally only marked-to-market annually, this section of AOCI shouldn't change quarterly.

   The pension impact in 2019 on AOCI was a $700 million loss as shown in GD's disclosure. The cumulative unrecognized pension amount in the company's AOCI balance at 2019 year-end was (-$4,509) million.

2. Unrealized gains/losses on available-for-sale marketable securities: Under *ASC 320, Investments – Debt and Equity Securities* (formerly FAS No. 115) unrealized gains/losses on a company's marketable security portfolio are recorded in AOCI. If management decides to sell all or a portion of its marketable securities, the unrealized gain/loss is removed from this account and recognized as income/expense in earnings. GD no longer has any unrealized gains/losses on AFS securities after 2017.

3. Unrecognized gains/losses from cash flow hedges of forecasted transactions: Under ASC 815, *Derivatives and Hedging* (formerly FAS No. 133), all derivatives are recorded at fair market value on the balance sheet. The two typical types of derivative transactions temporarily recorded in AOCI include (1) unrealized gains/losses on cash flow hedges of forecasted transactions and (2) hedging cash flows of a recorded balance sheet asset or liability (e.g., derivative to hedge floating rate debt that is swapped into a fixed rate). Gains or losses on these hedging transactions are temporarily held in AOCI until the hedged transaction is recorded into earnings. Hedge ineffectiveness is recognized immediately in earnings.

   This portion of AOCI should be reviewed for any large unrealized or unsettled derivative losses or for large year-over-year changes, suggesting new hedging policies and/or risk management practices. But be aware that companies may close out hedges at quarter-end or year-end to minimize the amount of unrealized gains or losses at period-end.

   GD's 2019 Form 10-K AOCI disclosure reveals that the company had a $2 million gain on its derivatives and hedging at year-end (due to a net $73 million gain in 2019).

4. Impact of foreign currency translation of foreign subsidiaries balance sheet under the current rate method of foreign currency accounting ("currency translation adjustment"): Under ASC 830, *Foreign Currency Matters* (formerly FAS No. 52), companies translate their balance sheet under the (1) current rate method (majority of companies use) or (2) temporal method.

   The current rate method translates all foreign subsidiary balance sheet assets and liabilities at the end of period exchange rate. The cumulative impact of translating foreign subsidiaries' balance sheets from a foreign currency into U.S. dollars under the current rate method is recorded directly into AOCI. Under the temporal method, the impact of translating foreign balance sheets is recorded in earnings.

   In a period of substantial exchange rate volatility, this account may experience a material year-over-year change. The amount of the gain/loss from currency translation depends on the company's net exposure (i.e., equity balances) and the change in exchange rates. The translation gain/loss is calculated as the foreign subsidiary's equity balance multiplied by the change in exchange rate, and the current year change represents the net gain or loss.

   As shown in GD's AOCI disclosure, the impact of translating foreign subsidiaries in 2019 was approximately a $186 million gain, resulting in a cumulative unrecognized translation gain at year-end of $288 million.

General Dynamics: AOCI Disclosure ($ in millions)

	Losses on Cash Flow Hedges	Unrealized Gains on Marketable Securities	Foreign Currency Translation Adjustments	Changes in Retirement Plans' Funded Status	AOCL
December 31, 2016	$ (345)	$ 14	$ 69	$ (3,125)	$ (3,387)
Other comprehensive income, pretax	341	9	348	20	718
Provision for income tax, net	(90)	(4)	(15)	(42)	(151)
Other comprehensive income, net of tax	251	5	333	(22)	567
December 31, 2017	(94)	19	402	(3,147)	(2,820)
Cumulative-effect adjustments*	(4)	(19)	—	(615)	(638)
Other comprehensive loss, pretax	36	—	(300)	(61)	(325)
Benefit from income tax, net	(9)	—	—	14	5
Other comprehensive loss, net of tax	27	—	(300)	(47)	(320)
December 31, 2018	(71)	—	102	(3,809)	(3,778)
Other comprehensive loss, pretax	97	—	186	(886)	(603)
Benefit from income tax, net	(24)	—	—	186	162
Other comprehensive loss, net of tax	73	—	186	(700)	(441)
December 31, 2019	$ 2	$ —	$ 288	$ (4,509)	$ (4,219)

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

FAIR VALUE MEASUREMENTS

ASC 820, *Fair Value Measurements and* Disclosures (formerly FAS No. 157), provides a framework to record the fair market values of financial assets and liabilities. This is the "mark-to-market" standard of accounting that created significant controversy over the years.

Central to this framework is the fair value hierarchy, commonly referred to as the Level 1, 2, and 3 assets and liabilities. The type of inputs used to determine the fair values of a company's financial instrument determine which level the asset (or liability) is disclosed within. According to ASC 820, below is the basis for fair value hierarchy classification:

- **Level 1:** Inputs based on "quoted prices in active markets for identical assets or liabilities" are Level 1 assets. The most common example would be determining a fair value based on an exchange traded stock price.
- **Level 2**: Observable inputs other than quoted prices for identical instruments are Level 2 assets. Observable inputs include items such as quoted prices for similar assets or pricing formulas based on commonly quoted inputs (e.g. interest rates).
- **Level 3**: Unobservable factors in the market are Level 3 assets, the most subjective of the three categories. Fair values of these assets consist primarily of management assumptions and can take the form of DCF models or comparable company analyses (i.e., mark to model).

Companies must provide a disclosure that shows the amount of their assets and liabilities within each of these levels. In the following exhibit, we present Travelers Companies' disclosure of its Level 1, 2, and 3 assets. At December 31, 2018, $222 million of the company's assets held at fair value (<1% of total) were valued based on Level 3 inputs.

Travelers Companies: Fair Value Measurement Disclosure

(at December 31, 2018, in millions)	Total	Level 1	Level 2	Level 3
Invested assets:				
Fixed maturities				
U.S. Treasury securities and obligations of U.S. government and government agencies and authorities	**$ 2,064**	**$2,064**	**$ —**	**$ —**
Obligations of states, municipalities and political subdivisions	**28,611**	**—**	**28,599**	**12**
Debt securities issued by foreign governments	**1,257**	**—**	**1,257**	**—**
Mortgage-backed securities, collateralized mortgage obligations and pass-through securities	**2,573**	**—**	**2,554**	**19**
All other corporate bonds	**28,880**	**—**	**28,725**	**155**
Redeemable preferred stock	**79**	**3**	**76**	**—**
Total fixed maturities	**63,464**	**2,067**	**61,211**	**186**
Equity securities				
Public common stock	**316**	**316**	**—**	**—**
Non-redeemable preferred stock	**52**	**30**	**22**	**—**
Total equity securities	**368**	**346**	**22**	**—**
Other investments	**52**	**16**	**—**	**36**
Total	**$63,884**	**$2,429**	**$61,233**	**$ 222**

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Companies are required to disclose a summary of Level 3 asset changes over the year. This disclosure is interesting and important to analyze because the determination of fair value is dynamic, and the inputs used to determine the fair value may have changed year-over-year. Since Level 3 asset fair values are the most open to management subjectivity, investors should watch out for large transfers from Level 1 or 2 into Level 3. It is also important to inquire about any large increases into the Level 2 category as there is relatively more subjectivity in valuing these types of assets than Level 1 assets.

Analysts should inquire with management about the type of valuation techniques and methods used to determine their assets' fair values. The next step would be determining the viability and applicability of management's valuation assumptions.

It's important to note that a classification as a Level 3 (or 2) asset doesn't necessarily suggest that the asset is more or less risky than another. The key difference is the type of inputs used to calculate the fair value. The following exhibit is Travelers Companies disclosure of Level 3 assets and activities.

Travelers Companies: Level 3 Fair Value Measurement Disclosure

(in millions)	Fixed Maturities	Other Investments	Total
Balance at December 31, 2017	$ 204	$ 38	$ 242
Total realized and unrealized investment gains (losses):			
Reported in net realized investment gains [1]	2	7	9
Reported in increases in other comprehensive income (loss)	(4)	—	(4)
Purchases, sales and settlements/maturities:			
Purchases	146	3	149
Sales	(11)	(12)	(23)
Settlements/maturities	(71)	—	(71)
Gross transfers into Level 3	11	—	11
Gross transfers out of Level 3	(91)	—	(91)
Balance at December 31, 2018	$ 186	$ 36	$ 222

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Income Statement

Improper revenue recognition has historically been the largest reason for financial restatements. Revenue recognition disclosures in the 10-K provide information about potential aggressive accounting policies. Analytically, these risks are important to assess whether revenues are overstated and / or potentially non- recurring in nature as follows:

1) Timing: Recognizing revenue earlier / later. Timing can work both ways as some companies may be incentivized to pull forward revenue from future periods to show growth, while others may prefer to smooth revenue over future periods.
2) Amount: Whether the proper amount of revenue has been recognized will depend on items, such as credit quality of the customer, whether the sale was made at arm's length distance, etc.

NEW REVENUE RECOGNITION RULES WERE REQUIRED IN 2018

- Beginning in 2018, a new comprehensive revenue standard was required to be adopted under both US GAAP and IFRS. Previously, revenue guidance consisted of a broad over-arching concept combined with many sources of fragmented industry or transaction specific guidance, which resulted in inconsistencies in recognizing revenues across economically similar transactions.
- The standard outlines a 5-step approach which focuses on: 1) Identifying the contract, 2) Identifying the performance obligation(s) promised by the seller, 3) Determining the transaction price, 4) Allocating the transaction price among the separate performance obligations and 5) recognizing revenue when the performance obligation is deemed to be satisfied.
- Additional disclosures are also required, including a disaggregation of revenue in a way to depict how the nature, amount, timing, and uncertainty of revenue and cash flows are affected by economic factors.
- From an investor perspective, the impact of adopting the new revenue rules was difficult to quantify as many changes were subtle and aggregated within the financial statements. The more straightforward the business model is, the less the potential impact (e.g. retail, pharmacies, restaurants). While the overall impact varied by industry and business model, in general, the biggest impact was on the *timing* of revenue recognition. In many cases, revenue is now recognized *earlier* than previously and potentially *more volatile*.
- While the standard applied to all companies, some of the sectors or industries most impacted:
    - Telecomm. – more upfront recognition of revenue as handsets/service revenues as there was no cap to subsidized phone price revenue recognition.
    - Software – unbundling of certain products / services resulted in higher upfront revenue recognition as transactions previously unable to be separated each received revenue allocation based on a standalone selling price estimate.
    - Asset Managers – performance-based incentive fees that are considered variable revenues cannot be recognized until probable (>70%) – delayed revenue recognition for certain companies that recognize performance fees immediately upon hitting targets earlier in the year.
    - Distributors – companies that currently use "sell-through" revenue recognition models with a distributor typically moved to "sell-in" recognition, meaning revenue is recognized earlier than it has been historically, and increases risk of "stuffing the channel".

Below we discuss the primary ways in which revenues may be managed.

1. **"Stuffing the Channel" through a "Middle-Man" Vendor / Distribution Partner**. Some business models lend themselves to more flexibility in recognizing revenue. For example, consider a sell-in versus sell-through business model where there is a distributor or other vendor as the "middle man". In a sell-in revenue recognition practice, revenue is recognized when shipped to the distributor and, from the company's perspective, there is clearly more discretion in the timing and amount of inventory shipped and, therefore, recognized. This is often known as "stuffing the channel".

   Conversely, in a sell-through model, revenue is recognized upon final shipment to the end customer (distributor to the customer). There is less (but still some) flexibility to stuff the channel in this scenario as revenue is recognized based on end demand from the customer. Improper revenue recognition under a sell-through model may still occur if a company is using "bill and hold" type sales or shipping inventory to a related party or vendor with close ties. For example, one issue that had been raised by investors was Keurig Green Mountain's use of a "fulfillment entity" called MBlock.

Keurig Green Mountain: MBlock Relationship

> We rely primarily on one fulfillment entity, M.Block & Sons, Inc. ("MBlock"), to process the majority of orders for our AH business sold through to retailers, department stores and mass merchants in the Domestic segment. Our sales processed through MBlock represented 37%, 38% and 38% of the Company's consolidated net sales for fiscal years 2013, 2012 and 2011, respectively. To a lesser extent, we also use other third-parties in the U.S. and Canada for fulfillment services in the AH channel…The Company primarily relies on MBlock to process the majority of sales orders for our AH single serve business with retailers in the United States. The Company is subject to significant credit risk regarding the creditworthiness of MBlock and, in turn, the creditworthiness of the retailers.

A material relationship with a third party may be used to pull forward sales

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Importantly the newer FASB (and IASB) revenue recognition rules, which became effective in 2018, may result in more frequent use of "sell-in" accounting models. When historical patterns suggest lower changes of returned or obsolete items once sold to the distributor, companies are still *required* to recognize revenues at that point. This creates greater opportunities for channel-stuffing around quarter ends; therefore, a critical analysis of days sales outstanding is important to detect aggressive revenue recognition. Below is On Semiconductor's revenue recognition disclosure discussing its adoption of the new standard and switch to a sell-in model.

On Semiconductor: Switch to Sell-In Revenue Recognition Model

> The Company adopted the New Revenue Standard using the modified retrospective method, applying the guidance to all open contracts, and recognized the cumulative effect adjustment of $2.1 million to retained earnings and accrued expenses. The comparative financial information has not been restated and continues to be presented under the accounting standards in effect for the respective periods. The Company applied the practical expedient and has not disclosed the revenue allocated to future shipments of partially completed contracts.
>
> In anticipation of the adoption of the New Revenue Standard, during the quarter ended March 31, 2017, the Company developed its internal systems, processes and controls to enable it to make the estimates required by the New Revenue Standard on sales to its distributors and was able to reliably estimate upfront the effects of returns and allowances and record revenue at the time of shipments to these distributors. Prior to this, the Company recognized revenue from distributors under the sell-through method as it did not have the ability to estimate the effects of returns and allowances. As a result of this change, the Company recognized an additional $155.1 million in revenue during the first quarter of 2017, which resulted in an increase of $59.0 million to income before income taxes.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings. Per 2018 10-K (emphasis added)

2. **Credit Quality Concerns? Extended or Loosened Payment Terms.** A company might grant extended payment terms to customers to induce sales. This is, in effect, financing the purchase with a longer-term receivable. Likewise, in order to boost revenue, the company may extend credit to customers with lower credit standing. Either of these scenarios may bring collectability of revenues recognized into question. As discussed later in this report, we recommend using days' sales outstanding (DSOs) as a key indicator.

   It's important to analyze whether bad debt provisions and the allowance for doubtful accounts are commensurate with the risk of the company's receivables. In some cases, an increasing allowance may indicate lower quality receivables, but may still not be high enough to counter the increased risk. As an example, below we show Healthcare Services Group's allowance for doubtful accounts and disclosure of credit impaired balances. In 2017, the allowance began to increase, from $7 million to $12 million. However, the balance of clients in bankruptcy increased from $16 million to $30 million, which turned out to be a leading indicator that the company was very under-reserved, which resulted in a large write-down on their A/R in 2018.

Healthcare Services Group – Allowance for Doubtful Accounts (2018 10-K)

Summarized below for the years 2018, 2017 and 2016 are the aggregate account balances against which reserves were recorded, as well as net write-offs, the bad debt provision and the balance of the allowance for doubtful accounts:

Year Ended	Aggregate Account Balances of Clients in Bankruptcy or in/or Pending Collection/Litigation	Net Write-offs of Client Accounts	Bad Debt Provision	Allowance for Doubtful Accounts
		(in thousands)		
2018	$ 115,659	$ 6,163	$ 51,387	$ 57,209
2017	$ 30,035	$ 1,176	$ 6,250	$ 11,985
2016	$ 15,873	$ 2,326	$ 4,629	$ 6,911

Increase in bad debt provision trailing credit impaired clients' balances,

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

3. **Is Accounts Receivable Securitization Masking Aggressive Revenue Recognition?** As discussed throughout this report, an increase in DSO's is one of our favorite indicators of aggressive revenue recognition. However, the efficacy of this metric can be reduced if a company is securitizing (a/k/a factoring or selling) its receivables. As a result, the receivable balances will be "artificially" deflated and the DSO metric will not reflect the growth in uncollected balances (and perhaps aggressive revenue recognition) that it otherwise would have absent the securitization. As disclosed below, in 2018, Ball increased usage of it's AR securitization by ~$460 million, which should potentially be added to receivables for a DSO calculation. [$460 = ($1.2B-$178m) – ($1B - $439m)].

Ball: Accounts Receivable Securitization

The company has entered into several regional uncommitted and committed accounts receivable factoring programs with various financial institutions for certain receivables of the company. Programs accounted for as true sales of the receivables, without recourse to Ball, had combined limits of approximately $1.2 billion and $1.0 billion at December 31, 2018 and 2017, respectively. A total of $178 million and $439 million were available for sale under these programs as of December 31, 2018 and 2017, respectively.

Source: Wolfe Research; Company filings. Emphasis added.

4. **Watch for Declining Deferred Revenues.** A deferred revenue balance may be used for improper revenue recognition or to mask slowing revenue growth. GAAP requires a deferred revenue liability to be recorded in situations where cash is received prior to when revenue is recognized.

   For an ongoing business with growing sales, the deferred revenue liability should also grow each period and be a source of cash in operating cash flow. Since deferred revenue represents a pool of future revenue, a company may change how deferred revenue is recognized or improperly draw down from this account. Therefore, we review this account for material year-over-year and sequential declines, focusing on a "days deferred revenue" metric similar to DSOs. Below, we show how ProQuest's decline in deferred revenue appeared to signal a forthcoming restatement. For more information, please see our Blow-Up Case Study of ProQuest.

ProQuest: Deferred Revenue Balances Pre and Post Restatement

Declining Days' Deferred Revenue Calculation may indicate more aggressive revenue recognition and / or declining backlog of orders.

Original Filings	Quarter ended						
	4/3/2004	7/3/2004	10/2/2004	1/1/2005	4/2/2005	7/2/2005	10/1/2005
Revenues ($ mln)	111	112	113	127	121	140	159
Deferred Revenues ($ mln)	106	83	114	100	79	60	86
Days Deferred Revenue O/S	**86**	**67**	**91**	**71**	**59**	**38**	**49**

Restated	Quarter ended						
	4/3/2004	7/3/2004	10/2/2004	1/1/2005	4/2/2005	7/2/2005	10/1/2005
Revenues ($ mln)	104	107	108	121	120	132	149
Deferred Revenues ($ mln)	134	122	158	157	142	130	159
Days Deferred Revenue O/S	**117**	**102**	**131**	**117**	**106**	**89**	**96**

Note: Days deferred revenue calculated as deferred revenue balance / revenues * 90 days.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

5. **Recording One-time Gains as Revenue.** Although not common, a company may choose to record a gain on the sale of a business in revenue. As an example, prior to its bankruptcy, General Motors (GM) recorded a gain on the sale of its defense business in revenues.

General Motors: Gain on Asset Sale Classifications

> Other Operations' total net sales and revenues include a pre-tax gain of approximately $814 million, or approximately $505 million after-tax, related to the sale of GM's Defense operations (light armored vehicle business) to General Dynamics Corporation on March 1, 2003. The sale generated net proceeds of approximately $1.1 billion in cash. (2003 10-K)

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

6. **Related Party Sales.** Analysts should pay extra attention to any transactions with disclosed related party entities, particularly related to the timing and value placed on these revenues.

7. **Bill and Hold Sales.** The existence of 'bill and hold' type sales are a red flag, in our view. Bill and hold sales are where a company "sells" a product to its customer, title is transferred, collectability of payment is reasonably assured, but the product hasn't shipped. However, since the product hasn't shipped and isn't consuming space on the customers' premises, there is incentive for companies to use it as a means to pull forward sales into a current quarter. A discount may even be offered as terms for its use.

   Historically, Sunbeam and Diebold are examples of accounting restatements due in part to improper bill and hold accounting. Recently, we have found fewer companies use this accounting for a material amount of transactions, presumably as auditors have become more conservative in their interpretations of whether revenue should be recorded. Nonetheless, it is allowable as there may be legitimate means for such sales. Ball recently disclosed a form of these sales based on adoption of the new rev rec rules.

Ball: Revenue Recognition Accounting Change Impacts

For the metal beverage packaging segments and, to a lesser extent, in our non-reportable segment that manufactures aerosol packaging, the new revenue standard accelerated the recognition of certain sales to be over time such that a portion of sales is now recognized prior to shipment or delivery of goods. The accelerated recognition of sales also caused the company's inventory to decrease with an offsetting increase to unbilled receivables to the extent the amounts had not yet been invoiced to the customer and right to payment was unconditional.

Source: Wolfe Research; Company filings. Emphasis added.

8. **Nonmonetary transactions.** While not commonplace, a company may record revenues from nonmonetary transactions. This can arise based on an exchange of goods/ services with another company, where no cash changes hands. The revenue will be recorded based on the equivalent fair value of a similar monetary transaction with a third party. Given the inherent subjectivity in assigning these fair values, we would place extra skepticism on any revenues recorded from nonmonetary transactions. Below is comScore's disclosure of nonmonetary revenue (also with a related party). Upon investigation, it was shown that these transactions should never have been recorded given the lack of cost basis for the exchanged assets, and the related revenues were restated to $0.

comScore – Disclosure of Nonmonetary Transactions (emphasis added)

The Company accounts for nonmonetary transactions under ASC 845, Nonmonetary Transactions. Nonmonetary transactions with commercial substance are recorded at the estimated fair value of assets surrendered including cash, if cash is less than 25% of the fair value of the overall exchange, unless the fair value of the assets received is more clearly evident, in which case the fair value of the asset received is used to estimate fair value for the exchange.

In 2013, the Company entered into an agreement to exchange certain data assets with a corporation. In Q4 2014, the Company and the corporation modified the existing agreement, where the parties will provide additional data assets. A member of the Company's Board of Directors also serves as a member of the Board of Directors of that corporation and therefore, we have considered the corporation to be a related party. The transaction was considered to have commercial substance under the guidance in ASC 845 and the Company estimated the fair value of the services delivered based on similar monetary transactions with third parties. No cash was exchanged in this transaction.

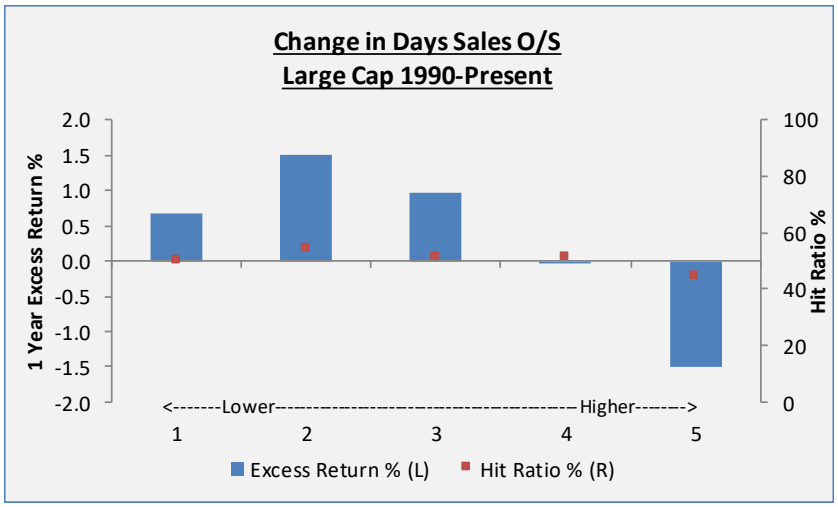
	Quarter ended					
Original filings	**6/30/2014**	**9/30/2014**	**12/31/2014**	**3/31/2015**	**6/30/2015**	**9/30/2015**
Total Revenues ($ mln)	80	82	90	87	91	92
Nonmonetary revenues ($ mln)	2	5	8	4	11	9
Nonmonetary revenues % of total	3%	6%	9%	5%	12%	10%

Material Increase in Use of Nonmonetary Transactions Supporting Revenue Growth, All Nonmonetary Amounts were Eventually Restated to $0!

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

As aggressive revenue recognition often is subtle in the early stages (there generally will not be "flashing red" signals in the company's policy disclosures), we've found a few simple ratios to be the best at signaling aggressive revenue recognition:

I. **Days Sales Outstanding (DSOs).** Our favorite and most powerful stand-alone metric for uncovering aggressive revenue recognition is Days Sales Outstanding (AR / Sales * 365). In particular, we look for large year-over-year changes (quarter-over-quarter can be used as well for non-seasonal businesses). Below are the quantitative historical returns for DSOs. We found that companies with the largest *increases* in DSOs underperformed (on a sector neutral basis) by ~150bps.



As previously mentioned, we recommend reviewing the debt footnote to ensure there is no securitization of accounts receivable. Selling receivables would artificially lower this ratio and, therefore, decrease its efficacy in detecting aggressive revenue recognition.

II. **Days Deferred Revenue (DDR).** If a company's business model uses deferred revenue, we calculate a days deferred revenue metric similar to a days sales outstanding metric. It is calculated as the total deferred revenue divided by sales (annualized if quarterly) multiplied by 365 days. A declining ratio may suggest a move to a more aggressive revenue recognition policy, a slowing overall business, or a change in policies.

III. **Sales Return Reserves / Discounts.** If disclosures exist, we calculate the sales return/discounts reserve to sales and review for material decreases in this ratio. A company may dip into these reserves as a means to boost earnings and this is unsustainable if the sales return/discount reserves are actually higher. We also compare the sales return/discount provision to current period revenues.

IV. **Large Increases in Other Receivables or Other Assets.** As an enticement to boost current period sales, long-term financing may be used. An increase in balance sheet accounts such as other receivables, financing receivables, or other assets are areas in which long term receivables may be recorded. In this scenario, days sales outstanding would not necessarily be a reliable red flag indicator.

V. **Related Party Sales or Sales to Off-Balance Sheet Joint Ventures.** Review financial statement footnotes for the existence of these items or bill and hold sales.

Recognition of operating expenses in earnings is another area requiring significant management estimates and assumptions. Possible ways to manage expenses include:

I. Classification choices / expense line item choices;
II. Cost capitalization (defer current period expenses to future periods);
III. Manage / reverse reserves;
IV. Report normal operating items as non-recurring costs / non-GAAP earnings;
V. Understate / draw down accrued expenses;
VI. Prospectively change accounting or input estimates (depreciation, inventory)
VII. Other: Aggressive stock option or pension assumptions

EXPENSE CLASSIFICATION MAY IMPACT COMPARABILITY OF MARGINS

Analysts should review the MD&A and footnote disclosures to ascertain whether any classification issues exist that would impact the comparability of one company's margins to its peers. For example, certain types of income or expenses may be classified in different line items within the financial statements. For many items, no clear accounting guidance exists on where to classify certain costs on the income statement. Current practice has been established through SEC guidance and industry practice.

One common point of non-comparability is the classification of distribution expenses. Items such as inbound freight charges, inspection costs, warehouse costs, and other distribution network costs may be in either in cost of sales or SG&A. For a retailer, rent expense and shipping and handling costs could potentially be included as either cost of sales or SG&A. Depreciation and amortization expense may be classified in SG&A or alternatively, capitalized into inventory and eventually expensed via cost of sales. Intangible asset amortization will typically be classified based on the intangible asset's function.

Although less common, certain gains may be classified in a manner where an analyst may want to adjust for multiple, growth or margin purposes. For example, a company might include equity income from an unconsolidated subsidiary or interest income in revenue. The SEC does require that product and service revenue that is at least 10% of total revenues to be separately disclosed on the income statement.

In the next exhibit, we illustrate Whirlpool's classification of gains on certain asset dispositions in cost of sales. Even though gains and losses as recorded may be "nominal", amounts may be included in future years that would require adjustment.

Whirlpool: Gain on Asset Sale Classifications

We classify gains and losses associated with asset dispositions in the same line item as the underlying depreciation of the disposed asset in the Consolidated Statements of Income (Loss). During 2018, we primarily retired land and buildings related to a sale lease back transaction and machinery and equipment with a net book value of approximately $100 million that was no longer in use. During 2017, we primarily retired machinery and equipment with a net book value of $63 million that was no longer in use. Net gains and losses recognized in cost of products sold were not material for 2018, 2017 and 2016.

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Improper capitalization of costs on balance sheet has been an area historically rife with aggressive accounting. Its form varies from a change in an accounting policy, to an outright fraud, or even to a new business model under which it is permitted since there are no clear accounting rules. Cost capitalization is required in certain circumstances, but it still may impair comparability across companies. In its true form, cash is expended in the current period for business items (marketing, contract costs), but management must reasonably allocate the costs to future period(s) expected to benefit under the matching principle. Estimating the future benefit period of such costs is rife with assumptions. What's more, cost capitalization is relatively easy to do. As an example, to shift current period expenses out of earnings to the balance sheet, a company might adopt a voluntary change in their cost capitalization policy.

Expenses related to long life assets (e.g., PP&E) are capitalized on the balance sheet as an asset if they are expected to provide future benefits typically greater than 1 year. This allows the matching of costs incurred with related revenues. By capitalizing costs, earnings are higher since the costs are deferred to an expense in a future quarter. On the cash flow statement, the increase in the asset is reported as a cash outflow in operating, investing or financing cash flow. If the cost capitalization is reported in operating cash flow, it will be comparable to other companies. Conversely, if the capitalization of asset is reported in investing or financing, operating cash flow will be permanently overstated. Over time, as the capitalized costs are expensed, earnings are lower, but operating cash flow is unchanged since the expense is non-cash and added back to operating cash flow. As an example, WorldCom improperly capitalized normal recurring costs as property, plant and equipment and reported the cash outflow in investing cash flow.

Classifying Costs as Investing Cash Outflows – WorldCom

Items originally improperly included as investing cash outflows were reclassified to operating

	Year Ended December 31,			
WorldCom ($ mln)	2000 Reported	2000 Restated	2001 Reported	2001 Restated
Cash flow from operations	$7,666	$4,227	$7,994	$2,845
Cash flow from investing				
Capital expenditures	(11,484)	(11,668)	(7,886)	(6,465)
Acquisitions and related	(14)	0	(206)	(171)
Increase in intangibles	(938)	0	(694)	0
Decrease in other liabilities	(839)	0	(480)	0
All other investing activities	(1,110)	505	(424)	514
Cash used by investing activities	($14,385)	($11,163)	($9,690)	($6,122)

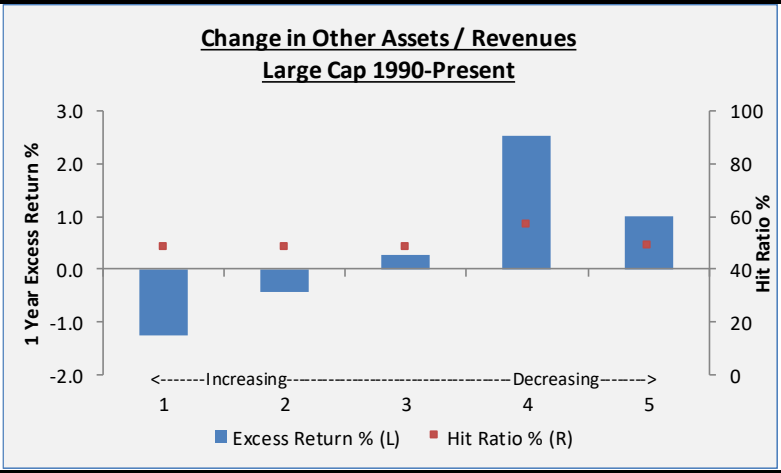
Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Insofar as there is not fraud involved, aggressive cost capitalization may come to light by reading the company's accounting policies section and reviewing several balance sheet and cash flow accounts. Look for large cash outflows in the various sections of the cash flow statement. The investing section would be the typical place for improper cost capitalization items to be recorded. However, it's entirely possible for them to appear in operating or financing cash flow and still avoid immediate expensing. While not foolproof, we would generally advise using free cash flow for analysis as operating cash flow and EBITDA can be materially altered from both improper and required cost capitalization.

It's also useful to review changes in other current assets and other long-term assets as these accounts may be the repository for a company capitalizing costs. SEC rules require additional disclosure of certain balance sheet accounts if materiality thresholds are met. We suggest reviewing these disclosures for large or unusual increases and/or decreases. In particular, a careful review of the other current or non-current assets is warranted as a company might capitalize costs into a non-current asset account rather than expensing such amounts. Annual disclosure of the following is required: 1) Any other current assets greater than 5% of total current assets; 2) Any other non-current assets greater than 5% of total assets; or 3) Deferred costs greater than 5% of total assets.

One metric we have found to be historically predictive of future stock price underperformance is an increase in other assets relative to revenues. This is one of the seven metrics in our quality model.

Historical Stock Returns: Changes in Other Assets



Source: Wolfe Research Accounting & Tax Policy Research; Company filings; FactSet. Universe = 1000 largest market Cap companies.

Importantly, in more aggressive historical accounting frauds, routine costs were capitalized into PP&E. Therefore, it's important to calculate PP&E metrics to look for situations that are out of line with either historical trends and/or peer companies. We find the following ratios most useful in comparing companies within the same sector or industry.

$$Average\ Asset\ Depr.Life = \frac{Gross\ PP\&E}{Depreciation\ Expense} \quad Sales\ to\ PP\&E\ Ratio = \frac{Total\ Sales}{Gross\ PP\&E}$$

Finally, if costs are legitimately capitalized, what is the period of time over which such costs are expensed and is it reasonable? It may appear that a company has calculated a proper amortization period with precision; nevertheless, it is highly subjective and variable. Therefore, we prefer to find short amortization periods for capitalized costs (<3 years) as technological obsolescence or product displacement may occur over longer periods of time.

MANAGING EXPENSES - WATCH FOR LARGE RESERVES AND RESERVE REVERSALS

A careful review of reserve disclosures is warranted as companies have been known to use reserves to manage earnings in what is known as “cookie jar” accounting. This occurs when a company reverses (i.e., decreases) an accrued liability or contra asset account (e.g. bad debt reserve which is netted against accounts receivable) as a gain in earnings. Another variation of this is “big bath” accounting in which a company records a very large charge in earnings by writing down assets and recording various reserves. If the charge is excessive, in a subsequent period, GAAP requires the reserve to be reduced / eliminated and companies have discretion in choosing when to reverse it as a gain in earnings. Mechanically, GAAP’s matching principal requires an expense to be recorded in the same period in which revenue is recognized and a loss recorded when both probable and estimable even though there is still uncertainty over the exact timing and amount of the loss.

Common reserves include bad debts, restructuring, warranty, sales discounts, worker’s compensation, taxes, inventory and legal. We discuss how to analyze reserves and spot potential unsustainable benefits to earnings and cash flows. When analyzing the use and potential abuse of reserves, we focus on 3 key points:

1) The Opportunity — What is the Level of Reserve Balances? The first item we analyze is how many reserve accounts does the company maintain and how large are their balances? Reserve liabilities are typically disclosed either in a separate schedule or listed as part of current and/or long-term liabilities in the 10-K footnotes. Assessing the breadth and depth of reserves allows us to evaluate if the company has the opportunity to use the “cookie jar” to boost earnings. As one way to common size the reserve balances, we compare the reserve balance to revenue and to a related balance sheet driver if one exists (e.g., A/R).

2) Have There Been Reserve Reversals as Gains in Earnings? We suggest analyzing financial disclosures to ensure a material amount of excess reserves were not reversed as a gain in earnings. Typically, the easiest way to spot this is an analysis of a reserve roll-forward table (if disclosed), reading the Management, Discussion and Analysis section, or a review of the operating section of the cash flow statement (where the gain is shown as a reduction in cash flow since it is non-cash). Keep in mind that GAAP actually requires a company to “release” a reserve if it’s no longer necessary and, therefore, reserve reversals technically may be within the confines of perfectly acceptable accounting. However, the reversal as a gain in earnings (offsetting SG&A or cost of sales) is unsustainable and, therefore, should be removed from earnings. Quarterly and annual detailed activity of restructuring reserves is required, frequently presented in a reconciliation table as we illustrate later in this report.

3) Is the Company Under-Reserving To Boost Earnings?: Another trick to boost current period earnings is to *underestimate* the current period additions to the reserve. For example, a company might choose to under expense recurring costs, such as warranty or sales returns to boost current period earnings. Since this account will need to be replenished in a future period, the company may encounter higher costs in future years as a higher than normal expense occurs to maintain the account.

The accounting rules for recording restructuring charges espouses a framework to avoid the abuse of "big bath" charges or "cookie jar reserves". Stemming from perceived abuse in the 1990s, when many companies previously took large charges in advance of actually incurring related restructuring costs, ASC Topic 420 / FAS No. 146, *Accounting for Costs Associated with Exit or Disposal Activities* was issued. This standard set a higher hurdle to recognize restructuring costs in that a liability must be incurred in a manner where there is little or no discretion to avoid (a probable future sacrifice of economic benefits arising from present obligations). Further, no 'charges' are recorded "below the line" - all costs must be included as part of operating income. A company simply having a restructuring plan is not sufficient to meet the hurdle to recognize the charges – additional steps must be taken. The following is a description of the accounting for several common restructuring items.

- One-time Termination Benefits: For one-time benefits provided to terminated employees, the following must occur in order for the company to record a restructuring expense:

  1. Management commits to a termination plan,
  2. The plan identifies the number of employees to be terminated, their job classifications or functions, and the expected completion date,
  3. The termination plan includes and establishes specific termination benefits so employees may ascertain the type and amount of benefits to be received,
  4. It is unlikely that significant change will be made to the plan or that the plan will be withdraw; and,
  5. Communicated to the impacted employees.

  The charges are recorded on the date the plan is communicated to the employees when employees are not required to render service until their termination date or if they will not be retained beyond a minimum retention period. The charges are recorded over the employee's remaining service period in the scenario that the employee is required to provide service until their termination date and required to stay beyond the minimum retention period. (Note that the minimum retention period may not exceed the legal notification period or, if none, 60 days.)

- Contract Termination Costs: When a company restructures, certain contracts or operating leases may be terminated. These terminations will result in a restructuring charge and related accrued liability to account for contract termination costs on the termination date. Additionally, there may be other ongoing costs expected to be incurred under terminated contracts when the company ceases using the rights under the contract (e.g., leased property). These amounts are also included in the charge and liability. The charges may be incurred on the same date as the contract termination date or on a later date.

One specific disclosure to regularly analyze is the restructuring reserve table. At the very least, we suggest reviewing it for material reserve reversals into earnings. While GAAP technically requires excess reserves to be recorded as a gain in earnings, they are low quality and non-economic. Therefore, we suggest excluding them from normalized earnings. We also find this specific disclosure useful in assessing future cash restructuring costs for severance, closing facilities, etc.

Below is Motorola Solutions 10-K restructuring reserve table. We use this example to illustrate the way to spot a reserve reversal. Not all companies will provide this level of reserve detail, but GAAP requires a quarterly roll forward of a company's restructuring reserves. Since reserves are subject to considerable discretion by management, the accounting game is to create a larger than necessary reserve (in a bad quarter/year or otherwise) and dip into the reserve when business conditions change.

We analyze the reserve schedule for material reversals into earnings. This reserve account is increased when a company records a restructuring reserve ("big bath accounting") as shown by "Additional Charges" below. Next, when costs are actually incurred/paid, the reserve account is reduced and this is shown in the "Amount Used" columns below. Generally, this is a cash cost unless it is property that is dispensed with/written down (e.g., depreciation). Last and importantly, there is a reduction in the reserve called "Adjustments" (may also be called "Revisions" or "Changes" to estimates). A reduction in this reserve due to excess is recorded as a gain in earnings (technically, it offsets part of an expense either in cost of sales or SG&A). In the example below for MSI, we circled the "adjustments" as $18mm out of the restructuring reserve as a potential gain in earnings.

Motorola Solutions: Restructuring Disclosure ($ mln) (2018 and 2017 10-Ks)

The following table displays a rollforward of the reorganization of businesses accruals established for exit costs and employee separation costs from January 1, 2018 to December 31, 2018:

	Accruals at January 1	*Additional Charges*	*Adjustments*	*Amount Used*	*Accruals at December 31*
Exit costs	$ 9	$ 16	$ —	$ (4)	$ 21
Employee separation costs	41	122	(18)	(61)	84
	$ 50	$ 138	$ (18)	$ (65)	$ 105

The following table displays a rollforward of the reorganization of businesses accruals established for exit costs and employee separation costs from January 1, 2017 to December 31, 2017:

	Accruals at January 1	*Additional Charges*	*Adjustments*	*Amount Used*	*Accruals at December 31*
Exit costs	$ 7	$ 8	$ —	$ (6)	$ 9
Employee separation costs	94	43	(9)	(87)	41
	$ 101	$ 51	$ (9)	$ (93)	$ 50

Exit Costs

At January 1, 2018, the Company had $9 million accrual for exit costs. There were $16 million of additional charges in 2018. The $4 million used in 2018 reflects cash payments. The remaining accrual of $21 million, which the current portion is included in Accrued liabilities and the non-current portion is included in Other liabilities in the Company's Consolidated Balance Sheet at December 31, 2018, primarily represents future cash payments for lease obligations that are expected to be paid over a number of years..

Employee Separation Costs

At January 1, 2018, the Company had an accrual of $41 million for employee separation costs. The 2018 additional charges of $122 million represent severance costs for approximately an additional 1,200 employees, of which 500 were direct employees and 700 were indirect employees. The adjustments of $18 million reflect reversals of accruals no longer needed. The $61 million used in 2018 reflects cash payments to severed employees. The remaining accrual of $84 million, which is included in Accrued liabilities in the Consolidated Balance Sheet at December 31, 2018, is expected to be paid, primarily within one year to: (i) severed employees who have already begun to receive payments and (ii) approximately 200 employees to be separated in 2019.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Accounting for warranty reserves is an area of significant management judgment. A company might choose to under-accrue warranty expense in the current period to increase earnings. However, if warranty costs haven't economically changed, the company will need to replenish the reserve and face higher costs in future periods. Since this account is very subjective, it's a relatively easy area with which for management to manage earnings.

Irrespective of whether the disclosure is bad debt, warranty, or sales discounts, etc., we analyze it the same way. To determine if the company is under reserving expenses, we compare the accruals for additions to the account (the amount expensed in earnings) to the payments on a current year basis and with a one-year lag (current year expense to prior year payments). The reason we compare also with a one-year lag is that sometimes a company's business operates with a lag and amounts expensed in the prior year might not be paid or written-off until the following year. If a company has been consistently expensing higher cost than payments, it may reflect a management tone of conservatism. However, that does create a higher reserve that could be used to manage earnings in the future. Even if costs incurred are similar to payments, we also check this schedule for large adjustments to any pre-existing reserves (e.g., warranties) that signal prior period under-estimation. As a third check, we assess and standardize the overall balance by comparing it to revenues. We expect a fairly constant ratio (%) over time unless something significant has changed in the business. Similar to the prior example, we review the footnotes/schedule for any reserve gains (reversals) that increased EPS.

We suggest analyzing financial disclosures to ensure a material amount of excess reserves were not reversed as a gain in earnings. Typically, the easiest way to spot this is an analysis of a reserve roll-forward table (if disclosed), reading the Management, Discussion and Analysis section, or a review of the operating section of the cash flow statement (where the gain is shown as a reduction in cash flow since it's non-cash). Keep in mind that GAAP actually requires a company to "release" a reserve if it's no longer necessary and, therefore, reserve reversals technically may be within the confines of perfectly acceptable accounting. However, the reversal as a gain in earnings (offsetting SG&A or cost of sales) is likely unsustainable and, therefore, should be removed from earnings.

As an example of a reserve reversal disclosure, below is Fitbit. In 2018, there was a ~$20 million reversal for "Changes in estimates related to pre-existing warranties" which was recorded as income.

Fitbit: Warranty Reserve (2018 10-K)

Product warranty reserve activities were as follows (in thousands):

	December 31,		
	2018	**2017**	**2016**
Beginning balances	$ 87,882	$ 99,923	$ 40,212
Charged to cost of revenue	15,720	53,840	185,434
Changes in estimate related to pre-existing warranties [1]	(20,545)	11,788	4,072
Settlement of claims	(37,452)	(77,669)	(129,795)
Ending balances	$ 45,605	$ 87,882	$ 99,923

[1] During 2018, the change related to pre-existing warranties resulted primarily from improved product quality and a decrease in the estimated cost of replacement units. During 2017 and 2016, changes related to pre-existing warranties resulted primarily from an increase in the estimated cost of replacement units.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

MANAGING EXPENSES - DO NOT OVERLOOK THE "SCHEDULE II"

Due to its location, typically near the end of the 10-K filing, the Schedule II ("Valuation and Qualifying Accounts") of reserve accounts is often overlooked. Although sometimes inconsistent and not standardized, the schedule provides a very useful summary of a company's critical reserve accounts. Common items included on the Schedule II include inventory reserves, sales return reserves, deferred tax valuation allowance, and bad debt reserves.

If a reserve account is disclosed elsewhere in the 10-K, it is not required to be disclosed in the Schedule II (common with restructuring reserves). A review of the Schedule II is important to determine whether the company reversed reserves or had another unsustainable benefit to earnings. For example, to boost earnings in the current period, a company might reduce the expense amount of a recurring reserve, such as warranties. Unless there is a sustainable trend whereby the lower reserve amount will not need to be increased in a future period, this will be only a temporary earnings boost. The company will subsequently record higher warranty expenses in future periods to build the account again. Likewise, the company may be over-reserving in the current period so that the reserve may be reversed as a gain into earnings at some future date (cookie jar reserves) when earnings are slowing.

To assess the reasonable of reserves, provisions and reversals, it's important to standardize these amounts. Companies use historical experience to calculate reserve amounts - the reserve amount should be compared to the driver of the cost (e.g. warranty to revenues, bad debt expense to accounts receivable, sales returns to sales and inventory) and contrasted with prior years. If the reserve percentage is low compared to historical periods, this may presage future reserve increases as an expense to earnings. The additions to the reserve account (the expense/provision) should be compared with the subtractions from the reserve account. This can be done on a current year basis, but we also suggest a one-year lag (subtractions from the current year vs. the additions from the prior year). This is due to the fact that the expensing of costs in the current period matches those costs with revenues, but charge-off amounts and payout amounts will occur in subsequent period(s) as the balance sheet asset is deemed worthless (receivables / inventory) or actual cash payments are made (warranties).

As an illustration and analysis of Schedule II, in the next exhibit we highlight Roper's 2018 disclosure. The schedule reconciles the beginning and ending reserve balances. The "Additions charged to costs and expenses" column represents the amount of expense recognized in earnings during each respective year. On the balance sheet, a corresponding allowance account is also increased and netted against the related asset account (accounts receivable, inventory, tax assets, etc.).

Next, the deduction column is the amount written-off or utilized in the current period. As amounts are written-off, there is generally no earnings impact — the accounts are removed from the balance sheet. For example, if an accounts receivable amount is written-off for which there is a bad debt reserve, both the accounts receivable account and the bad debt reserve is reduced by the same amount. For sales returns, this may represent a cash outflow as products previously sold were refunded to customers. There is generally no income statement impact. Similarly, when inventory is written-off, the inventory and inventory reserve account are both reduced.

Next, we compare the amounts charged to expense in the current period to the "deductions" amounts. The charges to expenses for allowance for doubtful accounts in 2018 were $11.9 million compared to the current year "deductions" of $7.3 (bad debt amounts written off in the current year). The larger charge in 2018 suggests an increase of the coverage. Ideally, we would prefer observing charges to earnings slightly higher than deductions. Due to their nature, they may be more "lumpy" on a year-over-year basis if there are larger receivables reserved for and subsequently written-off. We would be skeptical of large decreases in bad debt reserves relative to receivables or sales from the prior year, depending on the economic environment.

To assess the reasonableness of the allowance for doubtful accounts, we compare the ending balance to the receivables balance. Based on accounts receivable of $701 million in 2018 and $642 million in 2017, the allowance coverage was increased to 3.3% from 1.9% in the latest year.

Roper Schedule II

	Balance at beginning of year	Additions charged to costs and expenses	Deductions	Other	Balance at end of year
			(in millions)		
Allowance for doubtful accounts and sales allowances					
2018	$ 12.7	$ 11.9	$ (7.3)	$ 5.8	$ 23.1
2017	14.5	4.3	(5.9)	(0.2)	12.7
2016	12.4	1.8	(2.8)	3.1	14.5
Reserve for inventory obsolescence					
2018	$ 38.1	$ 6.7	$ (4.5)	$ (10.0)	$ 30.3
2017	37.2	5.3	(6.3)	1.9	38.1
2016	34.0	10.1	(6.6)	(0.3)	37.2

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Changes in accrued expenses may distort cash flow or signal lower quality. Examples include wages, employee benefits, taxes, interest, and marketing costs. Similar to A/P, accrued expenses should be analyzed based on their underlying driver. We view accrued expense changes in two ways.

First, in an effort to boost current period cash flow, it's possible for management to change the timing of paying accrued expenses into a future period. For example, deferring the payment of accrued expenses, such as bonus, to the following year is a possible way to shift the cash outflow into the next quarter/year. In this scenario, rising accrued expenses and its related cash flow benefit is unsustainable if there's merely been a timing shift as payments cannot be shifted forever.

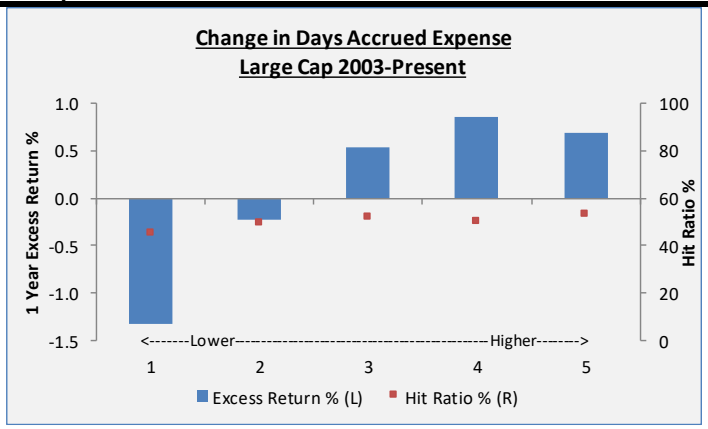
Second and importantly, we don't view rising accrued expenses as necessarily a signal of poor cash flow quality. Rising accrued expenses actually may be a signal of business strength or higher earnings quality as the expenses have already been recorded in earnings (more conservative accounting), but the cash has yet to be paid. Therefore, it's important to analyze the increase in the context of the overall business environment. As compared to accounts payable, an increase in an accrued liability generally means there was a related expense recorded in earnings in the current period. As an example, consider accrued bonus expenses. The bonus amount is expensed through earnings and a related accrued liability is recorded. The increase in accrued liability is shown as an operating cash inflow on the cash flow statement. It follows that the rise in accrued expenses does not necessarily suggest management is overstating earnings. Rather, the opposite is true as the *understatement* of accrued expenses is an earnings quality red flag. Warranty accrual is an example.

If a company is under expensing warranty cost, the accrued warranty liability may decline as it is drawn down when cash payments are made (new warranty expense recorded in earnings is < current period warranty cash payments). The decline in accrued warranty liability is shown as an operating cash outflow. While, at first glance, an investor might view the decline in cash flow (due to accrued warranty) as conservative since it's not increasing cash flow, it's actually a negative signal and suggestive of less conservative accounting.

FALLING ACCRUED EXPENSES: STOCKS UNDERPERFORM

Falling accrued expenses may be a sign of business weakness or low earnings quality. As shown below, the evidence suggests falling days' accrued expenses are a potential signal of business weakness or less conservative accounting as the accrued expense liability may be drawn down to avoid expensing an item through earnings. As shown below, companies with the largest *decrease* in days accrued underperformed historically (largest 1000 stock universe).

Historical Stock Returns: Accrued Expenses



Note: Universe is 1000 largest U.S. market cap cos. Sector neutral ex. Financials. Annualized monthly rebalanced returns 1990-date. Days accrued defined as Average other current liabilities (ex. Deferred revenues) / LTM sales * 365. Change defined as % changes vs. prior year.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings; Bloomberg; Standard & Poor's; FactSet.

EXPENSES: NON-RECURRING ITEMS?

Analysts should pay particular attention to any accounting changes or non-recurring items reported, no matter how innocuous they may appear on the surface. Below we discuss the GAAP treatment for certain one-time items:

- Unusual or infrequent items. GAAP requires unusual or infrequent items that are not extraordinary to be classified within continuing operations. Restructuring and impairment charges are common examples. As we explain later in this section, our historical tests have found that companies consistently report these special items tend to underperform.

- Accounting changes. A company may choose to change their accounting policy or method for certain items. Reasons for the change may vary, primarily being the FASB changing the rules or a company voluntarily choosing to change its accounting policy. Unless it is impractical to do so, the change in accounting will generally be applied retrospectively, meaning that all prior periods reflected in the current statements will be changed as if the new accounting was always in place. The scenario when a company voluntarily makes a change in accounting policy should be viewed cautiously, as it may be used as a mechanism to improve earnings optically. One recent popular change is companies changing the method of actuarial loss recognition for their pension plans (i.e., move to mark to market accounting).

  Notably, companies will obtain a preferability letter from their auditors to change from one permissible accounting standard to another (e.g., moving from LIFO to FIFO inventory method). Generally, these letters are difficult to obtain from auditors.

- Changes in estimates. Another type of change is an accounting estimate change – changes in estimates are accounted for only prospectively. One such example is changing the depreciable life of PP&E. These changes should be viewed skeptically, particularly if a company increases the useful life estimate, which would have the impact of increasing earnings through lower depreciation expense.

- Note: "Extraordinary" classification no longer allowed. Prior to 2016, "Extraordinary" items were defined by GAAP as infrequent in occurrence *and* unusual in nature. If a company had an extraordinary gain or loss, it would be shown discretely on the income statement, net of tax, and below discontinued items. The FASB eliminated the concept of extraordinary items beginning in 2016.

Since the late 1990's, some companies have aggressively moved to an alternative measure of their financial performance other than Generally Accepted Accounting Principles (GAAP) in what has become known as pro forma or Non-GAAP earnings. We strongly believe that Wall Street often uses pro forma earnings without proper skepticism and investors may not even be aware of the earnings measure upon which investment decisions are based does not conform to GAAP (i.e., consensus EPS ests).

While not always necessarily disclosed directly in the 10-K or footnotes, we have recently seen an increase in the aggressiveness of non-GAAP add-backs to earnings and EBITDA. Currently, we find the issue more important than ever amidst record levels of M&A activity in recent years as companies boost earnings by choosing to exclude such costs as restructuring and intangible amortization.

As part of our Accounting Blow-Up Series, we noted the use of pro forma earnings was common at several companies before issues began to surface. We've recently seen an increase in the aggressiveness of non-GAAP add-backs to earnings and EBITDA. We do believe the increased use of non-GAAP earnings has increased investor skepticism of companies that continue to aggressively use these add-backs.

For example, in late 2018, FIS announced that it will adjust non-GAAP earnings for all depreciation and amortization expenses.

FIS Non-GAAP reconciliation

	Three months ended December 31,		Years ended December 31,	
	2018	2017	2018	2017
Net earnings per share - diluted attributable to FIS common stockholders	$ 0.91	$ 2.77	$ 2.55	$ 3.75
FIS non-GAAP adjustments:				
Depreciation and amortization (1a)	1.10	1.04	4.28	4.07
Acquisition, integration and other costs (2)	0.10	0.12	0.47	0.54
Asset impairments (3)	—	—	0.29	—
Acquisition deferred revenue adjustment (4)	—	—	0.01	0.02
Loss (gain) on sale of businesses and investments (5)	0.01	(0.02)	0.17	(0.18)
Debt financing activities (6)	—	0.01	—	0.59
Equity method investment earnings (loss) (7)	0.01	—	0.05	—
Tax reform adjustment (8)	—	(2.26)	—	(2.26)
Provision for income taxes on non-GAAP adjustments	(0.06)	(0.07)	(0.87)	(0.89)
Adjusted net earnings per share - diluted attributable to FIS common stockholders	$ 2.07	$ 1.60	$ 6.93	$ 5.64
Weighted average shares outstanding-diluted	329	337	332	336

(1a) This item represents the impact of depreciation and amortization expense. The Company has excluded the impact of depreciation of fixed assets and amortization of intangibles as such amounts can be significantly impacted by the timing and/or size of acquisitions. Although the Company excludes these amounts from its non-GAAP expenses, the Company believes that it is important for investors to understand that such tangible and intangible assets contribute to revenue generation. Depreciation and amortization of assets, including those that relate to past acquisitions, will recur in future periods until such assets have been fully depreciated or amortized. Any future acquisitions may result in the depreciation and/or amortization of future assets. Within the depreciation and amortization item, $178 million and $164 million for the three months and $688 million and $636 million for the years ended December 31, 2018 and 2017, respectively, consist of depreciation and amortization of non-purchase accounting assets. The tax effects related to depreciation and amortization of non-purchase accounting assets are $23 million and $45 million for the three months and $121 million and $177 million for the years ended December 31, 2018 and 2017, respectively.

Note: Per Q4 2018 Press Release

Source: Wolfe Research Accounting & Tax Policy Research; Company filings..

Now known as ASC 718, companies have been required to record stock-based compensation as an expense in the earnings since the implementation of FAS No. 123(R), *Share Based Repayment*, in 2006. The primary forms of stock-based compensation include stock options, restricted stock and stock appreciation rights. We describe each briefly below.

Many companies have migrated from stock options to restricted shares as the primary form of stock-based compensation for employees.

TYPES OF STOCK-BASED COMPENSATION

- Restricted shares/stock or restricted stock units ("RSUs"): A company may also issue shares of restricted stock to employees as compensation. They are typically subject to similar vesting conditions as stock options that will be lifted upon meeting the terms. RSUs are promises made by the company to issue shares of stock upon vesting. Restricted shares and RSUs are, in effect, stock options with a $0 exercise price. Both restricted stock and RSUs may or may not have dividend and voting rights, depending on the company. We have noticed a trend in companies moving towards more restricted stock grants and away from options. The advantage to the employee of a restricted share grant is that some value is realized by the employee upon vesting, even if the share price has declined since the grant date due to the $0 exercise price.
- Stock options: Stock options provide the employee with a right to purchase a share of company stock at a stated exercise price. This right becomes effective upon vesting and has a limited timeframe until expiration. Common vesting conditions include service time, meeting a performance condition, or being subject to a market condition. The most common vesting condition is the service period, which is typically 3-4 years of service time. Option expiration is typically 7-10 years from the date of grant. The exercise price is typically set by the company as the market price of the stock on the day the option is granted ("at the money"). When the option is vested, and the option is in the money (market price > exercise price), the employee may exercise the option resulting in a cash payment from the employee to the company and an issuance of a share of stock to the employee. Employee stock options may expire worthless to an employee if the share price declines below the exercise price and remains lower through the expiration date. Prior to the required expensing of stock options in earnings, stock option grants were the preferred form of stock-based compensation but have since given way to restricted stock grants.
- Stock Appreciation Rights ("SARs"): Stock Appreciation Rights are stock based compensation instruments that are net settled in either cash or stock. Similar to a stock option, employees participate in any increases in the stock price between the grant date and the exercise date. However, no actual exercise proceeds are paid to the company. Instead, the employee is either directly paid in cash or shares based on the net increase in share price upon exercise. From a company perspective, less dilution occurs as full shares are not issued. There will be different accounting treatment based on whether the SARS are cash settled (and, thus, marked to market through earnings each period based on the change in stock price) or share settled (similar treatment to stock options and restricted stock). The size of these plans is typically small relative to option or RSU programs.

EXPENSING OF STOCK-BASED COMPENSATION

Companies must expense the grant date fair value of stock-based compensation. This expense is recognized over the service period, or the period the compensation is being earned by the employee. The service period is typically the same as the vesting period, which is usually three to four years. Depending on the actual vesting schedule, the grant date fair value will be recognized either straight line or under an accelerated amortization method. Regardless of the subsequent changes in stock price and intrinsic value of the option, the grant date fair value is a fixed compensation amount (no mark to market or "true-up"). As a result, there may be scenarios where the GAAP cost does not reflect the true economic cost of stock-based compensation.

MEASUREMENT OF STOCK-BASED COMPENSATION GRANT DATE FAIR VALUE

The income statement expense amount for the next several years will be driven by the grant date fair value of the stock-based compensation. For restricted shares or RSUs, the fair value is rather straightforward it's the market price of the stock at that date. (If the employee cannot participate in dividends before vesting, there may be some discount to the market price for the expected dividends).

Management will have additional judgment in setting grant date fair value amounts for options and share settled SARs. Typically, they will use a Black-Scholes, Binominal-Lattice, or some other type of option pricing model. Companies are required to disclose the material assumptions used in their option pricing models. It is important to assess these assumptions for reasonableness as well as any year to year changes. The primary input assumptions for the Black-Scholes model include exercise price, expected life, volatility, dividend rate, and risk-free rate.

The volatility assumption in option pricing is the most subjective. Analysts should pay particular attention to this assumption as management can use it to reduce future earnings impact. Due to SEC guidance, companies typically use a market-based assumption (may come from the implied volatility on the company's market traded equity options) as opposed to the historical volatility of their stock price. Analysts should review the disclosure of option assumptions and ascertain whether any changes in the volatility assumption are reasonable given the underlying volatility of the stock.

FORFEITURES

Due to employee turnover, not all share based compensation that is granted will ultimately vest. Companies assume a forfeiture rate, or an amount that will not vest, and are only required to record an expense for the amount expected to vest. This rate is not always disclosed and varies by company. An annual forfeiture rate between 2-10% is most common. The higher forfeiture rate assumed, the lower the expense. However, at the end of each vesting period, companies will make a "true-up" to include actual vested amounts. Beginning in 2017, companies may elect to forego an up-front assumption on forfeitures and instead record their impact as they occur. If this election is made, higher stock-based compensation expense will be recorded up-front, with reversals as forfeitures actually occur.

INCOME STATEMENT

Stock-based compensation expense is not typically a discrete line-item in the income statement. Instead, it's defined as a compensation cost and will be classified where the remainder of that particular employee's compensation cost resides. For example, stock-based compensation for executives will be recorded in SG&A. For manufacturing companies, a portion of stock-based compensation may be capitalized into inventory and eventually recognized as cost of goods sold upon sale. As an example, below we present Tyler Tech's disclosure that shows the allocation of total stock-based compensation expense throughout the income statement line items. At the bottom, there is also disclosure of how much granted, yet unrecognized stock-based compensation remains, along with the weighted average amortization period.

Tyler Tech: Stock Based Compensation Summary

The following table summarizes share-based compensation expense related to share-based awards which is recorded in the consolidated statements of comprehensive income:

	Years Ended December 31,		
	2019	2018	2017
Cost of software services, maintenance and subscriptions	$ 15,002	$ 13,588	$ 9,415
Selling, general and administrative expenses	44,965	39,152	27,933
Total share-based compensation expenses	59,967	52,740	37,348
Excess tax benefit	(29,819)	(32,487)	(40,624)
Net decrease (increase) in net income	$ 30,148	$ 20,253	$ (3,276)

As of December 31, 2019, we had $148.7 million of total unrecognized compensation cost related to unvested options and restricted stock units, net of expected forfeitures, which is expected to be amortized over a weighted average amortization period of 2.5 years.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

FAIR VALUE ASSUMPTIONS

Below we show Tyler Tech's assumptions for determining the fair value of its stock option grants. It is important to look through these disclosures for reasonableness of management inputs, notably the expected volatility and the expected life of the option. For both of these, the lower the number, the lower the option's fair value and, therefore, the lower the stock-based compensation expense.

Tyler Tech: Stock Option Valuation Assumptions

Determining Fair Value of Stock Compensation

Valuation and Amortization Method. We estimate the fair value of stock option awards granted using the Black-Scholes option valuation model. For restricted stock unit and performance stock unit awards, we amortize the fair value of all awards on a straight-line basis over the requisite service periods, which are generally the vesting periods.

The following weighted average assumptions were used for options granted:

	Years Ended December 31,		
	2019	2018	2017
Expected life (in years)	6.0	6.0	6.0
Expected volatility	26.6%	26.7%	28.1%
Risk-free interest rate	1.8%	2.7%	2.0%
Expected forfeiture rate	—%	—%	—%

	2019	2018	2017
Weighted average grant-date fair value of stock options granted	$ 74.54	$ 55.56	$46.89

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

GRANT AND EXERCISE TABLES

Below, we show the tabular format typically used to disclose the activity (number outstanding, number granted, number exercised, etc.) of stock-based compensation grants. Based on the disclosures, Tyler Tech granted 256k RSUs granted at a weighted average value of $241.19. There were 162k options granted (wtd avg. value of $74.54 disclosed on prior page)

Tyler Tech: RSU Awards

The following table summarizes restricted stock unit and performance stock unit activity during fiscal year 2019 (shares in thousands):

	Number of Shares	Weighted Average Grant Date Fair Value per Share
Unvested at January 1, 2018	—	$ —
Granted	336	221.29
Vested	—	—
Forfeited	(2)	229.75
Unvested at December 31, 2018	334	221.25
Granted	256	241.19
Vested	(76)	221.15
Forfeited	(14)	229.75
Unvested at December 31, 2019	500	$ 231.57

Tyler Tech: Stock Option Awards

Options granted, exercised, forfeited and expired are summarized as follows:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value
Outstanding at December 31, 2016	5,156	$ 83.64		
Granted	824	176.26		
Exercised	(1,113)	44.80		
Forfeited	(50)	134.83		
Outstanding at December 31, 2017	4,817	107.91		
Granted	432	208.21		
Exercised	(1,126)	66.53		
Forfeited	(31)	158.80		
Outstanding at December 31, 2018	4,092	129.51		
Granted	162	251.58		
Exercised	(999)	96.92		
Forfeited	(29)	174.54		
Outstanding at December 31, 2019	3,226	$ 145.27	6	$ 499,124
Exercisable at December 31, 2019	2,067	$ 121.07	6	$ 369,938

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

TREASURY STOCK METHOD AND DILUTED SHARE COUNT

Under GAAP, companies calculate the impact of stock-based compensation on their share count using the treasury stock method. When applying the treasury stock method, it is assumed that options are exercised / restricted shares are vested and that the deemed proceeds received by the company are used to repurchase shares at the average market price during the period. Note that the options do not need to be vested to be included in the diluted share count; they only need to be in the money. The shares assumed to be repurchased are then subtracted from the gross number of shares assumed to be issued upon exercise or vesting. If dilutive (e.g. the number of shares issued is greater than the number of shares assumed repurchased), the net number of shares will be included in the diluted share count.

There are several components that are considered assumed proceeds for stock-based compensation under the treasury stock method:

1) The assumed exercise proceeds of options; if any (restricted stock can be thought of as an option with a $0 exercise price)
2) Average unamortized / unrecognized stock-based compensation cost.

Also, there may be other complicating factors included in the assumed proceeds above, such as reductions due to deferred tax assets that would be written off upon vesting / exercise.

TREASURY METHOD EXAMPLE

Next, we show a basic example using the treasury stock method to determine the incremental shares included in the diluted share count. We compare how a restricted share grant and an option grant with the same grant date fair value will differ in terms of dilution impact. We also show how the impact on share count differs with varying average stock price assumptions throughout the year.

Our assumptions start with 1 restricted share granted at a $50 price and 5 stock options granted with an exercise price of $50 each and a fair value per option of $50. In both cases, the total fair value of stock-based compensation granted is $50. We assume a vesting schedule of 2 years so that $25 per year in stock-based compensation expense will be recognized. The example calculates the incremental shares in the diluted share count under the treasury stock method at the end of Year 1.

First, we determine the total proceeds assumed. In each of the varying stock price scenarios, the assumed exercise proceeds will be the same: $0 for the restricted share and $250 for the options (5 options x $50 exercise proceeds each). The average unamortized compensation expense will always be the same as well - given the $50 total compensation cost and $25 recognized in Year 1, the average unamortized expense is $37.5. So, total proceeds will be $37.5 for the restricted share and $287.5 for the options.

Next, we compare the number of shares underlying the stock grant (1 for the restricted share and 5 for the options) to the assumed shares that will be repurchased with the assumed proceeds. This is where the examples will diverge depending on the assumed average stock price throughout the year. As can be seen in the example, at a $40 assumed average stock price, the proceeds from the options would actually repurchase more shares than the options outstanding. The options are out of the money and therefore anti-dilutive – no additional shares will be added to the share count. However, under the restricted share $40 scenario, 0.9 shares would be assumed repurchased, for 0.1 shares incrementally included. At the $60 price assumption, only 0.6 shares will be assumed repurchased under the restricted share column, resulting in 0.4 incremental shares. For options, our assumed proceeds would allow us to buy 4.8 shares, resulting in 0.2 shares incrementally added to the diluted share count. Finally, for the $80 average stock price option, using similar math, the dilutive impact of the restricted share would be 0.5 shares while the options would be 1.4 shares.

This demonstrates how restricted shares will be more dilutive than an equivalent grant of options when the stock price does not appreciate materially; but the further into the money the option becomes, the more dilutive relative to restricted shares.

Treasury Stock Method Calculation Example: Restricted Share vs. Options at Various Average Stock Prices

Assumptions

1 restricted share granted at fair value of $50

5 options granted
Exercise price = $50; fair value per option = $10

2 year cliff vesting schedule

	Restricted Share	Options	Restricted Share	Options	Restricted Share	Options
Assumed average stock price during year	$40.0	$40.0	$60.0	$60.0	$80.0	$80.0
Treasury Stock Calculation at End of Year 1						
Assumed proceeds						
Exercise proceeds (1)	0.0	250.0	0.0	250.0	0.0	250.0
Average unamortized compensation expense *	37.5	37.5	37.5	37.5	37.5	37.5
Total proceeds assumed	37.5	287.5	37.5	287.5	37.5	287.5
Number of shares underlying stock grant	1.0	5.0	1.0	5.0	1.0	5.0
Less: assumed shares repurchased (2)	(0.9)	(7.2)	(0.6)	(4.8)	(0.5)	(3.6)
Incremental shares added to diluted share count	**0.1**	**NA**	**0.4**	**0.2**	**0.5**	**1.4**

* Memo calculation:

Beginning unamortized compensation expense	$50.0
Year 1 stock-based compensation recognized	25.0
End of Year 1 unamortized compensation expense	25.0
Average unamortized compensation expense	37.5

(1) No exercise proceeds for restricted stock. Total exercise proceeds for options = 5 options x $50 exercise price = $250
(2) Assumed shares repurchased = Total proceeds assumed / assumed average stock price during year.

Source: Wolfe Research Accounting & Tax Policy Research.

DILUTION OVERHANG & OUTSTANDING OPTION TRANCHE TABLE

To account for the outstanding restricted shares and options (that haven't been issued or exercised) in the diluted share count, the treasury stock method is used. Only options that are in the money are considered to be included in the diluted share count. For Tyler Tech, in 2019, stock-based compensation resulted in 1.465 million additional shares included in the diluted EPS calculation. Additionally, Tyler Tech discloses that there were 633,000 employee share based awards that have not been included in the diluted share count at period end. This is likely the result of unvested restricted shares and out of the money options. Careful attention should be paid to these for possible future EPS dilution.

Tyler Tech: EPS Calculation

Basic earnings and diluted earnings per share data were computed as follows:

	Years Ended December 31,		
	2019	2018	2017
Numerator for basic and diluted earnings per share:			
Net income	$ 146,527	$ 147,462	$ 169,571
Denominator:			
Weighted-average basic common shares outstanding	38,640	38,445	37,273
Assumed conversion of dilutive securities:			
Stock options	1,465	1,678	1,973
Denominator for diluted earnings per share - Adjusted weighted-average shares	40,105	40,123	39,246
Earnings per common share:			
Basic	$ 3.79	$ 3.84	$ 4.55
Diluted	$ 3.65	$ 3.68	$ 4.32

Share-based awards representing the right to purchase common stock of 633,000 shares in 2019, 888,000 shares in 2018, and 1,343,000 shares in 2017 were not included in the computation of diluted earnings per share because their inclusion would have had an anti-dilutive effect.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

An increase in the market price of a company's stock will result in a large dilution impact if there are a large number of options with exercise prices at or slightly below the current stock price. This is due to the mechanics of the treasury stock method. For example, given a stock price in the period of $20, a tranche of options with a weighted average exercise price of $30 would not be included in calculating diluted EPS. However, if in the following period, there is a large increase in the stock price to somewhere above $30, these options will begin to be included in the diluted share count, reducing EPS.

GAAP removed the requirement to disclose an option tranche table in the mid 2010's, and now very few companies continue to disclose one. If outstanding options are material, analysts should piece together historical option grant and exercise tables to ascertain how many of the remaining outstanding options may be at or close to the money. The key items to look for are the exercise prices and grant/exercise activity.

GAAP treats stock-based compensation cost as a non-cash item that is added back to net income in the calculation of cash flow from operations. Therefore, any free cash flow calculations that use reported operating cash flow figures do not include stock-based compensation. Relatedly, some companies view stock-based compensation expense as a "non-cash" item. We disagree.

In our view, stock-based compensation costs should be thought of in two distinctive components:

1) Choosing to compensate the employee in a specific amount (an operating decision); and
2) The issuance of options or shares directly to the employee instead of cash (a financing decision)

Below is an excerpt from Illumina's statement of cash flows. In 2018, there was $193 million of non-cash share-based compensation expense added back to be included in cash flow from operations. However, as shown in the financing section, there is clearly a cash cost associated with the share-based compensation expense as the company purchased shares to maintain its share count. If not, the share count would rise accordingly as the stock vests (recall restricted stock shares are only included in the diluted share count upon vesting; stock options are included in the diluted share count [based on the treasury stock accounting method] if in the money regardless of vesting).

Illumina Stock-Based Compensation & Buyback Impact on Cash Flow Statement

Stock based compensation is shown as a non-cash add-back to cash flow, however, companies often expend cash to keep share counts flat

	Years Ended		
	December 30, 2018	December 31, 2017	January 1, 2017
Cash flows from operating activities:			
Consolidated net income	$ 782	$ 678	$ 428
Adjustments to reconcile net income to net cash provided by operating activities:			
Gain on deconsolidation of GRAIL	—	(453)	—
Depreciation expense	140	110	90
Amortization of intangible assets	39	46	51
Share-based compensation expense	193	164	129
Accretion of debt discount	41	30	30
Deferred income taxes	(18)	81	94
Impairment of intangible assets	—	23	—
Other	(17)	1	2
Changes in operating assets and liabilities:	(18)	195	(45)
Net cash provided by operating activities	1,142	875	779
Cash flows from investing activities:			
Net cash used in investing activities	(1,813)	(214)	(515)
Cash flows from financing activities:			
Net proceeds from issuance of debt	735	5	5
Common stock repurchases	(201)	(251)	(249)
Proceeds from issuance of common stock	46	71	47
Taxes paid related to net share settlement of equity awards	(74)	(68)	(100)
Net cash provided by (used in) financing activities	594	(176)	(296)

Per 2018 10-K

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Analytically, we view the amount of compensation paid to the employee as a cash cost. Our view is that this is akin to the company selling the options or shares to an outside party and paying the employee in cash - an economically identical transaction with very different accounting impacts.

The cash cost of stock-based compensation as an adjustment to operating cash flow may be calculated in a variety of ways, none of which are perfect:

1) Treat the reported stock-based comp. expense as a recurring operating cash outflow. This is relatively simple with likely as much accuracy as the methods discussed next.
2) Treat the normalized annual fair value of stock comp. granted as a recurring operating cash outflow. Sometimes, due to changes in compensation policies, the reported stock-based compensation amount is not representative of future stock compensation amounts. In this case, we suggest using the normalized fair value of stock-based compensation grants. This amount is calculated by using the value granted in the most recent year (or an average of recent years) similar to how we calculated it previously in the fair value calculation of total stock-based compensation granted. In turn, adjustments can be made for any expected changes in company stock compensation policies.
3) Treat the actual economic cost of vested restricted stock and exercised options as a recurring cash outflow. The true economic cost of stock-based compensation is the transfer of value from the company to employees. For exercised options, this is the difference in the exercise price and the stock price at exercise date. For restricted stock, the exercise price is $0, and the exercise date is the vesting date. Again, there may be a historical bias in this amount as it reflects a compensation policy when the options were issued in the past (sometimes up to ten years ago) and may not be representative of the current stock-based compensation practices. Note that this option may be the most volatile from year to year and thus hardest to normalize.

Incorporating Stock Based Compensation as a Cash Cost (Illumina)

	$ millions	2018	2017	2016
	Cash flow from operations (reported)	1,142	875	779
(1)	Less: Stock based compensation	(193)	(164)	(129)
	Adjusted cash flow from operations	**949**	**711**	**650**
	Cash flow from operations (reported)	1,142	875	779
(2)	Less: Fair value of stock comp. granted	(279)	(228)	(184)
	Adjusted cash flow from operations	**863**	**647**	**595**
	Cash flow from operations (reported)	1,142	875	779
(3)	Less: Economic cash cost of RSU vest / option exercise	(196)	(231)	(199)
	Adjusted cash flow from operations	**946**	**644**	**580**

1) Stock-based compensation directly from the cash flow statement
2) Fair value of stock comp granted based on # of options / RSUs granted x average price
3) Economic cash cost calculated as RSUs value vested + intrinsic option value exercised

Note: Above example assumes cash taxes embedded in cash flow from operations. Individual adjustments may be made to more accurately tailor estimated tax impact with selected cash stock compensation estimate.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

The reported stock-based compensation in (1) above was pulled directly from the cash flow statement example on the previous page. The calculations for (2) and (3) are discussed on the following page.

TOTAL STOCK-BASED COMPENSATION GRANTED

Another option for calculating the economic cash cost of stock-based compensation is the normalized total fair value that is granted. This can be attained from the disclosures below. Generally, multiply the number of grants (options/RSUs/restricted shares) by the fair value per item granted. Restricted shares are straightforward as both items are disclosed in the grant table. For options, it's important to use the fair value of the options granted (which is disclosed in the table with the model assumptions) as opposed to the weighted average exercise price disclosed in the roll-forward table.

In 2018, there were 655,000 shares of RSUs granted at a fair value of $322/share along with 336,000 PSUs at $232/share. The total stock-based compensation granted in 2017 was $279 million.

Fair Value Calculation of Illumina's Total Stock-Based Compensation Granted

	Restricted Stock Units (RSU)	Performance Stock Units (PSU)(1)	Weighted-Average Grant-Date Fair Value per Share	
			RSU	PSU
Outstanding at January 3, 2016	2,206	583	$ 131.80	$ 169.41
Awarded	1,245	172	$ 132.47	$ 113..56
Vested	(928)	(199)	$ 105.49	$ 148.99
Cancelled	(230)	(96)	$ 139.74	$ 163.05
Outstanding at January 1, 2017	2,293	460	$ 141.80	$ 158.66
Awarded	879	238	$ 207.38	$ 191.53
Vested	(861)	(92)	$ 131.62	$ 189.09
Cancelled	(226)	(64)	$ 149.03	$ 173.83
Outstanding at December 31, 2017	2,085	542	$ 172.92	$ 166.15
Awarded	655	336	$ 322.04	$ 232.08
Vested	(731)	(188)	$ 170.50	$ 176.15
Cancelled	(169)	(30)	$ 172.30	$ 162.54
Outstanding at December 30, 2018	1,840	660	$ 227.00	$ 196.99

Calculated fair value of stock compensation grants:

Year	RSU Granted	PSU Granted	RSU FV	PSU FV	Number Granted (millions)	Weighted Ave. Fair Value ($) per share	Compensation Granted ($ in millions)
2016	1,245	172	$132.47	$113.56	1.42	$130.17	$184
2017	879	238	$207.38	$191.53	1.12	$204.00	$228
2018	655	336	$322.04	$203.08	0.99	$281.71	$279

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

ECONOMIC COST OF STOCK-BASED COMPENSATION

The true net economic cost of stock-based compensation is the transfer of value from the company to employees.
The net economic cost of stock-based compensation is calculated as follows:

Fair value of stock options exercised and restricted shares/ RSUs vested during the period:

Fair value of options exercised = number of stock options exercised X the average stock value during the period.

Fair value of restricted shares/ RSUs = number of restricted shares/ RSUs vested X the average stock value during the period.

Less: Cash received from stock option exercises (calculated as number of stock options exercised X the weighted average exercise price). No exercise proceeds from restricted stock/ RSUs.

Less: Cash tax benefit of stock options exercised and restricted shares / RSUs vested. For statutory stock options (most plans) the company does not receive a tax deduction until the option is exercised. The cash tax benefit should be disclosed by the company, typically in the narrative of the stock compensation footnote.

Equals: Net cash cost of stock options exercised / restricted shares vesting during the period.

In the following exhibit, Illumina actually provides the gross cash cost of stock-based compensation. For 2018, a total of $191 million based on the intrinsic value of option exercises ($33 million), fair value of restricted stock vested ($125 + $33 million). The cash tax benefit would be $40 million at a 21% tax rate. We estimate the net cash cost of stock-based compensation in 2018 was $151 million.

Net Economic Cost of Illumina's Total Stock-Based Compensation Granted

	Years Ended		
	December 30, 2018	December 31, 2017	January 1, 2017
Fair value of restricted stock vested:			
RSU	$ 125	$ 113	$ 98
PSU	$ 33	$ 17	$ 30

Total intrinsic value of options exercised was $33 million, $101 million, and $71 million for the years ended December 30, 2018, December 31, 2017, and January 1, 2017, respectively.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

OUTSTANDING UNVESTED RESTRICTED SHARES AND UNEXERCISED OPTIONS

For discounted cash flow / enterprise value purposes, it may be appropriate to also consider the value of all currently outstanding options and unvested restricted shares as a liability.

- For restricted shares, multiply the outstanding # of shares by the current stock price (the target stock price may also be used, though this will become a circular argument determining what is already "baked into" the current market cap value.)
- For stock options, ideally, we would multiply the number of outstanding options x the average value per stock option. However, this stock option value is likely difficult to estimate given the outstanding options are made up of many different tranches each with varying maturities and exercise prices. Therefore, as a proxy, we can use the estimated intrinsic value of outstanding options, given the disclosure of number and weighted average exercise price.

We make this calculation for Illumina below, using the disclosed outstanding RSUs (we also include the PSUs) and options. We calculate an outstanding value of stock based comp shares of $881 million, which we would consider akin to debt for valuation purposes.

Fair Value Calculation of Illumina's Outstanding Unvested Restricted Shares and Stock Options

	Restricted Stock Units (RSU)	Performance Stock Units (PSU)(1)	Weighted-Average Grant-Date Fair Value per Share	
			RSU	PSU
Outstanding at December 30, 2018	1,840	660	$ 227.00	$ 196.99

	Options (in thousands)	Weighted-Average Exercise Price
Outstanding and exercisable at December 30, 2018	192	$ 54.52

Calculated fair value of outstanding stock compensation shares:

	Number O/S (mln)	Avg. Exercise Price	Current stock price	Total Value (mln)
Restricted shares	2.50	$0.00	$331.00	$828
Stock options	0.19	$54.52	$331.00	$53
				$881

Source: Wolfe Research Accounting & Tax Policy Research; Company filings. Current stock price as of 12/31/2019.

When treating the above as a liability for valuation purposes, it is important to use a *basic* outstanding share count for any individual stock price fair value or target price calculations.

In our view, the combination of treating normalized / ongoing stock compensation expense as a current period cash cost, while the treating the value of outstanding compensation shares as a liability would not be double counting so long as the *basic* share count is used. The diluted share count does indeed include a blend of some of the outstanding compensation securities, but does not fully bake into account the potential transfer of value from employee to shareholder given the mechanics of the treasury stock method (e.g. the use of unrecognized stock compensation expense as proceeds).

ARE BUYBACKS REALLY RETURNING CAPITAL TO SHAREHOLDERS?

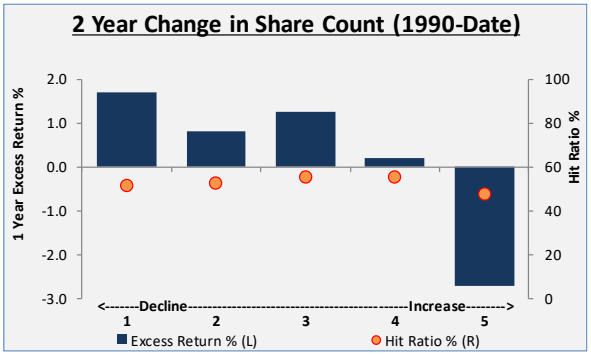
While there is no direct cash expended for stock-based compensation, some of the largest grantors of stock based-compensation purposely repurchase shares each year to maintain a constant share count. This wealth transfer escapes traditional cash flow metrics such as free cash flow yield and, therefore, the amount of cash flow reported may not be reflective of economic reality or the business' cash generation capabilities. As an example, Illumina repurchased ~$940 million (5 million shares) of stock in 2016-2018. However, the company's share count remained essentially flat as the company issued that same amount to employees through its stock-based compensation programs.

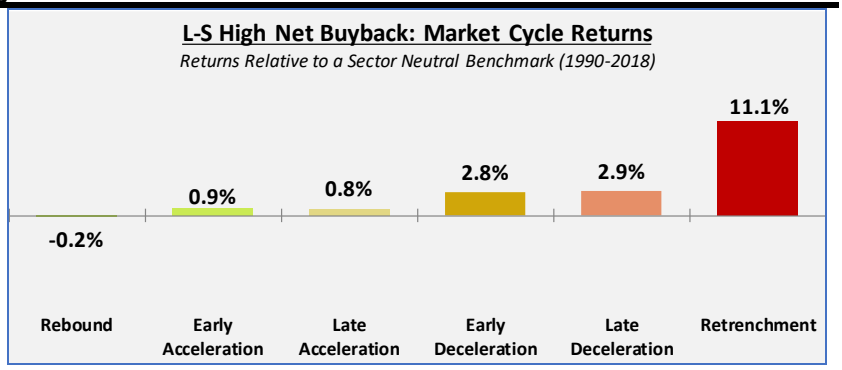
Ilumina(millions)	Shares O/S		Share repurchases $
1/3/2016	147		
Shares issued - stock comp.	5		
Shares repurchased	(5)	$	943
12/30/2018	147		
Net share count change vs. $ repurchased	**0%**	**$**	**943**

OUR RESEARCH SUGGESTS FOCUSING ON SHARE COUNT CHANGE

In our view, investors should focus on the overall change in a company's share count as opposed to buyback dollars taken from the cash flow statement. Based on our historical research, companies with the largest share count decline over the prior two-year period outperformed their sectors by the widest margin (top 20%) as shown in the chart below. It's clear that "real" (net) buybacks have been rewarded by the stock market over the years, and this metric has worked consistently throughout the cycle.

Historical Relative Stock Returns: Share Count Changes





Note: Universe is 1000 largest U.S. market cap cos. Sector neutral. Annualized monthly rebalanced returns 1990 through 2018.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings; FactSet.

Income Taxes

INCOME TAXES

While the recently enacted US corporate tax reform substantially reduced the US tax rate, reviewing and understanding a company's tax situation will still be critical to proper financial analysis. In fact, we believe that a proper analysis of a company's tax disclosures is more important than ever due to the developing guidance and changing provisions and deductions, including foreign earnings provisions, interest deductibility, NOLS, and bonus depreciation. Additionally, all companies will experience incomparability with historical periods. The income tax footnote is one of the most complex notes in a 10-K. In addition, taxes provide management with another avenue to manage earnings and EPS

Assessing the sustainability of a company's effective and cash tax rates is essential for company analysis. In reviewing the disclosures, look for the main drivers of the current GAAP effective tax rate (income tax expense divided by pre-tax GAAP income) and the cash tax rate (cash taxes as disclosed / pre-tax GAAP income). These rates must be taken in context with industry peer companies and geographic segments and incorporation.

Income taxes are one of the areas with consistently low earnings quality. A low or high tax rate is a classic reason companies may beat or miss earnings expectations. Unexpected tax rates / provisions may occur for three reasons:

- **Quarterly tax rates are based on the estimated annual tax rate.** Using a higher annual effective tax rate assumption in an early quarter in the year allows the company to true-up the tax rate in any particularly quarter. If the company deems the prospective tax rate to be lower, a "catch-up" gain is recorded in earnings.
- **Tax reserve accounts.** Companies must maintain an accrued liability for uncertain tax positions (i.e., when a company deducts an expense on their tax return (saving cash taxes) but does not record the tax benefit in its GAAP financial statements due to potential audit risk). These reserve accounts have significant management discretion. Part of the liability could be reversed as a gain offsetting income tax expense for a variety of reasons, such as a settlement with the IRS or some other judgmental determination that the accrued tax liability is no longer necessary.
- **The presence of historical net operating losses often causes significant volatility in a company's tax rate.** If a company is in a 3-year cumulative loss position, it may have recorded a valuation allowance on its net deferred tax assets. When this occurs, the company will report a very low GAAP effective tax rate. However, once the company returns to reporting consistent GAAP profitability (6-8 quarters), the tax rate will increase to a more normalized level. The auditors will require the company to reverse the deferred tax asset valuation allowance as a one-time gain offsetting income tax expense in earnings and then report a normal tax rate going forward. This increase in tax rate may present a potential source of negative earnings surprise.

Perhaps the most glaring example was Enron. In 2000, Enron reported $1.4 billion in GAAP earnings. However, the company reported a very low cash tax rate during periods where it was later found that there was fraud. What this suggests is that the IRS did not deem the income reported by Enron as real taxable income subject to taxes. The IRS uses a definition of taxable income closer to a cash basis income, meaning that companies overstating earnings through non-cash means will generally pay lower cash taxes since the tax authorities don't deem the GAAP income as real income.

A Low Cash Tax Rate Was a Sign at Enron

ENRON
Calculated Cash Tax Rate

($ in millions)	Year ended December 31,		
	1998	**1999**	**2000**
Income before taxes	$878	$1,128	$1,413
Cash taxes, net of refunds	73	51	62
Cash tax rate	8%	5%	4%

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

WHAT ARE THE DRIVERS OF A DIFFERENT EFFECTIVE INCOME TAX RATE VS STATUTORY?

Many companies report effective income tax rates for GAAP that are materially lower than the US statutory rate (21% beginning in 2018, 35% prior). The income tax footnote contains a reconciliation disclosure that will show in tabular format the reasons the GAAP rate is different from the statutory rate. It will be reported in either tax rate percentage terms or in absolute dollar terms. For a U.S.-based company with mainly domestic revenues, a typical effective income tax rate is between 21-25% including state taxes. Depending on the state, income tax rates range from 0% to 9% (companies receive a deduction on their corporate tax return for state income taxes paid. Therefore, the state tax amount shown on this reconciliation schedule is net of the federal income tax benefit). Common reasons for different than the statutory effective income tax rate include:

1) State taxes
2) Net operating losses / valuation allowances
3) Income earned in foreign countries that have (typically) lower tax rates
4) Minimum taxes on foreign earnings (GILTI / BEAT)
5) Tax credits (most notably, research & development tax credit)
6) Stock compensation tax benefits / expenses
7) Foreign derived intangible income (FDII) subsidy
8) Changes in uncertain tax positions / settlements with IRS.

Next, we illustrate 3M's income tax rate reconciliation. 3M reported an effective income tax rate of 19.8%. the major items that lowered the effective tax rate were FDII, R&D tax credits and stock comp. tax benefits. The primary offsets to those amounts were state taxes, GILTI, and reserve for tax contingencies (uncertain tax positions). These items are discussed in more detail shortly.

MMM: Statutory to Effective Income Tax Rate Reconciliation

	2019	2018	2017
Statutory U.S. tax rate	**21.0 %**	21.0 %	35.0 %
State income taxes - net of federal benefit	**0.5**	1.0	0.8
International income taxes - net	**0.2**	0.2	(6.3)
Global Intangible Low Taxed Income (GILTI)	**1.8**	1.1	—
Foreign Derived Intangible Income (FDII)	**(2.9)**	(1.3)	—
U.S. TCJA enactment - net impacts	**—**	2.5	10.1
U.S. research and development credit	**(1.7)**	(1.5)	(0.7)
Reserves for tax contingencies	**2.3**	1.2	2.2
Domestic Manufacturer's deduction	**—**	—	(1.8)
Employee share-based payments	**(1.3)**	(1.4)	(3.2)
All other - net	**(0.1)**	0.6	(0.6)
Effective worldwide tax rate	**19.8 %**	23.4 %	35.5 %

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

As mentioned, some companies present their reconciliation of statutory and effective tax rate differently than the above disclosure, using instead the actual dollars of income tax provision. Interestingly, disclosing in this manner may somewhat mask a low tax rate as an additional step must be performed to translate the dollar amounts into percentage terms. In this method of disclosure, each line item can be converted to a percentage by dividing by the "earnings before income taxes" (pre-tax GAAP income) line found in the income statement.

Using Apple's disclosure below, we would divide each of the 2019 amounts in Apple's disclosure below by the pre-tax income amount of $65.8 billion (from Apple's income statement). Dividing the total tax provision of $10.5 billion by $65.8 billion results in an effective tax rate of 16% compared to the 21% statutory corporate income tax rate. The primary driver is earnings of foreign subsidiaries (at lower tax rates than 21%). This specifically benefitted the tax rate by $2.625 / $65.8 = ~4% the company also had benefits from R&D tax credits and tax benefits from equity awards (discussed later).

Apple: Statutory to Effective Tax Rate Alternative Calculation ($ in millions)

A reconciliation of the provision for income taxes, with the amount computed by applying the statutory federal income tax rate (21% in 2019; 24.5% in 2018; 35% in 2017) to income before provision for income taxes for 2019, 2018 and 2017, is as follows (dollars in millions):

	2019	2018	2017
Computed expected tax	$ 13,805	$ 17,890	$ 22,431
State taxes, net of federal effect	423	271	185
Impacts of the Act	—	1,515	—
Earnings of foreign subsidiaries	(2,625)	(5,606)	(6,135)
Research and development credit, net	(548)	(560)	(678)
Excess tax benefits from equity awards	(639)	(675)	—
Other	65	537	(65)
Provision for income taxes	$ 10,481	$ 13,372	$ 15,738
Effective tax rate	15.9%	18.3%	24.6%

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

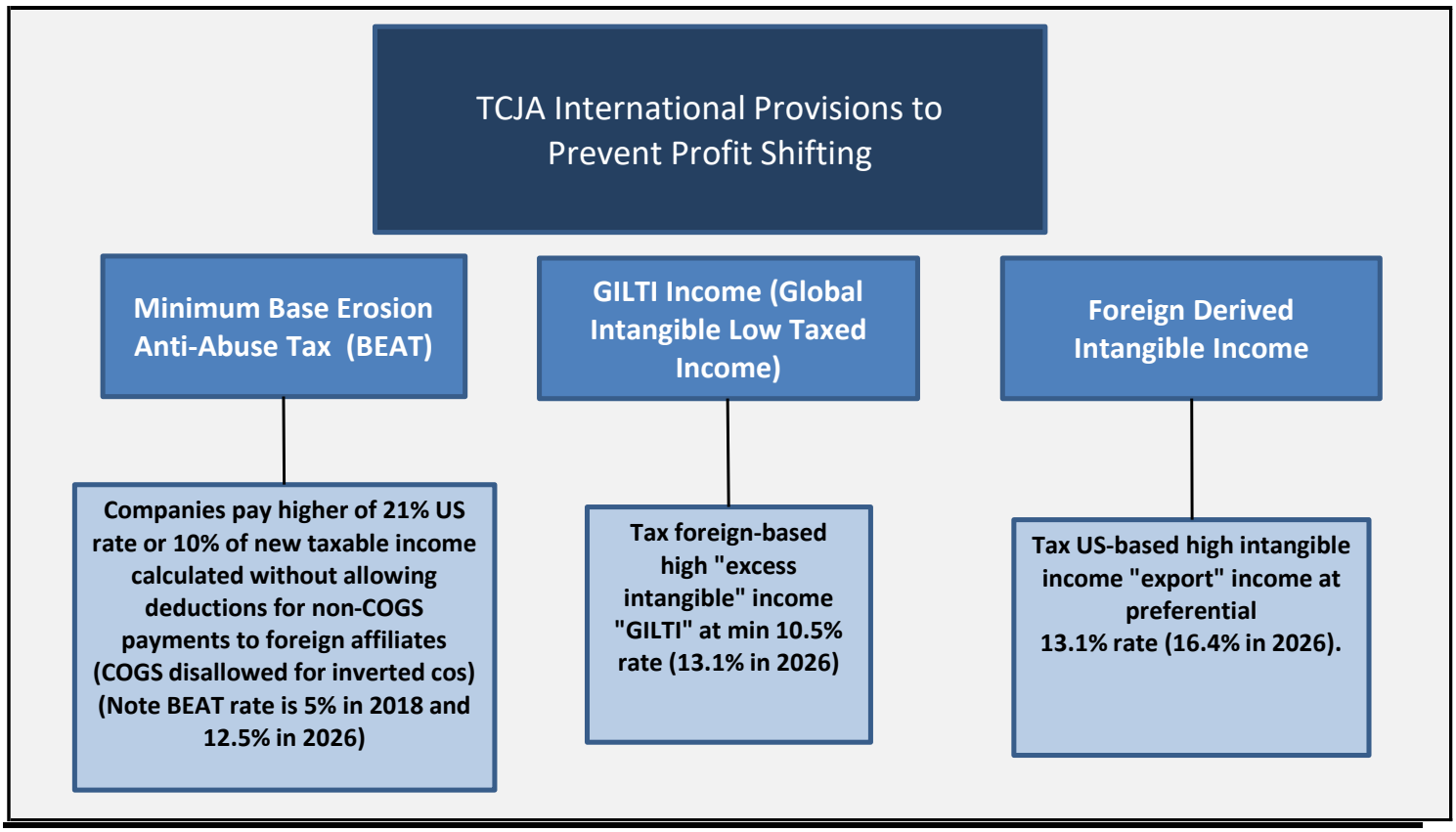
TAXING FOREIGN EARNINGS

After the TCJA, the US employs a "territorial" tax system meaning that only income generated within the US will be taxed. Even at a lower U.S. 21% tax rate, multinational companies are incentivized to generate more income in lower-taxed foreign jurisdictions. The primary measures that companies historically use to shift profits from U.S. entities to international affiliates include transfer pricing, intangible asset transfers and earnings stripping (levering up a US entity to a foreign affiliate with intercompany debt). As a result, the TCJA also instituted several provisions to help minimize the use of these strategies. These base erosion protection measures are designed to prevent or slow the shifting of U.S. taxable income (and thus U.S. tax avoidance) to foreign based income.

The main provisions meant to curb income shifting and incentivize US based activities are described below.

1) 'BEAT' tax (base erosion anti-abuse tax): Companies must pay the greater of the regular 21% US tax or 10% (5% in 2018, 12.5% after 2026) of a taxable income after adding back non-Cost of Goods sold payments to foreign affiliates. This will impact multinational U.S. and non-U.S. companies that do business in the U.S. alike, including inverted companies.
2) Changes in how international intangible income is taxed (meant to curb intangible asset transfers). U.S. companies with foreign subsidiaries with intangibles are required to pay a minimum effective 10.5% tax rate on foreign-based "GILTI" income.
3) Foreign derived intangible income (FDII) deduction. Any US based intangible income from non-US sources (e.g. "export") will pay a lower 13.1% tax rate.

TCJA Provisions to Curb Income Shifting



Source: Wolfe Research, Tax Cuts & Jobs Act.

HOW TO DETERMINE IF COMPANIES ARE AT RISK DUE TO PROFIT SHIFTING

Companies do not usually plainly disclose the use of profit shifting tax strategies. The best way to determine whether a company may be at risk of losing the benefits of these tax strategies is to look at the differential between percentage of reported US sales and percentage of US reported pre-tax income. The percentage of US sales can best be identified within the 10-K segment disclosures footnote, where companies must report major geographic segments. The income tax footnote contains a breakout of US vs. Non-US pre-tax income. Absent profit shifting or other one-time items, the percentage of US sales should generally be consistent with the percentage of US pre-tax income (at least within a range, as there may be differences in business focus / margins between US and foreign subsidiaries).

Below, using Hanes Brands as an example, we show how these amounts historically diverged. Combined with low effective / cash tax rates (not shown), this was an indicator of increased risk that the company would actually face a headwind from corporate tax reform due to making it more difficult to shift income.

Hanes Brands: US Sales vs. US Pre-tax Income

(23)Geographic Area Information

	Years Ended or at					
	December 28, 2019		December 29, 2018		December 30, 2017	
	Sales	Property, Net	Sales	Property, Net	Sales	Property, Net
Americas	$ 4,659,772	$ 383,219	$ 4,658,346	$ 402,370	$ 4,620,931	$ 413,900
Asia Pacific	1,247,989	104,041	1,129,605	104,305	909,539	102,430
Europe	1,023,639	99,560	987,016	99,835	914,415	105,825
Other	35,523	1,076	28,988	1,178	26,525	1,836
	$ 6,966,923	$ 587,896	$ 6,803,955	$ 607,688	$ 6,471,410	$ 623,991

The provision for income tax computed by applying the U.S. statutory rate to income before taxes as reconciled to the actual provisions were:

	Years Ended		
	December 28, 2019	December 29, 2018	December 30, 2017
Income before income tax expense:			
Domestic	(6.5)%	(9.5)%	(6.7)%
Foreign	106.5	109.5	106.7
	100.0 %	100.0 %	100.0 %

Despite the fact that 70-80% of reported sales were to US customers, very little of pre-tax income was reported as domestic

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

UNCERTAIN TAX POSITION ACCRUAL — ARE THERE LARGE POTENTIAL TAX LIABILITIES?

Companies record a reserve (accrued liability or often referred to as "tax reserves") for tax positions taken on their tax return that may not hold up under an IRS audit. Analysts should pay particularly close attention to this portion of the income tax footnote as it is both a way to manage earnings and can also result in a large cash tax outflow for income taxes. The accounting standard that sets forth this guidance and the related disclosures is FASB Interpretation No. 48 ("FIN 48"), *Accounting for Uncertainty in Income Taxes*. While companies calculate their current year GAAP and IRS income tax amounts annually, a long audit cycle (3 years, perhaps longer once IRS contesting occurs), causes uncertainty about the actual tax amounts that will be ultimately owed to the tax authorities. FIN 48 also requires increased annual disclosure of the company's uncertain (i.e., aggressive) tax positions.

FIN 48 provides guidance on how to calculate GAAP income tax expense when there is uncertainty in the allowable amount of a tax deduction (taken on the company's tax return). FIN 48 uses a two-step model in accounting for uncertain tax positions. First, determine if there is a greater than 50% chance that the tax position taken by the company would be allowed upon a tax audit. If yes, then a GAAP tax benefit is recorded (in the income statement by way of lower income tax expense) equal to the largest amount that has a greater than 50% chance of being realized. The remaining amount is treated as an uncertain tax position. If the answer is no in this two-step model, then none of the tax benefit is recognized in the income statement (through lower income tax expense) and the entire amount is recorded as an uncertain tax position (in the language of accountants: debit income tax expense, credit income tax accrued liability). Importantly, in this determination of an uncertain tax position, companies are required to assume that the tax position will be reviewed by the IRS/tax enforcers and such authorities will have complete knowledge and all relevant facts with respect to the tax position.

FIN 48 Reconciliation Disclosure

Analysts should pay attention to the reconciliation of unrecognized tax benefits. In tabular format, it provides a beginning to end of year activity rollforward for the "tax reserve". What this tax reserve represents is the reserve for "uncertain tax positions" as follows:

- The entirety of tax positions that would have less than a 50% chance of being sustained upon an audit.
- Portions of tax positions that have an at least 50% chance of being sustained upon an audit, but not 100%. When this occurs, the company records the tax benefit only up to the amount likely to be sustained. For example, if a company received a $1,000 tax benefit from a tax deduction taken and the highest probable amount likely to be sustained upon audit is $600, the remaining $400 would be recorded as the unrecognized tax benefit on the FIN 48 schedule.

Analysts should heavily scrutinize the tax footnote reconciliation of unrecognized tax benefits. In tabular format, it provides a beginning to end of year activity roll forward for the "tax reserve". The next exhibit is an excerpt of UTX's unrecognized tax benefit (uncertain tax positions) liability reconciliation. It shows the balance of $1.189 billion at the beginning of the year and activity within the account during the year that resulted in an ending balance of $1.619 billion.

In 2018, there were $192 million of unrecognized tax benefits taken as new tax positions on the company's tax return, but not recognized for GAAP (as a reduction in income tax expense). The current period "additions" in this table provides insight into the amount of uncertain tax positions recognized on the tax return in the current year. Large year-over-year increases may suggest more aggressive tax planning in the current year. There were $344 million of additions for tax positions taken in prior years. There was a $91 million reduction for the reversals of prior year positions. These reversal amounts are netted against income tax expense reported on the income statement and lowered the effective tax rate. Often the timing and amount of the reversals is highly subject to management discretion and, therefore, we closely analyze such reversals (when a company reports higher earnings from a lower than expected tax rate, this is likely the reason). Lastly, there was a $15 million decrease in the reserve due to settlements with the tax authorities. This amount, too, reduced the company's effective tax rate in the current year.

UTX: Uncertain Tax Positions

(dollars in millions)	2018	2017	2016
Balance at January 1	**$ 1,189**	$ 1,089	$ 1,223
Additions for tax positions related to the current year	**192**	192	164
Additions for tax positions of prior years	**344**	73	435
Reductions for tax positions of prior years	**(91)**	(91)	(47)
Settlements	**(15)**	(71)	(686)
Balance at December 31	**$ 1,619**	$ 1,169	$ 1,089
Gross interest expense related to unrecognized tax benefits	**$ 37**	$ 39	$ 180
Total accrued interest balance at December 31	**$ 255**	$ 176	$ 292

Note: Per 2016 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Based on the $91 million reduction for tax positions of prior years in 2018 noted above, we estimate this lowered the 2018 effective tax rate by 1%. In other words, if UTX had not reversed this liability, the effective tax rate would have been 13.6% instead of the reported 12.5%.

UTX: Effective Tax Rate ($ millions)

2018 Effective Tax Rate Calc.	Reported	Add-back Reserve Reversals	Adjusted
Income Tax Expense	$1,038	$91	$1,129
Pre-tax Income	$8,280		$8,280
Effective Tax Rate	12.5%		13.6%
Impact of reversals on tax rate:		-1%	

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

There are a few important items to keep in mind when analyzing this schedule:

1. The balance is not the maximum expected cash payments from unfavorable tax audits, is not an expected value of future taxes owed on uncertain tax positions and it does not include any interest or penalties that might be owed to the IRS upon an unfavorable settlement (e.g., there is a 20% annual penalty for substantial underpayment of taxes and companies are charged accrued interest on the amounts owed since the tax return filing date).

2. There are many other tax positions that, upon audit, might be disallowed (e.g., aggressive transfer pricing). At the time of the GAAP financial statements, these positions may have met the FIN 48 threshold for recording the tax benefit in the income statement and, therefore, are not recorded as an uncertain tax position.
3. It is very difficult to accurately estimate the expected future cash payments with respect to uncertain tax positions and the liability often includes hundreds of different tax positions taken over multiple years.

HOW TO ANALYTICALLY ASSESS UNCERTAIN TAX POSITIONS

We suggest analysts assess, standardize, and compare uncertain tax risk across companies by using several metrics:

1. **Short-term risk:** Compare the current year additions to one or all of the following: the beginning reserve balance, the total income tax expense, an average of the prior 3 to 5 years' income tax expense (to remove potential one-year volatility in income tax expense) and cash income taxes paid in the current year. Recording an uncertain tax position reduces a company's cash tax rate, but not the GAAP tax rate. Therefore, a high ratio of uncertain tax positions to the aforementioned items suggests that a company's low cash tax rate (and, therefore, higher operating cash flow) may be driven by aggressive / uncertain and unsustainable tax positions. Changes in unrecognized tax benefits are recorded through GAAP income tax expense.
2. **Long-term risk:** Compare the uncertain tax position balance to free cash flow and current market capitalization of the company. Keep in mind that the ending balance represents at least several years of tax positions that have not yet been audited or where the tax statute of limitations remains open. It is not an expected cash outflow but can be thought of more as a "worst-case scenario".

Below, we use UTX as an example to analyze their tax reserve. As percentage of the tax reserve's beginning balance, the current year additions have been increasing (16% in 2018 and 18% in 2017 vs. 6% in 2016). Prior period revisions materially increased from 7% to 29%. For long-term risk, the reserve balance is currently ~1% of market cap. (small) and ~31% of the company's free cash flow (medium). We conclude that the short-term risk has been rising given the movement in the reserve and larger y/y current/prior period additions. Long-term risk remains lower given it's a small percentage of market cap. and one year's free cash flow. An ending balance greater than 20% of market cap. or greater than one year's free cash flow is concerning to us.

UTX: Analyzing Tax Reserve ($ millions)

Short-term risk:

	2018	2017	2016
Current period additions	$192	$192	$69
Prior period revisions	$344	$73	$167
Reserve Beginning Balance	$1,189	$1,086	$1,169
Additions / Beginning Balance	16%	18%	6%
Revisions / Beginning Balance	29%	7%	14%

Long-term risk:

	2018	Tax Reserve as % of MC / FCFF
Tax Reserve Balance	$1,619	
Market Cap.	$128,012	1%
Free Cash Flow	$5,278	31%

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

DEFERRED TAX ASSETS / LIABILITY TABLE

At a high level, deferred tax assets and liabilities (DTAs / DTLs) represent timing differences between when an item is deducted/recognized as income on the GAAP financial statements and the company's tax return. This is because GAAP is based on the accrual accounting concept and the tax code is generally based on cash accounting. The recording of a deferred tax asset/liability bridges this timing difference and allows a normal tax rate to be recorded on the GAAP financial statements.

Some of the more common timing differences that create DTAs / DTLs:

1) Reserves (warranty, bad debt, restructuring etc.): Will create a deferred tax asset as expenses will be recorded first. The DTA will reverse when tax deduction is taken when the cash is expended.
2) Pensions: as most plans are underfunded, typically will create a deferred tax asset as pension costs are recorded in earnings or AOCI. The DTA will reverse when a cash contribution to the pension plan occurs.
3) Net operating losses (NOLs): NOLs are tax losses that are carried forward to be used against future taxable income. The DTA will reverse upon usage of the NOL.
4) Depreciation / PP&E: Accelerated & bonus depreciation is used for tax purposes and creates a larger tax shield vs. the typical straight-line expense recognized for GAAP purposes. This will create a deferred tax liability (DTL). For any given asset, this DTL will reverse as time passes and GAAP depreciation expense becomes larger than the tax depreciation deduction. Overall, the entire DTL for depreciation will depend on level and growth of capex. Continually growing capex into perpetuity may result in the DTL never reversing (e.g. may be considered equivalent to equity).

ARE DEFERRED TAX VALUATION ALLOWANCES REQUIRED?

Accounting rules require that companies evaluate their net tax assets for realizability. A company must actually have positive pre-tax income in the future in order to utilize / realize the value of these deferred tax assets A deferred tax asset write-down, or valuation allowance, must be recorded if, based on available evidence, there is a more than 50% chance that some portion or all of the deferred tax assets will not be realized by the company. The accounting standards on valuation allowances are set forth in ASC 740. In determining whether tax assets should be written-down to their realizable value, the rules require both positive and negative evidence to be considered. In order to justify the realizability of the tax assets, the company must demonstrate the ability to generate a specific type of taxable income that is of the same character as the tax asset's attributes (i.e., same jurisdiction and type [e.g. capital loss vs. ordinary income]).

The recording of a valuation allowance, or deferred tax asset write-down, is recorded as an increase to income tax expense in the income statement with a corresponding increase to the deferred tax asset valuation allowance account. There will be a direct impact on GAAP shareholders equity due to the write-down. For reporting purposes, the deferred tax valuation account is netted against the net deferred tax asset amount on the balance sheet (a contra-asset account akin to bad debt allowance netted against accounts receivable). It's important to note that despite any deferred tax asset valuation allowance, the actual tax attributes (e.g. NOLs) continue to exist and may be utilized so long as the taxable income generated allows for it.

When a company is valued on book value metrics, the evaluation of tax asset realizability and assessing potential valuation allowances is critical. This is particularly true for financial institutions.

The disclosure below shows that AK Steel has ~$2.1 billion US operating loss carryforwards (this is the amount that would pre-tax income dollar-for-dollar; to calculate the amount that would offset taxes, multiply by the respective tax rate [e.g., 21%]). There was a DTA (tax amount) of $516.7 million including capital loss carryforwards and other tax credits. In addition, there are several other items that warrant a discussion. There is a $81.8 million and $114.1 million deferred tax asset for postretirement benefits and pensions, respectively. This is due to the timing of when the pension/OPEB expense is recognized on the GAAP financial statements as an expense (earlier) and deductible for tax purposes (when the cash is paid to the pension trust or OPEB benefits/trust). In reviewing this table, we also look for large deferred tax liability balances. Such items represent a possible future cash outflow from higher cash taxes, the timing of which is uncertain and a question for management. AK Steel has $108 million in deferred tax liabilities due to depreciable assets, due to the accelerated depreciation for tax purposes vs. GAAP.

A couple of other notes on this table: AK Steel shows a material $693.5 million valuation allowance against its DTA, indicating it foresees <50% likelihood that the company will generate enough taxable income to use these amounts that will result in cash tax savings in the next several years (note that this does not diminish the actual legal usability of the carryforwards if income is indeed generated).

AK Steel: Deferred Tax Asset/Liability Table with Large NOL Carryforwards

At December 31, 2018, we had $2,174.0 in federal regular net operating loss carryforwards, which will expire between 2030 and 2037. Our net operating loss carryovers generated through 2017 retain the original 20-year carryover periods and can be used to offset future taxable income without limitation. At December 31, 2018, we had research and development ("R&D") credit carryforwards of $1.2 that we may use to offset future income tax liabilities. The R&D credits expire between 2027 and 2028. At December 31, 2018, we had $89.2 in deferred tax assets for state net operating loss carryforwards and tax credit carryforwards, before considering valuation allowances, which will expire between 2018 and 2038.

Significant components of deferred tax assets and liabilities at December 31, 2018 and 2017 are presented below:

	2018	2017
Deferred tax assets:		
Net operating and capital loss and tax credit carryforwards	$ 516.7	$ 619.5
Postretirement benefits	81.8	92.5
Pension benefits	114.1	117.5
Inventories	38.5	47.9
Other assets	65.1	71.6
Valuation allowance	(693.5)	(735.7)
Total deferred tax assets	122.7	213.3
Deferred tax liabilities:		
Depreciable assets	(108..3)	(121.9)
Other liabilities	(33.4)	(118.3)
Total deferred tax liabilities	(141.7)	(240.2)
Net deferred tax liabilities	$ (19.0)	$ (26..9)

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

DEFERRED TAX ASSETS/LIABILITIES: NET OPERATING LOSS CARRYFORWARDS?

Large tax net operating loss ("NOL") carryforwards may be a "hidden asset" on balance sheets. When a company experiences a loss on its tax books, there is no refund or credit immediately. If not, an NOL carryforward would be created. This NOL carryforward can be used in a subsequent year to offset positive taxable income, thus, reducing a company's tax liability.

Outside of an acquisition (and even then, with some limitations), NOLs are not easily monetizable. However, for a going concern company that once again becomes profitable, NOLs represent a significant source of value if utilized. NOLs are disclosed in the table of deferred tax assets and liabilities at their tax effected amount.

Importantly, the TCJA changed the usage rules for NOLs that are incurred after 2017. Prior to 2018, NOLs could be carried back to the 2 immediately prior years when (if) taxes were paid, with a 20 year carry forward expiration. Within this timeframe, the NOLs could be used to offset 100% of taxable income. The TCJA eliminated the carryback period but made the carryforward period unlimited. Additionally, the usage is limited to offsetting 80% of taxable income. (Note that change in control limitations due to S. 382, discussed later are enforced regardless of the NOL "vintage".)

NOL and Tax Credit Summary

US Federal NOL incurred:	2017 & Prior	2018 & After
Carryback limitation	2 years	Not allowed
Carryforward limitation	20 years	No expiration
Income offset	100%	80%
Use limits upon change in control (S. 382)	Yes	Yes

Other NOL / tax credit expirations:	
US state NOLs	Varied by state, but often 10-20 years, some states do not allow carryback
US capital losses	3 year carryback / 5 year carryforward; may only offset against capital gains
US AMT credit	Typically 10 years
Foreign NOLs	Varies by jurisdiction (many indefinite)

Source: Wolfe Research Accounting & Tax Policy Research; Internal Revenue Code.

Important items to keep in mind when reviewing 10-K income tax footnote disclosures for NOLs:

(1) Within the deferred tax asset table, the amounts shown are the company's tax-effected NOL amounts. It is not net present valued. As an illustration, if an NOL carryforward of $1,000 is available to a company, this NOL could be used to offset $1,000 of pre-tax income. Within the deferred tax asset table, the NOL line item would be $210 ($1,000 NOL multiplied by the U.S. federal (or foreign/state income tax rates) statutory income tax rate of 21%). This $210 is the amount that can offset taxes owed. In reality, the actual value of the NOL in the deferred tax asset table is somewhat lower as no present value factors based on expected utilization are considered (if used, the NOLs would likely be used over a number of forthcoming years when pre-tax profit is generated). Also, the NOL deferred tax asset amount is often an aggregate of all NOLs available to the company, which may include federal, state, foreign NOLs, and possibly tax credits. Each of these may have different expiration periods and varying ease of use. Below, we present a summary table of the carry forward periods and expiration of various tax NOLs and credits.

(2) Amounts listed in the narrative annual report disclosures before or after the table of deferred tax assets and liabilities typically represent the amount that may be used to offset pre-tax income and is not the NOLs' value. In the previous example, a $1,000 NOL would likely be described in the narrative.

(3) Certain limitations on the ability to use the NOLs may exist. For example, IRC Section 382 places an annual limitation on the amount of NOLs that can be used to offset pre-tax income. Designed to prevent the trafficking of NOLs, Section 382 will kick in if there has been an "ownership change" in the corporation. Under IRC Section 382, an ownership change occurs when there has been a more than 50% change in ownership of a company within any three-year period. When this ownership change occurs, there will be a ceiling placed on the annual amount of NOLs that may be used to offset taxable income. The limitation amount is formulaic and is calculated as the acquired company's common and straight preferred equity value immediately prior to the ownership change multiplied by the monthly long-term tax-exempt rate published by the Treasury (~1.63% for acquisitions occurring in February 2020). The long-term tax-exempt interest rate may be found at www.irs.gov/irb.

Our experience is that sometimes investors may find companies with market capitalizations below their net cash and NOL balances. The annual use of an acquired company's NOLs may be limited due to IRC Section 382, which was enacted by lawmakers to prevent "trafficking" of NOLs (purchasing a company for its NOL value and thereby reducing the acquiring company's taxes owed). Without any restrictions, an "NOL-rich" company may be appealing to a profitable acquirer who might be looking to use the acquisition to immediately reduce its taxes owed.

Trafficking NOLs is prevented by IRC Section 382 if there has been an "ownership change" in the corporation, defined by the IRC as a more than 50 percentage point change in ownership of the target company within the prior three-year period. Specifically, an ownership change occurs when:

1. The percentage of stock of the corporation owned by one or more 5% shareholders has increased by more than 50 percentage points over,
2. The lowest percentage of stock owned by the 5% shareholder during the prior three-year period (prior to the ownership change).

For purposes of the ownership change test, each 5% or more shareholder is tested individually. The less than 5% shareholders are typically aggregated and treated as one 5% shareholder under the so-called "aggregation rules." In a merger, there is usually a change in ownership, as defined by the IRC above, for at least one of the corporations involved.

When an ownership change occurs, IRC Section 382 places a ceiling on the annual amount of the target's NOLs usable to offset the taxable income of the combined company. The limitation amount is calculated as the acquired company's common and straight preferred equity value immediately prior to the ownership change (in-the-money options and warrants may also be included) multiplied by the monthly long-term tax exempt rate published by the Treasury (currently 1.63% for acquisitions occurring in February, 2020). Immediately prior to the ownership change is construed to mean the market cap. of the target company on the day the acquisition closes.

Below we illustrate the IRC Section 382 limitation calculation, assuming that a $3B market capitalization company, immediately prior to the ownership change (the date of acquisition), is acquired. The calculated Section 382 limitation amount ($49 million) is the maximum allowable annual deduction to offset taxable income of the combined company in the years following the acquisition. This NOL limitation amount may be increased in certain years by built-in gains and the "338 Approach," which are discussed in more detail in our May 25, 2016 report, "Hidden Value in Net Operating Losses".

Example: Section 382 Limitation

Acquired company's equity market cap. x Long-term tax-exempt rate = **Annual NOL limitation**

$3,000 x 1.63% = **$49 million** (annual amount of NOL allowed against pre-tax income)

Source: Wolfe Research Accounting & Tax Policy Research; Internal Revenue Code.

The IRC Section 382 limitation combined with the 20-year carryforward limit for pre-2018 Federal NOLs limits the amount of usable NOLs for some companies, explaining why our research has in the past identified companies with NOLs and net cash balances that exceed their current market capitalizations. A few other IRC Section 382 items that we consider to be important when analyzing companies with material NOLs are detailed below:

- Continuity of business required: The acquired NOL business must continue in existence during the two-year period after the ownership change date. If the acquiring corporation does not continue the business of the acquired company at all times during the two-year period after the change in ownership date, the IRC Section 382 limitation amount is reduced to $0 under IRC Section 382(c).
- Second ownership changes: If another greater than 50% "ownership change" occurs, a company must re-calculate its IRC Section 382 annual limitation amount based on then current long-term tax-exempt rate multiplied by the change in control company's equity and preferred market value immediately prior to the second ownership change date. This renewed IRC Section 382 limitation amount is applicable to all NOLs created after the first ownership change. Furthermore:
  - If the second IRC Section 382 limitation amount is lower than the first IRC Section 382 limitation amount, the company must use the lower of the two amounts for all existing NOLs; and
  - If the second IRC Section 382 limitation amount is higher than the first Section 382 limitation amount, the company must continue using the first IRC Section 382 limitation amount for NOLs existing as of the first ownership change date.
- Unused Section 382 amounts are additive to the next year: If a company under the IRC Section 382 limitation rules doesn't use all of the NOLs available, any unused amount may be used to offset losses in the subsequent year plus that current year's IRC Section 382 amount. Based on the prior example, if the company experiences an ownership change resulting in an annual IRC Section 382 limitation of $49, but only reports $35 in taxable income, using $35 of NOLs, $14 of the IRC Section 382 amount remains ($49 – $35) and is carried forward to the subsequent year. Thus, in the following year, the company may use $63 of NOLs ($49 + $14).

To value NOLs, we suggest the following:

1. Project GAAP pre-tax income and estimate the amount of NOLs that will be usable in each year, offsetting pre-tax income and keeping in mind any IRC Section 382 limitations;
2. Multiply the amount of NOLs used in each year by the company's marginal tax rate in the same jurisdiction as in which the NOLs exist; and
3. Calculate the NPV of the tax effected NOL amounts at the company's weighted average cost of capital ("WACC"), representing the present value of tax savings. We use the company's WACC (instead of a Treasury rate) as it reflects the riskiness of the company's cash flows (i.e., taxable income) necessary to utilize the NOL.

Once the NOLs are valued, an analyst may calculate the company's earnings at a normalized effective tax rate assuming no NOLs. A target price can then be determined by multiplying the company's tax-effected normalized earnings by its expected P/E multiple and adding the NOL value per share. Similarly, we believe the aggregate value of a company's NOLs, as calculated above, should be added to the equity value derived from a DCF model or treated as a reduction in enterprise value (similar to cash) for comparable company analysis.

NOL VALUATION EXAMPLE

Below we walk through an example of how to value a company's NOLs, using the net present value ("NPV") approach described above. Assuming that a company's NOL beginning balance in 2019 is $1.5 billion, we then assume that it generates $350 million of pre-tax income (growing by 10% each year), which would be the amount of NOLs used in that year. At an assumed tax rate of 21%, there is $74 of tax value from 2019 NOL usage. We then carry forward the remaining unused NOL amount and assume that the pre-tax income available for NOL usage grows by 10% annually. Each year's NOL usage tax amount is calculated based on the 21% tax rate and the NPV of all years equals $249 million based on an assumed discount rate of 10%.

For simplicity of our example, we do not incorporate the 80% pre-tax income limitation usage for post 2017 NOLs in the example below, but should be considered for any company generating NOLs of a more recent "vintage".

Example: Valuing NOLs ($ in millions)

NOL Valuation Example		2019	2020	2021	2022
Beginning NOL Balance	**$1,500**	$ 1,500	$ 1,150	$ 765	$ 342
Assumed usage		$ 350	$ 385	$ 424	$ 342
Tax rate assumption		21%	21%	21%	21%
= NOL DTA Amount Used		$ 74	$ 81	$ 89	$ 72
Present value (10% WACC)	**$249**	$ 67	$ 67	$ 67	$ 49

Note: assumes all NOLs are pre-2017 with no limitation on pre-tax income offset.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

OFF-BALANCE SHEET HIDDEN TAX VALUE: ARE THERE OTHER TAX SHIELDS?

Apart from tax net operating loss carryforwards, some acquisitions are structured to create future tax-deductible goodwill and intangible amortization expense (goodwill/intangibles are amortizable over 15 years under IRC Section 197). Below is Cooper's disclosure of tax-deductible goodwill, the asset of which is not reflected on the company's balance sheet or in 10-K tax footnote table of deferred tax assets. We suggest valuing this asset separately and treating it similar to a NOL for valuation purposes.

Cooper Companies: Tax Deductible Goodwill [Emphasis added]

Goodwill

(In millions)	CooperVision	CooperSurgical	Total
Balance at October 31, 2017	$ 1,735.7	$ 619.1	$ 2,354.8
Net additions during the year ended October 31, 2018	36.8	34.4	71.2
Translation	(29.6)	(4.3)	(33.9)
Balance at October 31, 2018	$ 1,742.9	$ 649.2	$ 2,392.1
Net additions during the year ended October 31, 2019	14.1	22.0	36.1
Translation	8.4	(7.7)	0.7
Balance at October 31, 2019	$ 1,765.4	$ 663.5	$ 2,428.9

Of the October 31, 2019 goodwill balance, $146.8 million for CooperSurgical and $29.2 million for CooperVision is expected to be deductible for tax purposes.. Of the October 31, 2018 goodwill balance, $247.1 million for CooperSurgical and $51.8 million for CooperVision was expected to be deductible for tax purposes.

Note: Per 2019 10-K. Emphasis added.

Source: Wolfe Research Accounting & Tax Policy Research.

LOW CASH TAX RATE?

The amount of cash taxes paid is a required annual disclosure. The location may vary — either at the bottom of the cash flow statement as a supplemental item or in the financial statement footnotes narrative. Analysts should pay close attention to these disclosures and calculate a cash tax rate. We believe that a consistently low cash tax rate may suggest aggressive tax planning or aggressive GAAP reporting. Certain circumstances (e.g., NOLs, large foreign earnings, etc.) may be exceptions. We believe that one sign of early problems at Enron was a very low cash income tax rate, as high GAAP profits and taxes were not consistent with a lower amount of taxes actually paid based on income reported to the IRS.

Cash taxes may vary from the GAAP income tax expense as the latter is based on an accrual basis using pretax income reported to shareholders. Cash taxes paid represent what is actually paid to the IRS. Cash flow from operations will reflect the cash taxes paid. U.S. calendar year-end companies generally make federal quarterly estimated tax payments to the Treasury on April 15th, June 15th, September 15th, and December 15th. Any final payment is payable on the tax return's due date, which is March 15th (of the subsequent year) for calendar year-end companies. International country estimated tax payment dates vary by country. We suggest two primary methods to calculate cash tax rates:

1. **Cash taxes paid / GAAP income before taxes.** This cash tax rate reflects the actual cash tax payments made during the current year. However, this calculation may be skewed by the timing of cash tax payments which can be lumpy due to estimated tax payments and income tax refunds. This issue may be exacerbated in the next several years as companies make their TCJA transition tax installment payment.
2. **Current income tax provision / GAAP income before taxes.** To correct for the timing issues discussed in Method #1 above, this is an alternative measure of the cash tax rate. We prefer this method when cash tax payments are abnormally high or low in the current year. It's an improvement as it's based on taxes related to the current year's earnings. In the annual tax footnote, the total reported income tax provision is comprised of two parts: current and deferred. The current year income tax expense is the amount of taxes owed as calculated on the company's income tax return (corporate 21% tax rate multiplied by the company's tax return pre-tax income).

Next, we calculate Skyworks' cash tax rates using both of the methods described above. The tax rate based on actual cash taxes paid has fallen below the current tax expense method over the last several years.

Skyworks: Cash Tax Rate Calculations ($ in millions)

		2017	2018	2019
1	Cash paid for income taxes	163	136	124
	Earnings before provision for taxes	1,257	1,332	961
	Cash tax rate using cash taxes paid	**13%**	**10%**	**13%**
2	Current tax expense	240	379	109
	Earnings before provision for taxes	1,257	1,332	961
	Cash tax rate using current tax expense	**19%**	**28%**	**11%**

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

BEWARE OF LOW CASH TAXES SKEWING OPERATING CASH FLOW

Several items over the past several years may be reducing cash taxes paid. Therefore, investors should pay close attention to cash tax rates to ensure they're sustainable.

Reasons why cash taxes may be cyclically low are listed below and described in more detail throughout other parts of this report:

1) Stock-based compensation benefits: 'Excess' tax benefits may reverse if the stock price doesn't increase.
2) Bonus depreciation 'boomerang'. 100% PP&E expensing for US tax purposes benefits cash taxes the most in the early years, unless capex meaningfully accelerates.
3) Interest deductibility limitations. Threshold for non-deductible interest will decline from 30% of EBITDA to 30% of EBIT in 2022.
4) Other TCJA items:
    a. BEAT tax moved from 5% to 10% in 2019.
    b. TCJA made it more difficult to deduct incentive executive compensation. Normalization may occur over time as new contracts are signed.
    c. Beginning in 2022, R&D costs are required to be capitalized and amortized for tax purposes (currently deductible immediately).
    d. Repatriation tax owed may be paid over 8 years beginning in 2018, and is more heavily weighted towards the latter years.
5) Many large pension contributions in 2018 still received a 35% tax shield.

THE IMPACT OF 100% EXPENSING / BONUS DEPRECIATION ON CASH TAX RATES

In an effort to stimulate capital investment and growth, tax laws have afforded companies 'bonus' depreciation periodically over the last 20 years, as shown in the table below. The Tax Cuts and Jobs Act allows 100% expensing of capex through 2022 then is phased out at 20% per year over the subsequent 5 years. That is, 2023 will start with 80% bonus depreciation, then is reduced each year until completely repealed in 2027, when companies would revert to the traditional MACRS depreciation tables.

Companies in general are experiencing large cash tax tailwinds due to the 100% expensing provisions. However, depending on capex levels beginning in Year 2, companies may start to see cash tax headwinds. Once the phase-out begins, the cash tax headwinds may accelerate.

'Bonus' Depreciation & 100% Expensing Periods

Bonus Depreciation Allowed For Corporations Under U.S. Tax Law										
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
0%	30%	50%	50%	0%	0%	0%	50%	50%	50%	100%
2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
50%	50%	50%	50%	50%	50%	100%	100%	100%	100%	100%
			2023	2024	2025	2026	2027			
			80%	60%	40%	20%	0%			

Source: IRS Publication 946; Wolfe Research Accounting & Tax Policy.

100% CAP-EX EXPENSING: BOOMERANG IMPACT

Overall, we expect that 2018 was the trough year for cash tax rates across many companies with rates approaching the low teens for capex heavy companies. The move to 100% U.S. cap-ex expensing materially impacted cash tax rates with a 'boomerang' effect in subsequent years as the initial benefit rolls off. The initial impact was to lower cash tax rates and increase operating cash flow. However, depending on a company's future cap-ex, the initial boost to cash taxes may be transitory.

For the first several years, in addition to 100% expensing for tax purposes of all new capex, there is tax depreciation from prior years' capex still rolling off. However, past Year 1, unless the capex *level* is meaningfully increased, the total depreciation tax deductions for any given year declines and the cash tax rate begins to converge towards the statutory rate.

Additionally, once 100% expensing begins to phase out starting in 2023, there will be an *increase* in the cash tax rate above and beyond the statutory rate (sometimes referred to as a bonus depreciation boomerang effect), if cap-ex levels are constant or declining.

A company's cash tax rate will be driven by levels of cap-ex, average MACRS tax asset class, foreign income mix and the specific year (e.g. how many years since 100% expensing began / started to phased-out / ended).

For more information and our modeling of how bonus depreciation will impact cash taxes over the course of the next several years, please see our note here.

WHICH ASSETS QUALIFY?

The tax rules delineating the types of assets qualifying for 100% expensing are very similar to those under heretofore 'bonus' depreciation, with some important modifications. Some important considerations include:

- The asset must be subject to so-called Modified Accelerated Cost Recovery System (MACRS) tax depreciation with a maximum recovery period of 20 years. It also includes 25-year asset life water utility properties, 'off-the shelf' software (normally depreciated over 3-year straight line) and qualified improvement property. This includes most assets except for buildings (real property) and intangible assets. Also, regulated utility assets have been specifically carved out from immediate expensing.
- The capital expenditures must be placed in service within the US (which is a pre-requisite to qualify for MACRS as described above). This would include "imported capex" by US corporations and US taxpaying subsidiaries of foreign corporations. This would exclude capital expenditures made by a US company but placed in service internationally.
- In an important change to past law, the TCJA allowed *used* equipment to qualify for 100% expensing bonus depreciation. The purchase must be made as part of an arms-length transaction, meaning purchases from related party don't qualify.
- The asset must be purchased and placed into service during the taxable year. However, there are certain extensions available which may benefit companies in some industries. A one-year extension (asset must be put into use by) of the relevant expiration date is available for property with a production period greater than one year, that has an asset life of at least 10 years (also includes transportation property which would not be a 10-year recovery period) and has a cost of at least $1 million. Certain noncommercial aircraft purchases not considered "transportation property" (commercial airlines don't qualify for the extended place in service rules) may qualify for the extended placed in-service date as well.
- Bonus depreciation does not apply for buildings with 39-year straight line depreciation required for non-residential real property and 27.5-year straight line for residential rental property.
- Keep in mind that some smaller ticket capital expenditures may already be immediately expensed for tax purposes under the de minimis rule.
    - De minimis rule- The tax code does not require the capitalization of all incidental costs insofar as:
        - Company has written accounting procedures at the beginning of the year for expensing property costing less than a certain amount.
        - Company immediately expenses such costs for GAAP financial statements.
        - Total aggregate amounts paid and not capitalized do not distort the taxpayer's income for the year (a safe harbor if amounts expensed are the lesser of .1 percent of company's gross receipts or 2 percent of company's total depreciation/amortization expense).
        - Materials and supplies- there is a similar rule that materials and supplies costing $100 or less may be expensed immediately (subject to the safe harbor rules).

INTEREST DEDUCTION LIMITATIONS

The TCJA limits some interest deductibility on all currently outstanding and future debt (e.g. no grandfathering of old debt). The maximum interest deductible is 30% of tax-book EBITDA from 2018-2021, then max 30% of tax-book EBIT thereafter. Tax-book EBITDA is likely similar to GAAP; however, tax-books EBIT will be much lower than GAAP due to the 100% expensing provisions described above. Any interest deductions not allowed will be carried forward, with no expiration.

Selected 'carve-outs' for interest deductibility for:

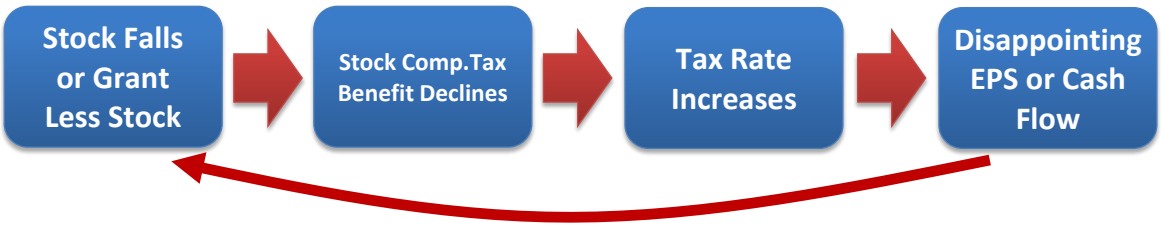
1. Regulated utilities were specifically scoped of the applicability (applies to 100% expensing as well)
2. Based on net interest expense which will alleviate impact on Financial sector companies with 'spread type' businesses.
3. Other businesses not specifically scoped out, will require Treasury guidance or Technical Corrections bill to avoid potential negative implications for leasing and similar companies.

Similar to expensing, loss of interest deductibility should not have a direct impact on the GAAP tax rate due to the deduction / carryforward being allowed (a timing difference). However, if the company deems the resultant deferred tax asset to be less than 50% likely to be used, a valuation allowance would be required, which would increase tax expense.

ACCOUNTING BOOMERANG — STOCK COMPENSATION TAX BENEFITS

The GAAP treatment of stock compensation tax benefits has reduced tax expense and boosted operating cash flow at some companies. The full cash tax benefit realized on restricted stock vesting and/or option exercises is recognized in earnings (through the companies' income tax expense line). Since the tax code treatment of stock compensation is different than GAAP, the actual tax benefits realized (upon exercise or restricted stock vesting) are different (GAAP expense is based on grant date fair value). A ten-year bull market of rising stock prices has generally led to the actual tax benefit greater than the amount expensed in GAAP earnings, lowering GAAP tax rates. These tax benefits are being recorded in operating cash flow, buried within working capital items and separate disclosure is not required.

These tax benefits (that lowered GAAP tax rates and boosted earnings) are not guaranteed to recur in the future and are predicated on continued rising stock prices and/or granting more and more shares each year. In scenarios when a stock price materially declines or a company grants less compensation over time, these excess tax benefits will likely shrink/disappear resulting in higher tax rate (and lower earnings).



Below, we show the 2018 10-K impact on SiteOne's tax expense, where these benefits lowered the expense by $13 million. If companies' stock price performance does not keep up with how well they have done in the past, these extra tax benefits will likely shrink resulting in higher GAAP and cash tax rates (and lower earnings/ cash flow).

SiteOne – 2018 10-K Tax Rate Reconciliation Disclosure

Excess stock comp tax benefits lowered tax expense and likely increased operating cash flow by a similar amount

	For the year January 1, 2018 to December 30, 2018	For the year January 2, 2017 to December 31, 2017	For the year January 4, 2016 to January 1, 2017
U.S. federal statutory expense	$ 15.8	$ 25.4	$ 18.2
State and local income taxes, net	(0.2)	* 2.0	* 1.9
Excess tax benefits pursuant to ASU 2016-09	(13.2)	(6.1)	—
Enactment of 2017 Tax Act - deferred tax re-measurement, net	(0.1)	(4.5)	—
Enactment of 2017 Tax Act - transition tax	(1.0)	1.3	—
Transaction costs	0.2	0.4	1.1
Other, net	(0.2)	(0.5)	0.1
Income tax expense	$ 1.3	$ 18.0	$ 21.3

* Includes excess tax benefits pursuant to ASU 2016-09 of $(3.1) million and $(0.7) million for the years ended December 30, 2018 and December 31, 2017, respectively.

Source: Wolfe Research; Company filings.

SHARE REPURCHASES

In addition to the gross share repurchase amount shown in the statement of cash flows (within the financing section), analysts may also look for more information on the buybacks within the company's annual report filing. In either Item 5 of the 10-K or within the notes to the financial statements, share repurchase activity must be disclosed in tabular format.

Detailed information will be included pertaining to the total number of shares repurchased, average price paid per share, total number of shares purchased as part of publicly announced plans, and the approximate amount of the shares remaining under approved stock repurchase plans. Either the fourth quarter or full-year share repurchase activity may be disclosed (also required to be disclosed quarterly in a tabular format).

Below we present QCOM's fourth quarter share repurchase disclosures from the company's 2019 Form 10-K.

Qualcomm: Share Repurchase Disclosure

Issuer purchases of equity securities during the fourth quarter of fiscal 2019 were:

	Total Number of Shares Purchased	Average Price Paid Per Share (1)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (2)
	(In thousands)		(In thousands)	(In millions)
July 1, 2019 to July 28, 2019	2,368	$ 76.01	2,368	$ 7,589
July 29, 2019 to August 25, 2019	2,502	71.94	2,502	7,409
August 26, 2019 to September 29, 2019				
Other repurchases	4,489	77.07	4,489	7,063
Accelerated share repurchases (3)	68,682		68,682	7,063
Total	78,041		78,041	

(1) Average Price Paid Per Share excludes cash paid commissions

(2) On July 26, 2018, we announced a repurchase program authorizing us to repurchase up to $30 billion of our common stock. At September 29, 2019, $7.1 billion remained authorized for repurchase. The stock repurchase program has no expiration date. Since September 29, 2019, we repurchased and retired 3.9 million shares of common stock for $300 million. Shares withheld to satisfy statutory tax withholding requirements related to the vesting of share-based awards are not issued or considered stock repurchases under our stock repurchase program and, therefore, are excluded from the table above.

(3)In September 2018, we entered into three accelerated share repurchase agreements (ASR Agreements) to repurchase an aggregate of $16.0 billion of our common stock. During the fourth quarter of fiscal 2018, 178.4 million shares were initially delivered to us under the ASR Agreements and were retired. The ASR Agreements were completed during the fourth quarter of fiscal 2019, and an additional 68.7 million shares were delivered to us and were retired, comprising the final delivery of shares under the ASR Agreements. In total, 247.1 million shares were delivered to us under the ASR Agreements at an average price per share of $64.76.

Per 2019 10-K

Accounting & Tax Policy Research; Company filings.

A separate table in the footnotes must be disclosed showing the numerator and denominator components of basic and diluted earnings per share calculations. This is an important section to review for future potential EPS dilution. More information may also be found in the stock-based compensation and debt footnotes (if convertible debt is outstanding). The diluted share count will only include the impact of outstanding stock options to the extent they are in the money. However, there may be a dilution overhang from at or out of the money options (see the stock-based compensation section). Unvested restricted shares of stock are not fully included in the diluted share count; therefore, beware of large recent grants that could impact the share count in future years. Yet another variation of stock-based compensation is performance-based shares (e.g. subject to meeting EPS, ROE targets, etc.). These are included in the diluted share count until the performance threshold has been met (considered to be contingently issuable shares).

On the other hand, a company's share count may not include the analytically correct number of shares. This may occur most often with convertible debt outstanding. Plain vanilla convertible bonds will be included in diluted EPS under the “if converted” method, which assumes that the bond will always be converted into stock, regardless of where the conversion price is relative to the market price of the underlying stock. In some cases, this may result in too many shares being included in the diluted share count from an economic perspective. If the convertible bond is out of the money or the company plans on redeeming the bond in cash, no shares would be issued. Analytically, this convertible debt instrument should be treated as debt rather than equity and the shares should not be included in the diluted share count. Keep in mind that if a convertible bond's principal amount is required to be settled in cash, the treasury stock method may apply. Within the EPS footnote, some cos. may disclose the number of shares excluded from the diluted share count due to their anti-dilutive effect. This helps frame the possible forward EPS dilution existing at the balance sheet date.

Cisco Systems: EPS Calculation

The following table presents the calculation of basic and diluted net income per share (in millions, except per-share amounts):

Years Ended	**July 27, 2019**	July 28, 2018	July 29, 2017
Net income	**$ 11,621**	$ 110	$ 9,609
Weighted-average shares—basic	**4,419**	4,837	5,010
Effect of dilutive potential common shares	**34**	44	39
Weighted-average shares—diluted	**4,453**	4,881	5,049
Net income per share—basic	**$ 2.63**	$ 0.02	$ 1.92
Net income per share—diluted	**$ 2.61**	$ 0.02	$ 1.90
Antidilutive employee share-based awards, excluded	**55**	61	136

Employee equity share options, unvested shares, and similar equity instruments granted and assumed by Cisco are treated as potential common shares outstanding in computing diluted earnings per share. Diluted shares outstanding include the dilutive effect of in-the-money options, unvested restricted stock, and restricted stock units. The dilutive effect of such equity awards is calculated based on the average share price for each fiscal period using the treasury stock method. Under the treasury stock method, the amount the employee must pay for exercising stock options and the amount of compensation cost for future service that has not yet recognized are collectively assumed to be used to repurchase shares.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Pension Accounting and Disclosures

Pension and other postretirement benefits ("OPEB") plan accounting and disclosure is one of the more complex areas to understand when reviewing a 10-K. For specific company impacts and analysis, please refer to our related pension report published on December 9th, 2019.

The following discussion focuses on defined benefit pension and OPEB plans. Defined contribution plans (e.g. 401(k) plans) are typically very simple as they are expensed on a pay as you go basis. Generally, there are three primary impacts analysts should consider when analyzing defined benefit pension and OPEB plans. Importantly, the three risks below are all very different in how they come to fruition, and companies may be impacted by any one in isolation or several.

1) **Balance sheet – Leverage.** The net Funded Status (Pension Assets – Pension Liability) is recorded on the balance sheet and is only "marked to market" annually. We consider any unfunded amount as the economic equivalent of debt. Over the long-term, this unfunded amount will need to be funded in some way, by way of contributions from the company or outsized asset returns from the pension plan. Our primary measure of measuring balance sheet risk is an underfunded status amount > 20% of market cap.

2) **Pensions cost – Watch for surprise headwinds/tailwinds.** Pension cost is "smoothed" into earnings, and this may create material surprises in earnings.

   Important things to watch for:

   a. Review changes in discount rates and asset returns
   b. Watch for pension income
   c. Determine if the company uses "mark to market" pension accounting
   d. Review subjective assumptions set by management (e.g., expected return)

3) **Cash Flow – Contributions.** This is the actual cash impact of pensions, as determined by either the related regulatory rules, union agreements, or other discretionary choices made by the company. Cash contributions are made either to the pension asset trust for a funded plan or directly to the plan beneficiaries in an unfunded plan. These amounts are included in the operating sections of the cash flow statement.

GAAP VS. REGULATORY RULES

The funded status of a pension plan is typically very different on a GAAP basis compared to a regulatory basis. Regulatory rules are used to determine the required cash contributions, which may be very different than the periodic pension cost reported under GAAP. Regulatory pension funded status is generally not disclosed. In some cases, investors may find that no cash regulatory pension funding requirement is due despite a large underfunded pension plan for GAAP purposes.

Only certain plans, so-called "qualified" plans, are subject to the ERISA regulatory funding rules. Other plans, such as some executive plans ("non-qualified plans") may not be subject to the specific ERISA cash funding requirement rules. Additionally, plan disclosures may segregate U.S. and international pension plans. International plans typically follow the cash funding rules of their respective domiciles, which vary greatly.

For defense contractors, certain cash pension costs/funding amounts may be indirectly reimbursed by the gov't through negotiated contract rates under CAS accounting (Cost Accounting Standards).

In the pension footnote, pension plans are aggregated together for combined funded status. There could be individually separate plans underlying the combined amounts, each of which with varying funded levels. For example, there may be separate plans for union employees, salaried employees, or executives. The combined disclosures may show a net overfunded pension plan, but one plan may be overfunded while other smaller plans may be underfunded. Therefore, the aggregate disclosure amounts may understate certain individual pension plan's funding level.

Unless specifically noted, the majority of the following discussion pertains to the GAAP accounting rules (see the subsequent pension Q&A section for a short primer on the regulatory rules).

Funded Status

The funded status of the pension plan is calculated as the plan assets less the pension liability (PBO). An overfunded status is included on the company's balance sheet as an asset or the underfunded status (more typical in today's environment) is included as a liability. If not specifically broken out, amounts would typically be included on the balance sheet under some "other" assets or liabilities line item caption.

Pension Plan Assets

Pension assets are recorded and measured at fair value at year-end. The assets are not specifically consolidated on the company's balance sheet, but rather as part of the funded status as discussed above. The assets are typically held in a trust separate from the remainder of the company's assets.

Pension Liability - Projected Benefit Obligation (PBO) and Accumulated Benefit Obligation (ABO)

Corporate pension benefit payments are typically tied to a predetermined formula. Several inputs are used in the calculation such as an average of the employee's average salary and the number of years of employment. From a GAAP perspective, the pension liability is a series of future cash outflows (benefit payments) that are discounted back to today using an assumed discount rate. Many equate the pension liability to a series of zero-coupon bonds with maturities equal to the individual future benefit payment date.

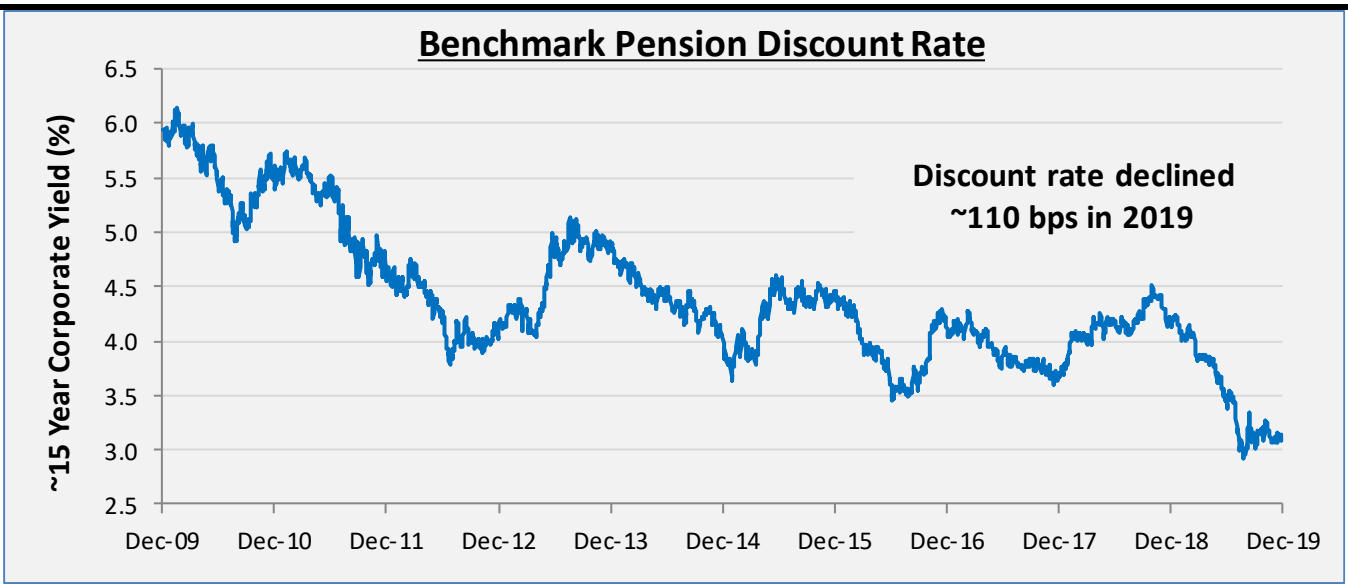
The reported GAAP pension liability is also known as the PBO or "projected benefit obligation". The PBO makes assumptions about future compensation increases and what salary levels may ultimately be at the time current employees reach retirement. An alternative measure is the ABO or "accumulated benefit obligation". The primary difference is the treatment of assumed future compensation increases. The ABO is a measure of the present value of the future benefit payments based on the employee's current salary. The PBO will always be larger than the ABO. The ABO represents the liability required if the pension were settled today and is closer to the liability used for regulatory purposes.

DISCOUNT RATE

The discount rate is one of the primary assumptions companies use to calculate the PBO when the pension liability is marked to market each year-end. As a result, the discount rate assumed at the end of one year will impact the service and interest cost for the following year. Management has some, but generally not a significant amount of input into determining the discount rate as its generally market based ─ the spot Aa corporate bond yield at year-end.

Actuaries hired by the company will calculate the rate based on Aa corporate interest rates that match the duration of the company's pension plan liabilities. We monitor several Aa indexes that track the level of corporate Aa rates. One publicly available index that we've found to be highly correlated is the FTSE Pension Discount Rate Curve– which is available on a monthly basis at the following location: https://www.soa.org/sections/retirement/ftse-pension-discount-curve/. Alternatively, some analysts may follow the Moody's Aa for directional purposes due to its ease of availability (Bloomberg ticker = MOODCAA Index).

Benchmark Pension Discount Rate



Source: Wolfe Research Accounting & Tax Policy Research; Standard & Poor's; Bloomberg; FactSet.

IMPACT OF DISCOUNT RATE

As a function of present value, lower discount rates will increase the calculated pension liability. The year-end assumed discount rate is used to mark the pension liability to fair value at year-end. It is also used to determine the following years' service and interest cost. The impact of discount rates on service and interest cost include:

- Higher discount rate — lower service cost;
- Higher discount rate — higher interest cost (higher rate reduces the projected benefit obligation, but the impact of a higher interest rate on a lower benefit obligation is typically larger); and,
- The net impact of a higher discount rate on the combined service and interest cost typically reduces pension expense, as the effect of the lower service cost amount exceeds that of the higher interest cost. However, if a pension plan has a large proportion of retirees or older employees, as measured by a high interest cost relative to service cost, a higher discount rate may increase pension expense.

RATE OF COMPENSATION INCREASE (SALARY INFLATION RATE)

As discussed earlier, the primary measurement of the pension liability is the PBO, which incorporates assumptions about future salary levels. The rate of compensation increase, or salary inflation rate is disclosed by the company. The salary inflation rate acts as a pension benefit obligation growth rate. Along with the employee's expected retirement date and mortality, the company's actuary uses the current salary amount and assumed salary inflation rate to calculate future pension benefit payments. Lower salary inflation rate assumptions may be considered less conservative since they will result in lower pension liabilities. Based on our reviews, a salary inflation rate of 3.00% to 4.00% is typical and assumptions do not frequently change.

EXPECTED RATE OF RETURN ASSUMPTION

The expected rate of return assumption is a direct input into the calculation of periodic pension cost. As discussed later, the expected return on plan assets is a component of pension cost and is a direct offset to the other components in that it will lower the overall expense since it is a return measure. The expected long-term rate of return on plan assets is an assumption reflecting 1) the current or target asset allocations and 2) the anticipated average rate of return on the company's pension assets over the long-term. It is typically based on a long-term historical average of actual fund performance (anywhere from 10-30 years is possible based on discussions with fund managers and actuaries). Therefore, year to year volatility in the performance of the pension fund's actual returns will not immediately portend a change in the expected rate of return assumption.

The reported pension expense in earnings is directly impacted by the expected rate of return. A higher expected rate of return reduces pension cost and thus increases earnings. Conversely, a lower expected rate of return would increase pension cost and lower earnings.

GAAP Guidance on the Expected Rate of Return Assumption:
ASC 715-30-35-47:
"The expected long-term rate of return on plan assets shall reflect the average rate of earnings expected on the funds invested or to be invested to provide for the benefits included in the PBO. In estimating that rate, appropriate consideration shall be given to the returns being earned by the plan assets in the funds and the rates of return expected to be available for reinvestment. The expected long-term rate of return on plan assets is used (with the market related value of assets) to compute the expected return on assets."

Below are the median expected rate of return and discount rate assumptions used by U.S. companies. The expected rate of return assumption is set by management with the assistance of its pension fund consultants and historical realized returns from the pension plan. This rate has trended down gradually over time to 6.5%. The discount rate is a market driven assumption and is based on Aa corporate bond yields at the company's year-end (e.g., 12/31 spot rate for calendar year-end companies) and, as such, there is less opportunity for management maneuvers.

Over the last ten years, there has been a material re-allocation within pension funds from equities into fixed income and "other" (may include anything from hedge funds or other alternatives to annuities) investment classes. Our sense is that the decrease in equity allocation is driven by the de-risking of pension plans (into annuities, LDI strategies, etc.). We would expect this trend to generally continue as companies attempt to remove the pension impact from their risk profile. (However, note that in the exhibit below the 2018 allocations may have been materially obfuscated by the large market sell-off in December of 2018).

Historical GAAP Pension Accounting Assumptions and Asset Allocations

Pension Plan Assumptions			*Equal Weighted Average*				*Asset Weighted Average*			
Year	Median Expected Rate of Return %	Median Discount Rate %	Equities	Fixed Income	Real Estate	Other	Equities	Fixed Income	Real Estate	Other
2002	8.75%	6.75%	58%	33%	2%	7%	59%	31%	3%	6%
2003	8.50%	6.25%	63%	29%	2%	6%	62%	28%	3%	6%
2004	8.50%	5.75%	64%	29%	1%	6%	63%	29%	3%	5%
2005	8.25%	5.50%	63%	30%	2%	6%	62%	28%	3%	6%
2006	8.00%	5.75%	62%	29%	2%	7%	61%	29%	4%	6%
2007	8.00%	6.25%	59%	34%	2%	5%	57%	32%	4%	7%
2008	8.00%	6.25%	53%	38%	2%	7%	48%	39%	5%	9%
2009	8.00%	5.85%	53%	36%	1%	10%	49%	38%	5%	9%
2010	8.00%	5.40%	53%	37%	1%	9%	47%	39%	5%	10%
2011	7.75%	4.75%	50%	40%	1%	9%	42%	42%	5%	10%
2012	7.50%	4.00%	49%	40%	1%	10%	43%	41%	5%	11%
2013	7.50%	4.75%	48%	40%	1%	11%	44%	41%	3%	12%
2014	7.25%	4.00%	44%	43%	1%	12%	41%	45%	3%	12%
2015	7.00%	4.30%	42%	43%	2%	14%	40%	45%	3%	12%
2016	7.00%	4.00%	42%	41%	2%	16%	38%	45%	3%	15%
2017	6.70%	3.60%	40%	44%	1%	16%	36%	46%	3%	15%
2018	**6.50%**	**4.20%**	**35%**	**48%**	**1%**	**16%**	**32%**	**49%**	**3%**	**16%**

Note: US companies. Based on data as disclosed in annual 10-K pension footnotes.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings; Standard & Poor's; Bloomberg; FactSet.

PENSION COST

GAAP pension cost is comprised of an amalgamation of different pieces, each separately calculated based on a variety of actuarial assumptions and accounting conveniences.

For income statement purposes, the service cost component is included as compensation cost based on the where the related employees other compensation costs are classified (e.g. SG&A, operating expenses, capitalized / expensed as inventory / COGS). The remaining components are included "below the line", likely as part of "other income / expense" or "interest/financing costs". The seven primary components are as follows:

1 Service cost. This cost is the ongoing expense from new benefits earned by current employees for working during the current year and increasing their future benefit payments under the pension benefit formula structure. It is, in effect, compensation cost. These incremental benefits are "earned" now but will be paid out during retirement. Therefore, the additional future benefit amounts earned in the current year are calculated, discounted back to present values, and expensed as service cost in the current period. This amount increases the projected benefit obligation.

2 Interest cost. Interest cost is calculated on the pension benefit obligation as a function of the deferred nature of the pension benefit payments. A defined benefit pension plan is essentially a deferred compensation arrangement. Interest expense is calculated as the end-of-prior-year benefit obligation ("PBO") multiplied by the year-end discount rate. This amount is included within periodic pension cost and the projected benefit obligation.

3 Expected return on pension plan assets. Due to smoothing mechanisms in GAAP pension accounting, actual returns on pension plan assets are not used in determining periodic pension cost. As discussed previously, a company must assume an expected rate of return on pension plan assets when calculating pension expense. This is the return on the plan assets that the company assumes will be achieved over the long-term on a smoothed basis. The expected return on plan assets is an offset ("income") amount to other pension costs and calculated as the assets x the expected rate of return on plan assets. Companies may choose to use the fair value of plan assets or up to a 5-year smoothed value (called the market-related value).

4 Amortization of gains/losses. The increase or decrease in the PBO from a change in the discount rate or differences between the actual and expected returns on plan assets are directly reflected in the balance sheet but are *not* directly reflected in pension cost / earnings in the current period. These items are the result of changes in actuarial assumptions that are smoothed into pension expense over time and will dampen earnings volatility. When an actuarial mark occurs that changes amounts on the balance sheet, instead of immediately expensed through earnings, they are accumulated in AOCI (within equity) in an account called "unrecognized net gain or loss". The accumulated unrecognized net gains or losses are then recognized into earnings over time under a complex calculation commonly referred to as the "corridor" method. While overall EPS volatility is understated through use of this smoothing technique, the impact of using the corridor may still result in large swings in GAAP pension expense year-to-year.

5 Amortization of prior service cost. Companies may amend their pension plan benefit terms to retroactively increase or decrease (less likely) employee pension benefits, particularly with union negotiated pension plans. When a company makes an amendment to a pension plan that changes future benefits, the costs / savings associated with the amendment are calculated by an actuary and then recognized straight line over the remaining service life of the impacted employees.

6 Curtailments. The FASB pension rules define a plan curtailment as "an event that significantly reduces the expected years of future service of present employees or eliminates for a significant number of employees the accrual of defined benefit payments for some or all of their future services" (ASC 715-30). Essentially, employees will not continue to accrue future benefits in the amount originally estimated. Freezing a pension plan is a typical example of a curtailment (the discontinuing of accruals for any future benefit increases based on service life or salary increase). Another example is a restructuring event, such as the closing of a facility or a division of the company. Curtailments will typically result in a reduction of the PBO as the value of future benefit payments will be less than previously estimated. Based on the specific events, actuaries will calculate the costs/savings associated with the action and the company will record a one-time gain or loss in earnings.

7 Settlements. A settlement occurs when there is some irrevocable action taken by the company to relieve a portion of its future pension liability. Common examples include: 1) making a lump sum cash payment to the employee/retiree that relieves any obligation to pay the future benefit payments or 2) the purchase of a nonparticipating annuity contract that will exactly offset the future cash flows due for the benefit payments. Simply investing in high quality fixed income securities with maturities similar to the benefit payment dates would not be considered a settlement. Based on the specific events, actuaries will calculate the costs/savings associated and the company will record a one-time gain or loss.

On the next several pages, we interpret some of the common pension footnote disclosures using Ingersoll Rand as an example. Note that many companies also have other post-retirement employee benefits (OPEB) such as healthcare benefits that have similar accounting and disclosures.

ASSUMPTIONS

The first part of the disclosure includes assumptions used to calculate the pension plan liability – these are 2019 year-end assumptions that are used to calculate the year-end funded status (i.e., assets-liabilities). For example, Ingersoll calculated the present value of its pension projected benefit obligation at December 31, 2019 using a discount rate of 3.22%. This was the single overall weighted average yield curve rate at year-end.

The bottom part of the table lists the assumptions used to calculate Ingersoll's 2019 pension expense. Typically, the interest cost is calculated as the prior year-end PBO multiplied by the discount rate at prior year-end. However, as the company has adopted what's known as spot-rate accounting (contact us for more information), the 2019 US interest cost rate was 3.88%, ~30bps lower than the 2018 year-end rate of 4.21%.

In 2019, the company actually increased the expected rate of return on plan assets to 5.75% from 5.50% in 2018. We typically view increases in the rate of expected return with caution as it leads to a direct increase in non-cash earnings. The assumed rate of compensation increases (salary inflation rate) is also shown at 4.00%. Note amounts refer to assumptions for U.S. plans.

Ingersoll Rand: Pension Assumptions

Weighted-average assumptions used to determine the benefit obligation at December 31 are as follows:

	2019	2018
Discount rate:		
U.S. plans	3.22%	4.21%
Non-U.S. plans	1.66%	2.47%
Rate of compensation increase:		
U.S. plans	4.00%	4.00%
Non-U.S. plans	3.75%	4.00%

Weighted-average assumptions used to determine net periodic pension cost for the years ended December 31 are as follows:

	2019	2018	2017
Discount rate:			
U.S. plans			
Service cost	4.24%	3.70%	4.18%
Interest cost	3.88%	3.24%	3.36%
Non-U.S. plans			
Service cost	2.81%	2.52%	2.66%
Interest cost	2.83%	2.46%	2.50%
Rate of compensation increase:			
U.S. plans	4.00%	4.00%	4.00%
Non-U.S. plans	4.00%	4.00%	4.00%
Expected return on plan assets:			
U.S. plans	5.75%	5.50%	5.50%
Non-U.S. plans	3.25%	3.25%	3.25%

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

PENSION COST

The pension cost disclosure in the following exhibit details the individual components of pension cost and OPEB cost. The drivers of changes in pension cost include discount rates, salary inflation rates, company contributions, actuarial changes, and the inherent smoothing mechanisms in GAAP pension accounting (i.e., deferring some gains and losses). Ingersoll reported total 2019 pension cost of $118 million. Across the income statement, this was allocated as $69.8 to operating income (service cost, allocated to cost of sales, SG&A, and R&D), $36.1 to other income/expense for non-service cost components, and $12.1 to discontinued ops.

These amounts are non-cash, and the only pension cash "cost" is the current year's cash contribution to the company's pension plan. The cash contribution amount is shown as an operating cash outflow on the cash flow statement (pension expense, net of cash contributions is typically shown as one-line item in the operating section of the cash flow statement) and may be an inflow or outflow depending on if the GAAP expense is higher or lower than the actual cash contribution. The amount may also be buried within "other" operating cash flow.

Ingersoll Rand: Pension Cost ($ in millions)

In millions	2019	2018	2017
Service cost	$ 73.6	$ 75.0	$ 70.8
Interest cost	119.1	109.7	109.0
Expected return on plan assets	(138.5)	(146.6)	(141.7)
Net amortization of:			
Prior service costs (benefits)	5.0	4.2	3.8
Plan net actuarial (gains) losses	54.3	51.3	56.8
Net periodic pension benefit cost	113.5	93.6	98.7
Net curtailment, settlement, and special termination benefits (gains) losses	4.5	2.3	5.6
Net periodic pension benefit cost after net curtailment and settlement (gains) losses	$ 118.0	$ 95.9	$ 104..3
Amounts recorded in continuing operations:			
Operating income	$ 69.8	$ 72.7	$ 68..2
Other income/(expense), net	36.1	14.6	25.4
Amounts recorded in discontinued operations	12.1	8.6	10.7
Total	$ 118.0	$ 95.9	$ 104.3

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

FUNDED STATUS, PLAN ASSETS & LIABILITY ROLL FORWARDS

The next exhibit includes the two parts of the funded status for the pension plans. It includes a "roll forward" of 2019 activity and items impacting ending balances for each of the pension plan assets and liabilities.

At December 31, 2019, Ingersoll's fair market value of pension plan assets was $3.1 billion, while the company's PBO was approximately $3.8 billion. Therefore, Ingersoll's pension plan was underfunded by approximately $714 million at December 31, 2019. Also, keep in mind that these disclosures aggregate pension plans as most companies have multiple pension plans (salaried, union, etc.).

The pension footnote rollforward discloses the line-by-line changes in the pension benefit obligation and the fair market value of pension plan assets. In 2019, the pension plan's PBO increased vs. 2018 due to $74 million of service cost, $119 million of interest cost and $422 million actuarial loss (primarily due to a decrease in discount rate as shown previously under the Assumptions section), offset by $225 million of benefit payments made. Pension plan assets increased due to $526 million in actual market gains and $83 million of contributions, partially offset by $225 million of benefit payments.

Ingersoll Rand: Pension Assets, Liabilities, Funded Status ($ in millions)

In millions	2019	2018
Change in benefit obligations:		
Benefit obligation at beginning of year	$ 3,465.3	$ 3,523.8
Service cost	73.6	72.1
Interest cost	119.1	110.2
Employee contributions	1.1	1..0
Amendments	5.7	6.2
Actuarial (gains) losses	422.8	129.6
Benefits paid	(225.3)	(203.5)
Currency translation	9.0	(89.4)
Curtailments, settlements and special termination benefits	(3.1)	(1.6)
Other, including expenses paid	(17.0)	(16.5)
Benefit obligation at end of year	$ 3,851.2	$ 3,531.9
Change in plan assets:		
Fair value at beginning of year	$ 2,766.9	$ 2,772.0
Actual return on assets	526.1	274.9
Company contributions	83.1	56.4
Employee contributions	1.1	1..0
Benefits paid	(225.3)	(203.5)
Currency translation	12.0	(85.6)
Settlements	(5.3)	(1.6)
Other, including expenses paid	(21.8)	(16.5)
Fair value of assets end of year	$ 3,136.8	$ 2,797.1
Net unfunded liability	$ (714.4)	$ (734.8)

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

BALANCE SHEET LOCATION

The actual funded status of a company's pension (and OPEB) plan is recorded on the company's balance sheet. However, the exact balance sheet location of the net pension (under)/over-funded amount may differ among companies as shown in the next exhibit.

For example, at 2019 year-end, Ingersoll's approximately $714 million underfunded pension plan is recorded on the balance sheet primarily as a noncurrent liability on the Postemployment and Other Benefits liabilities line item, but smaller portions are also recorded as other noncurrent assets and current liabilities.

Ingersoll Rand: Pension Funded Status Balance Sheet Location ($ in millions)

In millions	2019	2018
Amounts included in the balance sheet:		
Other noncurrent assets	$ 50.4	$ 49.9
Accrued compensation and benefits	(8.7)	(25.9)
Postemployment and other benefit liabilities	(756.1)	(722.4)
Net amount recognized	$ (714.4)	$ (698.4)

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

UNRECOGNIZED ACTUARIAL AMOUNTS

While GAAP requires the pension plan's economic funded status to be shown on the balance sheet, actuarial gains/losses are still smoothed into earnings over time. The cumulative unrecognized actuarial gains/losses and unrecognized prior service cost are recorded in equity in AOCI.

As shown in the exhibit below, Ingersoll had gross unrecognized pension actuarial losses of $800 million at 2019 year-end. These amounts will be recognized as pension expense in the future years based on a complex amortization method known as the corridor approach ($47 million in 2020 as shown on the following page). Prior service costs of $32 million will be recognized on a straight-line basis.

Ingersoll Rand: Pension Unrecognized Actuarial Losses ($ in millions)

The pretax amounts recognized in *Accumulated other comprehensive income (loss)* are as follows:

In millions	Prior service benefit (cost)	Net actuarial gains (losses)	Total
December 31, 2018	$ (31.2)	$ (820.6)	$ (851.8)
Current year changes recorded to AOCI	(5.7)	(35.2)	(40.9)
Amortization reclassified to earnings	5.0	54.3	59.3
Settlements/curtailments reclassified to earnings	—	2.2	2.2
Currency translation and other	(0.5)	(0.9)	(1.4)
December 31, 2019	$ (32.4)	$ (800.2)	$ (832.6)

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

FUTURE RECOGNITION OF ACTUARIAL GAINS/LOSSES

Due to the overly complex corridor approach and smoothing of pension costs, actuarial gains and losses are perhaps the most variable pension cost components on a year-to-year basis. Some companies will disclose the subsequent years' expected recognition of net actuarial gains/losses (currently held in AOCI as shown above). These amounts will be recognized into pension cost (income) in the upcoming fiscal year. As shown below, Ingersoll expects to recognize $47 million of actuarial losses into pension cost in 2020. This disclosure, while no longer required, may be in the pension footnote in tabular format or elsewhere in financial statements in the narrative, as below.

Ingersoll Rand: Pension & OPEB Expected Next Year Actuarial Gain/Loss Recognition ($ in millions)

Net periodic pension benefit cost for 2020 is projected to be approximately $89 million. The amounts expected to be recognized in net periodic pension benefit cost during 2020 for prior service cost and plan net actuarial losses are approximately $5 million and $47 million, respectively.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

FUTURE BENEFIT PAYMENTS

Companies must disclose the upcoming future benefit payments expected to be paid to pension and OPEB plan beneficiaries. As shown below, Ingersoll expects to pay $232 million in benefit payments for its pension plan in 2020. While these amounts typically are funded from pension trust assets for U.S. qualified plans, this may not be the case for certain non-qualified, international pension, or OPEB plans (amounts may need to be funded from operating cash flow).

Ingersoll Rand: Pension Future Benefit Payments ($ in millions)

Pension benefit payments are expected to be paid as follows:

In millions		
2020	$	232.2
2021		219.1
2022		226.1
2023		230.7
2024		221.0
2025-2029		1,136.7

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

EXPECTED CONTRIBUTIONS

The minimum cash funding of pensions is determined not by GAAP, but IRS / ERISA rules, the details of which are discussed later in the report. Discretionary contributions may be made in excess of these regulatory minimums. Within the 10-K footnote, companies must disclose their expected pension contributions for the subsequent year. As shown below, Ingersoll expects to contribute $90 million for its pension plan in 2020.

Ingersoll Rand: Pension Expected Contributions ($ in millions)

The Company made required and discretionary contributions to its pension plans of $83.1 million in 2019, $86.9 million in 2018, and $101.4 million in 2017 and currently projects that it will contribute approximately $90 million to its plans worldwide in 2020. The Company's policy allows it to fund an amount, which could be in excess of or less than the pension cost expensed, subject to the limitations imposed by current tax regulations. However, the Company anticipates funding the plans in 2020 in accordance with contributions required by funding regulations or the laws of each jurisdiction.

Note: Per 2019 10-K (Emphasis added).

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

PLAN ASSET DISCLOSURES

The next exhibit includes the allocation of pension plan assets at 2019 year-end for IR. In reviewing, it is helpful to ascertain where the company's "target" allocation is and if it changed (e.g. due to reduction of risk tolerance, more liability matching, etc.). Also, review the asset allocations in conjunction with the company's expected return on asset assumption to assess their reasonableness.

Ingersoll Rand: Pension Asset Allocation ($ in millions)

	Fair value measurements				
In millions	Level 1	Level 2	Level 3	Net asset value	Total fair value
Cash and cash equivalents	$ 7.0	$ 26.3	$ —	$ —	$ 33.3
Equity investments:					
Registered mutual funds – equity specialty	—	—	—	61.5	61.5
Commingled funds – equity specialty	—	—	—	665.2	665.2
	—	—	—	726.7	726.7
Fixed income investments:					
U.S. government and agency obligations	—	528.5	—	—	528.5
Corporate and non-U.S. bonds[a]	—	1,393.0	0.4	—	1,393.4
Asset-backed and mortgage-backed securities	—	70.9	—	—	70..9
Registered mutual funds – fixed income specialty	—	—	—	103.3	103.3
Commingled funds – fixed income specialty	—	—	—	127.6	127.6
Other fixed income[b]	—	—	26.0	—	26.0
	—	1,992.4	26.4	230.9	2,249.7
Derivatives	—	0.4	—	—	0.4
Real estate[c]	—	—	3.4	—	3.4
Other[d]	—	—	114.1	—	114.1
Total assets at fair value	$ 7.0	$ 2,019.1	$ 143.9	$ 957.6	$ 3,127.6
Receivables and payables, net					9.2
Net assets available for benefits					$ 3,136.8

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Some companies have adopted an accounting policy change to mark their pension assets and liabilities to market at year-end and immediately recognize the net impact in earnings in Q4 (companies are already doing the former, but not the latter). Currently, almost all companies smooth the net impact of marking pension assets and liabilities to market at year-end and amortize the net loss/gain over a longer period of time (in the meantime, the losses are held in an account in equity called Accumulated Other Comprehensive Income). As interest rates have moved lower in the last 10 years, companies reported higher pension expense in earnings through "actuarial losses". In an effort to "flush out" the losses sitting in equity, some companies adopted MTM pension accounting changes. Adopting MTM eliminates most, if not all of, the actuarial losses in equity, transforming them into a Q4 charge or gain (depending on asset returns and the direction of interest rates).

As we look ahead, if interest rates rise again, MTM pension companies may experience pension cost earnings impacts somewhat opposite of what would normally be expected. This is a function of the interest cost component of pension cost moving in line with rates (e.g. increasing with higher rates), without the offset that most companies have of a reduced actuarial loss. Below are companies that use MTM pension accounting):

Companies Adopting Mark to Market Pension Accounting ($ millions)

Company	Ticker	Market Cap.	Company	Ticker	Market Cap.
AT&T, Inc.	T	275,764	PerkinElmer Inc. (1)	PKI	10,168
Verizon Communications Inc.	VZ	247,113	DXC Technology Co.	DXC	9,175
Honeywell Int'l Inc.	HON	126,322	Fortune Brands Home & Security, Inc.	FBHS	8,760
United Parcel Service, Inc.	UPS	102,355	PVH Corp.	PVH	7,401
Caterpillar Inc.	CAT	79,516	Pentair plc	PNR	7,351
Northrop Grumman Corp.	NOC	58,845	Albemarle Corp. (1)	ALB	6,882
FedEx Corp.	FDX	40,846	BWX Technologies, Inc. (1)	BWXT	5,763
Ford Motor Co.	F	35,248	W.R. Grace & Co. (1)	GRA	4,503
Johnson Controls Inc. (1)	JCI	32,940	Ashland Inc. (1)	ASH	4,363
FirstEnergy Corp.	FE	25,578	Valvoline Inc. (1)	VVV	4,339
Corning Inc.	GLW	22,320	NCR Corp. (1)	NCR	4,248
Kellogg Co.	K	22,004	PolyOne Corp. (1)	POL	2,449
Celanese Corp.	CE	15,084	Adient plc	ADNT	2,009
Campbell Soup Co.	CPB	14,105	Ferro Corp. (1)	FOE	1,042
ConAgra Foods, Inc.	CAG	13,982	Garret Motion	GTX	787
Eastman Chemical Co. (1)	EMN	10,551	J. C. Penney Co., Inc. (1)	JCP	352
Teradyne Inc. (1)	TER	10,383	TimkenSteel Corp.	TMST	240

(1) Primary US plan is closed (either benefit accrual have ceased or frozen to new employees)

Source: Wolfe Research & Co. Accounting & Tax Policy Research; Company filings; Standard & Poor's; Bloomberg; FactSet. Market data as of 11/24/2019.

A few other companies have not formally adopted a pension MTM accounting policy change, but instead report a form of "adjusted" earnings that excludes certain pension and OPEB costs:

Companies Reporting Non-GAAP Earnings Adjusted for Pension Costs ($ millions)

Co. Name	Ticker	Market Cap.	Co. Name	Ticker	Market Cap.
The Boeing Co.	BA	208,987	The Brink's Co. (1)	BCO	4,519
Int'l Business Machines Corp. (1)	IBM	118,977	NCR Corp. (1)	NCR	4,248
General Electric Co.	GE	100,872	Ryder System, Inc. (1)	R	2,750
Xerox Corp. (1)	XRX	8,444	Unisys Corp. (1)	UIS	694
Unum Group (1)	UNM	6,231	J. C. Penney Co., Inc. (1)	JCP	352

(1) Primary US plan is closed (either benefit accrual have ceased or frozen to new employees)

Source: Wolfe Research & Co. Accounting & Tax Policy Research; Company filings; Standard & Poor's; Bloomberg; FactSet. Market data as of 11/24/2019.

PENSIONS: IFRS VS. GAAP

Pension accounting is an area where material differences remain between US GAAP and IFRS. The most notable differences are the assumptions used (under IFRS the expected rate of return must be equal to the discount rate) and the way that actuarial gains/losses are accounted for (under IFRS, they go directly into equity, and are not smoothed into earnings).

Pension Accounting: IFRS vs US GAAP differences

	IFRS	***US GAAP***
Assumptions	**Expected Return = Discount Rate.** **Implication:** **"Net finance cost" will be based on funded status (e.g. typically higher pension cost)**	**Expected Return based on asset allocation and historical performance.** **Implication:** **Expected return typically > discount rate, which will create non-cash earnings boost through lower pension cost.**
Actuarial Gains & Losses	**Actuarial gains & losses recorded directly in equity, permanently.** **Implication:** **Pension cost (typically) lower as most companies in current accumulated net acturial loss position.**	**Actuarial gains & losses smoothed into earnings.** **Implication:** **Pension cost (typically) higher as most companies in current accumulated net acturial loss position. Companies that use mark-to-marrket more aligned to IFRS treatment.**

Source: Wolfe Research Accounting & Tax Policy Research.

UNFUNDED MULTI-EMPLOYER PENSION PLANS

Some companies participate in multi-employer pension plans. They are most popular amongst grocery stores and transportation companies. Companies account for these multi-employer pension plans under a “pay-as-you-go” system and only expense the annual contribution amounts through earnings and cash flow.

A company's true liability from participating in a multi-employer pension plan has always been shrouded in secrecy, with underfunded amounts largely unknown. Further, while a typical defined benefit pension plan’s unfunded liability is disclosed and on the balance sheet, an unfunded multi-employer pension plan is neither.

In addition to recent contributions, disclosures for each significant multi-employer plan are required in a tabular format if possible, to include the following:

1) Name and identifying EIN number;
2) Level of employer’s participation (whether the employer’s contribution represents >5% of total contributions to the plan);
3) Financial health of the plan based on the “risk zone” as indicated by the Pension Protection Act; any funding improvement plans pending or implemented; any surcharges imposed; and
4) Expiration date and information about the collective bargaining agreements underlying the required contributions to the plans.

Using the EIN number, investors may view the source document Form 5500 IRS pension plan filing for more information on the pension plan (filed on a delayed basis at www.freeerisa.com). Importantly, certain information about plan withdrawal liabilities is not required. This information may prove useful when analyzing companies with multiemployer pension plans, if attainable by voluntary disclosure, company inquiry, or otherwise. On the next page as an example is the 10-K disclosure for Kroger.

Multi-Employer Plan 10-K Disclosures – Kroger ($ in millions) (continued)

The following table contains information about the Company's multi-employer pension plans:

Pension Fund	EIN / Pension Plan Number	Pension Protection Act Zone Status 2018	Pension Protection Act Zone Status 2017	FIP/RP Status Pending/ Implemented	Multi-Employer Contributions 2018	Multi-Employer Contributions 2017	Multi-Employer Contributions 2016	Surcharge Imposed (5)
SO CA UFCW Unions & Food Employers Joint Pension Trust Fund(1) (2)	95-1939092 - 001	Yellow	Yellow	Implemented	$ 71	$ 66	$ 60	No
Desert States Employers & UFCW Unions Pension Plan(1)	84-6277982 - 001	Green	Green	No	19	18	18	No
Sound Retirement Trust (formerly Retail Clerks Pension Plan)(1) (3)	91-6069306 – 001	Green	Green	Implemented	23	20	18	No
Rocky Mountain UFCW Unions and Employers Pension Plan(1)	84-6045986 - 001	Green	Green	No	20	19	16	No
Oregon Retail Employees Pension Plan(1)	93-6074377 - 001	Green	Green	No	9	9	8	No
Bakery and Confectionary Union & Industry International Pension Fund(1)	52-6118572 - 001	Red	Red	Implemented	11	11	10	No
Retail Food Employers & UFCW Local 711 Pension(1)	51-6031512 - 001	Yellow	Yellow	Implemented	10	10	9	No
Denver Area Meat Cutters and Employers Pension Plan (9)	84-6097461 - 001	Green	Green	No	—	—	3	No
United Food & Commercial Workers Intl Union — Industry Pension Fund(1)(4)	51-6055922 - 001	Green	Green	No	32	33	37	No
Western Conference of Teamsters Pension Plan	91-6145047 - 001	Green	Green	No	34	34	33	No
Central States, Southeast & Southwest Areas Pension Plan (7)	36-6044243 - 001	Red	Red	Implemented	18	492	23	No
UFCW Consolidated Pension Plan(1)	58-6101602 – 001	Green	Green	No	55	201	34	No
IBT Consolidated Pension Plan(1) (6) (7)	82-2153627 - 001	N/A	N/A	No	37	—	—	No
Other (8)					19	41	20	
Total Contributions					$ 358	$ 954	$ 289	

(1) The Company's multi-employer contributions to these respective funds represent more than 5% of the total contributions received by the pension funds.
(2) The information for this fund was obtained from the Form 5500 filed for the plan's year-end at March 31, 2018 and March 31, 2017.
(3) The information for this fund was obtained from the Form 5500 filed for the plan's year-end at September 30, 2017 and September 30, 2016.
(4) The information for this fund was obtained from the Form 5500 filed for the plan's year-end at June 30, 2017 and June 30, 2016.
(5) Under the Pension Protection Act, a surcharge may be imposed when employers make contributions under a collective bargaining agreement that is not in compliance with a rehabilitation plan. As of February 2, 2019, the collective bargaining agreements under which the Company was making contributions were in compliance with rehabilitation plans adopted by the applicable pension fund.
(6) The information for this fund was obtained from the Form 5500 filed for the plan's first year beginning February 20, 2017 and year-end December 31, 2017.
(7) In 2017, the Company ratified a new contract with the IBT that provided certain local unions to withdraw from this pension fund and form the IBT consolidated pension fund.
(8) The increase in 2017, compared to 2018 and 2016, in the "Other" funds is due primarily to withdrawal settlement payments for certain multi-employer funds in 2017.
(9) As of June 30, 2016, the Denver Area Meat Cutters and Employers Pension Plan merged with the Rocky Mountain UFCW Unions and Employers Pension Plan. The final Form 5500 for this plan was for the period of January 1, 2016 through June 30, 2016 (the date of the Merger). Prior to the merger, the Company's multi-employer contributions to this fund represented more than 5% of the total contributions received by the pension fund..

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings. Note: Above disclosure is excerpt of entire multiemployer plan table in the 10-K.

In this section, we discuss commonly received questions on pensions.

How Does Pension Underfunding Affect a Company's Balance Sheet?

GAAP requires companies to mark their pension plan assets and liabilities to market at year-end and 'true-up' the respective balance sheet asset or liability. The actual over or under funded amount of the pension plan is shown on the balance sheet either as a long-term asset (if over-funded) or a liability (if under-funded). When the funded status of a pension plan declines at year-end, the company will record an increase in the pension liability on the balance sheet with a corresponding charge to equity (net of a deferred tax asset). Vice versa, the pension liability will decrease (assuming still net underfunded) for an improvement in funded status.

For example, assume Company Alpha reported an $80 net pension liability at 2017 year-end. Market returns and a decline in Aa corporate bond rates results in a $100 net pension liability at 2018 year-end when assets and liabilities are marked to market. At 2018 year-end, the balance sheet is adjusted by recording a $20 increase in the pension liability with a corresponding decline to equity for $16 ($20 x [1-21% assumed tax rate). A deferred tax asset for $4 (or corresponding reduction in a deferred liability) ($20 x 21% assumed tax rate) is recorded.

Are Stock Contributions Allowed to a Pension Plan?

Yes, stock contributions are allowed, but cannot exceed 10% of the value of the total pension plan assets. Generally, we've observed that if pension plan stock contributions are made, the pension plan will sell down the stock over time.

What is the Cash Cost of a Pension Plan?

The pension expense amount recognized on the income statement is non-cash and calculated under the GAAP rules. The current year cash cost of pensions is the actual amount of cash contributed to the company's pension trust(s). The GAAP and the cash contribution number are calculated under a different set of rules and often are materially different.

Is There an Earnings Benefit (or Carry) from Contributing Cash to the Pension Plan?

In today's low interest rate environment, contributing money to a pension plan generally provides a non-cash EPS benefit as there is a significant positive carry between the interest rate at which the cash balance is earning (or debt interest rate paid) and the return at which the contributed cash is assumed to earn in the pension plan (6.50% median rate expected pension plan rate of return for all companies). If a company contributes to its pension plan, the contribution amount is assumed to earn the company's pension plan expected rate of return. The pre-tax income impact is equal to the pension contribution amount multiplied by the expected pension plan rate of return less the cost of funds/foregone interest income.

How Should I think about Pension Income?

Some companies, particularly those well-funded with higher expected return assumptions, will report positive pension income. In our view, at the very least, this should not be considered a recurring income stream that an analyst would want to put a multiple on or capitalize for valuation purposes. This income does not stem from operations, nor will the company be able to capture any of this income as future cash flows.

How Should Pensions be Incorporated into Valuation?

Analytically, we view the unfunded status of pension as debt that, in our view, should be incorporated into valuation measures such as discounted cash flow, and relative valuation multiples, such as enterprise value to EBITDA. It is our understanding that the rating agencies also treat unfunded pension plan amounts in this manner. Conversely, we do not treat an overfunded pension plan amount as an "other asset" for valuation purposes since its use is limited (some overfunded may be used to fund health care expenses; otherwise, there is a large excise tax imposed on pension overfunding withdrawals).

We suggest the following pension related valuation adjustments. Since pension payments are ultimately tax-deductible, we tax-effect the unfunded pension amount and treat this as debt for analytical purposes. Based on accounting changes that took effect beginning in 2018, pension cost is disaggregated between service cost in operating income and all other amounts in "other". Generally, this should ensure the appropriate non-financing amount is captured in EBIT and EBITDA metrics.

May an Overfunded Pension Plan Be Merged with an Underfunded Plan in an M&A Transaction?

In certain cases, it is possible to merge an overfunded plan with an underfunded plan as part of an M&A acquisition (A buys B and then merges B's plans into A's). However, there are several issues of which to be aware:

(1) The overfunding or underfunding amounts listed in the 10-K footnotes is the aggregation of all the company's pension plans. There may be some plans that are underfunded even though the overall company is overfunded and vice versa.

(2) Only like-kind plans can be merged. Companies generally maintain multiple pension plans: hourly (union) and salaried (note that there may be multiple hourly and salaried plans and perhaps more granular). A company may only merge an hourly plan with an hourly plan, for example, and it must be in the same country.

(3) U.S. versus International Plans. Only US plans can be merged with US plans and other country plans with that same country plans. Again, a company may have pension plans in many countries and their funded status may be different, too.

(4) HR Issues. Sometimes the biggest obstacle can be HR issues. By merging an overfunded plan with an underfunded plan, it could be argued that the company is putting the overfunded plan participants at a potential disadvantage by merging it with a "poorer" plan. The company will need to obtain Department of Labor approval to merge the plans, too, but that typically isn't a large obstacle.

PRIMER ON THE REGULATORY U.S. PENSION FUNDING RULES

The regulatory pension funding rules are promulgated by the Pension Protection Act of 2006 and originally promulgated under ERISA rules. The rules have changed several times over the past 20 years which only adds to their complexity. The rules are materially different than the GAAP rules, so companies will value their pension plans under two different calculations. Invariably, a third-party actuary calculates a company's pension liability and asset amounts under the rules based on detailed company data. Most defined benefit pension plans are so-called qualified plans and, therefore, subject to regulatory funding requirements. A company may also have a non-qualified pension plan. These plans are not subject to the regulatory pension funding rules (plans are often called a SERP or supplemental executive retirement plan).

Under the ERISA rules, the pension assets and liabilities are valued on the first day of each plan year (GAAP values on the last day of the year). Therefore, for a calendar year-end company, 1/1/20 was the most recent pension valuation date. For plan assets, a company either uses the actual fair market value of plan assets on the valuation date or a 24-month smoothed asset value (used by most companies to mitigate year-to-year asset volatility) and switching methods is not allowed unless IRS approval is obtained (very difficult to do). If a smoothed asset value is used, it is calculated based on the trailing 24 months' average pension assets value adjusted for an assumed expected return. This smoothed value may not be less than 90% or greater than 110% of the pension plan's actual fair market value. The pension liability is calculated as the present value of all pension benefits earned or accrued as of the pension plan's valuation date and is calculated by an actuary. It is most comparable to the accumulated benefit obligation (ABO) under the GAAP rules.

Companies are allowed to use one of two discount rate options in calculating the pension liability: (1) three segment 24 month trailing average Aaa-A corporate bond yield curve as listed monthly in the IRS Internal Revenue Bulletin (www.irs.gov/irb) or (2) a spot corporate Aaa-A yield curve based on the average of the daily corporate bond rates for the prior month (the rate used for a January 1st pension valuation date is the average daily Aaa-A corporate bond for December). The IRS publishes this rate monthly at the beginning of the month and our experience is that it approximates the average daily ML Aaa-A yield curve for the month. Similar to the asset smoothing option, companies are not allowed to move back and forth between the more favorable discount rate without IRS approval (very difficult to obtain). As an added twist, if a company uses the 24-month trailing average Aaa-A corporate rate, it may use the rate for the month in which the pension plan valuation is completed (January 2020) or any of the four proceeding months (September 2019, October 2019, November 2019 or December 2019). However, once a certain month is elected to be used, it may not be changed in a subsequent year (e.g., once November, always November). Note that as discussed in the pension funding relief section of this report, companies are currently allowed to use a 25-year trailing average discount rate in lieu of either of the aforementioned rates (MAP-21, HTFA and Bipartisan Budget Act of 2015 pension legislation passed).

The company then calculates if the pension plan is underfunded based on the difference between the pension plan assets and liabilities. The shortfall amount, if any, must be ratably funded over 7 years. The annual minimum required pension contribution amount consists of:

1. Service cost: net present value of pension benefits that were accrued by employees in the current year (very similar to the GAAP service cost); and,
2. Seven-year ratable funding of the pension plan's underfunded amount (pension assets – pension liabilities).

The difference between the pension assets and liabilities must be funded ratably over 7 years. Importantly, the pension funding amounts are trued-up each year. For example, if the pension plan is underfunded in one year and favorable market returns eliminate the underfunding in a subsequent year, no contributions would be required in the subsequent year.

Another complicating factor in assessing minimum required pension contributions is the existence of credit balances, which are not generally disclosed in the GAAP financial statements. A company may have accumulated credit balances in prior years from pension contributions in excess of the minimum required amount. Companies are allowed to use these credits to reduce their minimum pension plan contributions. However, credits are not allowed to be used if the pension funding percentage for the prior plan year is below 80% (1/1/19 for the 1/1/20 pension valuation). Further, in calculating the current funding ratio (assets divided by liabilities), credit balances created after the Pension Protection Act was enacted are subtracted from pension assets. In turn, the pension liability is divided into this adjusted pension asset amount to calculate the current funded ratio.

Required pension contributions are due by 8.5 months after the pension plan year-end. To illustrate, the last required pension valuation date for calendar year-end companies was January 1, 2020 since pensions are valued on the first day of each pension plan year. Using the 8.5 months after plan year-end timeline, the mandatory pension plan contributions are not due until September 15, 2021. However, the pension rules require quarterly contributions if a pension plan was not at least 100% funded in the previous year (1/1/19 in our example and the majority of pension plans *were* underfunded on this date) and such amounts are due on 4/15, 7/15, 10/15 and the following 1/15 (for non-calendar year-end companies such amounts are due on the 15th of the fourth, seventh and tenth months and the 15th day after year-end). The required quarterly contribution amounts are calculated based on the lower of: (1) 90% of the current year's minimum pension contribution or (2) 100% of the prior year's minimum pension contribution amount.

At Risk Rules

Higher contributions will be required if a pension plan is considered "at-risk". A pension plan is considered at-risk if its funded ratio using a one-year lookback (e.g. 1/1/2017 for the valuation date that took place on 1/1/2018) was less than 80%. An at-risk plan must calculate its funded ratio using the following formula, which essentially nullifies the potential use of credit balances that would otherwise be available to reduce required contributions.

1/1/2020 Market value of assets (smoothed or actual FMV)
- 1/1/08 existing credit balance
- Post 12/31/07 credit balance

= Adjusted market value of pension assets
/ 1/1/2020 Pension liability (what the PPA terms "funding target")
= Pension funded ratio under at-risk rules

Further, if the pension plan was less than *70*% funded using the one-year lookback period (e.g. as of 1/1/2019), then the current year pension regulatory liability will be calculated differently. The plan will have to use more stringent actuarial assumptions that will essentially calculate the liability based upon the maximum potential benefits that could be paid out (e.g. using lump sum payments vs. annuity). If the current year funded ratio is less than 70%, using this newly calculated pension regulatory liability, then this will be the funding ratio used to calculate the minimum required contribution.

BENEFIT RESTRICTION THRESHOLDS

Two important pension funding percentage thresholds are 60% and 80%. If a company falls under these thresholds, various benefit restrictions are imposed. Therefore, some companies with active pension plans will endeavor to maintain an at least 80% regulatory funded pension plan.

Funded Ratio < 60%

Using the previously discussed at-risk rules, plans with a funded ratio less than 60% will have certain restrictions enforced. For example, benefits may be required to be frozen (no new benefit accruals) and payments must be made in annuity form as opposed to lump sum payouts. In order to avoid these restrictions, companies may choose to waive their credit balance amount if this action would increase the funding level back to at least 60%. Alternatively, a company may accept the pension plan restrictions, keep the credit balance, and use it to offset part (or all) of the minimum contribution amount. We believe many companies would endeavor to keep their plans at least 60% funded under the at-risk rules to avoid benefit restrictions unless the company itself is in a distressed scenario.

Funded Ratio: 60% to <80%

There are several restrictions placed on a company's pension plan if it's 60% or more funded, but less than 80% funded as calculated under the 'at-risk' rules. If a company's pension plan is still open to employees, these restrictions may become an HR issue and, therefore, the company may choose to incrementally and voluntarily fund its pension plan to meet the 80% funding threshold. The restrictions are as follows:

1. Company is required to file Form 4010. This form notifies pension plan participants of the current funded status of the pension plan,
2. There are no benefit increases allowed unless this amount is immediately fully funded (an issue since some union contracts require annual benefit increases),
3. Lump sum benefit payments are limited to 50% of an employee's accrued pension benefit (most employees are given an option for a 100% lump sum distribution or an annuity when retiring or leaving the company).

Assuming a pension valuation date on 1/1/20, the voluntary contributions required to reach an 80% funding level would need to be made by 9/15/21.

PENSION FUNDING RELIEF PROVISIONS

Pension funding (cash contribution) requirements are based on a different set of rules established under the Pension Protection Act. Pension funding relief legislation was initially enacted in the 2012 MAP-21 legislation, subsequently extended within the Highway and Transportation Funding Act of 2014 (HTFA), then extended once more by the Bipartisan Budget Act of 2015. Traditionally, the discount rate used in calculating a company's pension liability is a 24-month trailing average of corporate Aaa-A rates published monthly by the Treasury / IRS. Under the legislation, companies may instead use a *25*-year average rate, subject to corridor thresholds vs. the current rate they would otherwise be required to use. That is, if 90% of the 25-year average rate that companies used on 1/1/20 is above the 24-month rate, then the rate will just be 90% of the 25-year number.

The applicable corridors are below. Keep in mind that pension plan years begin on January 1st (e.g. 2020 plan year valuation was 1/1/20). The corridor will begin phasing out in 2021 and is scheduled to reach the maximum phase-out of 70%-130% in 2024.

Pension funding relief: Allows use of 25-year rate subject to thresholds vs 24-month rate as follows:

Plan Year	Min Threshold	Max Threshold
2017	90%	110%
2018	90%	110%
2019	90%	110%
2020	90%	110%
2021	85%	115%
2022	80%	120%
2023	75%	125%
2024 & Thereafter	70%	130%

Current regulatory discount rates can be viewed here: http://www.irs.gov/Retirement-Plans/Funding-Yield-Curve-Segment-Rates.

Based on IRS published rates, we estimate the discount rate used under the relief rules (for funding purposes) for the 2020 plan year is ~140 basis points higher than what otherwise would have been used under a 2-year AAA-A 24-month trailing U.S. corporate rate absent any funding relief.

Typically, the average pension plan's duration is approximately 12, so for every 100 basis point increase in the discount rate, the pension liability (used for calculating funding purposes) would decline by roughly 12% (ignoring convexity). There were no "strings" attached to the legislation, so there was general adoption of the funding relief, but with varying financial impacts.

Other Disclosures and Audit Opinions

LOOK FOR RELATED PARTY TRANSACTIONS

Related party transactions are a required GAAP disclosure. The accounting literature broadly defines a related party as including:

1. A parent company and its subsidiaries;
2. Subsidiaries of a common parent company;
3. Affiliates;
4. An enterprise and trust for the benefit of employees;
5. An enterprise and its principal owners (owners or beneficial owners of at least 10% of voting interest), management (Board of Directors, CEO, COO, SVPs, or immediate family members);
6. Other parties if one party controls or can significantly influence management or operating policies of the other inasmuch as one of the transacting parties might be prevented from fully pursuing its own separate interests.

In assessing the disclosure requirements, there is not a dollar amount materiality threshold per se and companies must also evaluate qualitative factors. Related party transactions are not required disclosures in situations where the transactions are eliminated in the consolidated financial statements.

WHEN ARE SEGMENT DISCLOSURES REQUIRED?

GAAP requires disclosure of operating segment information under ASC 280, *Segment Reporting* (formerly FAS No. 131*)*. The framework for identifying segments under ASC 280 is a "management approach" based on the way management organizes the company in making operating decisions and evaluating operating results. Segments may be organized by line of business, division, geography, end markets, customer, etc. As a result, this information is often diverse across companies since it's disclosed based on how management organizes the company for decision making.

Under GAAP, an operating segment is a component of a business when:

1. It engages in business activities from which it may earn revenues and incur expenses;
2. Its operating results are regularly reviewed by the enterprise's chief operating decision maker to make decisions about resources to be allocated to the segment and assess its performance; and
3. For which discrete financial information is available.

GAAP further classifies a segment as a "reportable segment" (that must be disclosed) if it meets the aforementioned operating segment definition and at least one of the three following quantitative thresholds.

a. Its assets are 10% or more of the combined assets of all operating segments.
b. Its reported revenue, including both sales to external customers and intersegment sales or transfers, is 10% or more of the combined revenue (internal and external) of all reported operating segments; and/or
c. The absolute amount of its reported income or loss is 10% or more of the greater, in absolute amount, of (1) the combined reported profit of all operating segments that did not report a loss or (2) the combined reported loss of all operating segments that did report a loss.

If a segment is a reportable segment, GAAP requires certain disclosures. First, a measure of income or loss and total assets is a required disclosure for each reportable segment. Second, disclosure of the following items is required if it's included in the company's measure of segment profit or loss reviewed by the company's chief operating decision maker:

1. Revenue from external customers;
2. Revenue from transactions with other operating segments of the same company;
3. Interest income;
4. Interest expense;
5. Depreciation, depletion, and amortization expense;
6. Equity income/loss;
7. Income tax expense/benefit;
8. Impact of items in earnings that are unusual in nature or occur infrequently but not both;
9. Extraordinary items;
10. Significant non-cash items other than depreciation, depletion, and amortization expense;
11. Type of product or service from which each reportable segment derives its revenues; and
12. Factors used to identify the enterprise's reportable segments, including the basis for organization (products, services, geographic).

Additionally, GAAP requires several reconciliations in the segment disclosures:

1. The total of the reportable segment's net revenues to the company's consolidated net revenues;
2. A reconciliation of the total of the reportable segments' measures of profit or loss to the company's consolidated income from continuing operations;
3. The total of the reportable segment's assets to the enterprise's consolidated assets; and
4. The total of the reportable segments' amounts for every other significant item of information disclosed to the corresponding consolidated amount.

Besides segment disclosures, geographical disclosures are required for the following items:

1. Total domestic revenues;
2. Total revenues from all other foreign countries;
3. Revenues from individual countries, if material (materiality not defined in ASC 280); and
4. Long-lived assets (i.e., PP&E) in the company's home country, in all other foreign countries, and in individual countries, if material.

GAAP also requires disclosure of large customers if a customer is 10% or more of the company's revenues. The customer's percentage of the firm's total revenues and the identity of the segment or segments reporting the revenues must be disclosed. Notably, the specific customer is not required to be disclosed, so sometimes companies will list the disclosure as Customer A, B, C, etc. along with the customer's specific percentage of the total firm's revenues. The customer percentage of a certain segment's revenue is not required to be disclosed.

Unfortunately, ASC 280 does not define the profit or loss measure required to be disclosed (e.g., operating income, EBIT, EBT, net income, etc.). Therefore, any measure is allowed to be used as the segment measurement of profit or loss insofar as it's used by management for internal decision making. GAAP also allows segment information to be reported under different accounting methods than is used in the consolidated GAAP financial statements (e.g., LIFO vs. FIFO). However, the amount reported for each segment item must be the same amount reported to the chief operating decision maker used to allocate resources and measure the segment's financial performance.

Any adjustments, eliminations and allocations of revenues, expenses, gains, and/or losses are included in the segment's earnings only if they are included in the earnings measure used by the chief operating decision maker. These items could vary. For example, a company reports LIFO inventory for external reporting purposes and uses the FIFO inventory costing method for internal performance measurement purposes. If amounts such as corporate overhead and other costs are allocated to reported segments, GAAP requires such items to be allocated to segments on a "reasonable basis." To be sure, this is open for management's interpretation and, thus, we often find different cost allocations across companies. We are also cautious in how allocations are calculated across companies since the information is used by the chief decision maker internally and is a likely input into evaluating the performance and compensation of company management. This creates a large financial incentive among internal managers to report high segment profits.

If segments change, GAAP requires restatement of prior-period comparative information for the new segments unless it is impracticable. If segment information for earlier periods is not restated, companies are required to disclose the segment information in the current year on both its current year segment basis and its old segment basis unless it is impracticable. Notwithstanding comparable restated segment information, the newly reorganized segment disclosures may still be used to mask slowing growth.

ARE THERE CHANGES TO SEGMENTS?

Management has discretion in choosing if, or when, they change their internal organizational structure and how the chief operating decision maker analyzes the segment's operating performance. While changing segments is often undertaken for a specific business purpose, such as a change in customer patterns or recent acquisitions, it still may be used as an artifice to mask slowing growth. As an example, a highly acquisitive company acquires another business and consolidates the acquired business into an existing operating segment, boosting revenues.

Fortunately, GAAP requires companies to disclose if they change segments and we view this alone as a yellow flag. To provide an example of the different types of GAAP segment disclosures, in the next exhibit, we present MMM's operating segment and geographical disclosures.

3M: Segment and Geographic Information

Business Segment Products

Business Segment	Major Products
Industrial	Tapes, coated, nonwoven and bonded abrasives, adhesives, advanced ceramics, sealants, specialty materials, filtration products, closure systems for personal hygiene products, acoustic systems products, automotive components, abrasion-resistant films, structural adhesives and paint finishing and detailing products
Safety and Graphics	Personal protection products, transportation safety products, commercial graphics systems, commercial cleaning and protection products, floor matting, roofing granules for asphalt shingles, fall protection products, self-contained breathing apparatus systems, and gas and flame detection instruments
Health Care	Medical and surgical supplies, skin health and infection prevention products, drug delivery systems, dental and orthodontic products, health information systems and food safety products
Electronics and Energy	Optical films solutions for electronic displays, packaging and interconnection devices, insulating and splicing solutions for the electronics and electrical industries, touch screens and touch monitors, renewable energy component solutions, and infrastructure protection products
Consumer	Consumer and office tapes and adhesives, repositionable notes, indexing systems, home improvement products, furnace filters, painter tapes, mounting products, home care products, sponges, scouring pads, high-performance clothes, protective material products, and adhesive bandages and braces

Business Segment Information

	Net Sales			Operating Income		
(Millions)	2018	2017	2016	2018	2017	2016
Industrial	**$ 12,267**	$ 11,866	$ 11,217	**$ 2,737**	$ 2,490	$ 2,528
Safety and Graphics	**6,827**	6,235	5,948	**1,720**	2,066	1,403
Health Care	**6,021**	5,853	5,606	**1,799**	1,764	1,731
Electronics and Energy	**5,472**	5,501	4,926	**2,055**	1,377	1,145
Consumer	**4,796**	4,731	4,578	**1,027**	1,004	1,054
Corporate and Unallocated	**50**	3	6	**(1,465)**	(395)	(321)
Elimination of Dual Credit	**(2,668)**	(2,532)	(2,172)	**(666)**	(614)	(513)
Total Company	**$ 32,765**	$ 31,657	$ 30,109	**$ 7,207**	$ 7,692	$ 7,027

	Assets			Depreciation & Amortization			Capital Expenditures		
(Millions)	2018	2017	2016	2018	2017	2016	2018	2017	2016
Industrial	**$ 9,855**	$ 9,895	$ 9,140	**$ 376**	$ 432	$ 407	**$ 454**	$ 381	$ 360
Safety and Graphics	**9,657**	9,874	7,626	**300**	275	277	**210**	184	228
Health Care	**4,687**	4,757	4,293	**162**	175	175	**180**	137	136
Electronics and Energy	**3,993**	4,291	4,335	**134**	240	223	**115**	152	187
Consumer	**2,757**	2,706	2,497	**91**	112	114	**115**	109	109
Corporate and Unallocated	**5,551**	6,464	5,015	**425**	310	278	**503**	410	400
Total Company	**$ 36,500**	$ 37,987	$ 32,906	**$ 1,488**	$ 1,544	$ 1,474	**$ 1,577**	$ 1,373	$ 1,420

Geographic area information is used by the Company as a secondary performance measure to manage its businesses. Export sales and certain income and expense items are generally reported within the geographic area where the final sales to 3M customers are made.

	Net Sales			Property, Plant and Equipment - net	
(Millions)	2018	2017	2016	2018	2017
United States	**$ 12,840**	$ 12,372	$ 12,188	**$ 4,915**	$ 4,891
Asia Pacific	**10,254**	9,809	8,847	**1,624**	1,672
Europe, Middle East and Africa	**6,654**	6,456	6,163	**1,751**	1,798
Latin America and Canada	**3,024**	3,033	2,901	**448**	505
Other Unallocated	**(7)**	(13)	10	**—**	—
Total Company	**$ 32,765**	$ 31,657	$ 30,109	**$ 8,738**	$ 8,866

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

MARKET RISK DISCLOSURES

This footnote identifies companies that experienced material changes in market risk exposures and derivatives. The market risk disclosure section must be disclosed by companies annually and include both quantitative and qualitative information about the market risks impacting them.

Typical items included in the market risk disclosure section are interest rate risk, equity price risk, commodity price risk, and foreign currency exchange rate risk. All of a company's financial instrument market risks are categorized into (1) instruments entered into for trading purposes and (2) instruments entered into for purposes other than trading. The quantitative and qualitative information mentioned above must be provided for each of these two categories.

Within the qualitative section of a company's market risk footnote, management must disclose at least the following few items:

1. The company's primary market risk exposures;
2. The manner in which market risk exposures are managed; and
3. How the primary market risk exposures are managed compared to the prior year and whether there were any changes in these exposures.

Under the SEC's disclosure rules, a company's quantitative disclosure for these exposures may be presented in one of following three formats:

1. A tabular presentation of instruments sensitive to market risks grouped by similar risk characteristics. The information included in this table should include the fair market values, contract terms, and expected maturity dates for each of the exposures, allowing investors to determine the exposures' next five years of expected cash flows.
2. A sensitivity table that quantifies potential losses in earnings, cash flows, and fair values from one or more hypothetical changes in interest rates, commodity prices, exchange rates, and/or other market prices over a selected time period. The different categories and market risk exposures may have varying magnitudes of hypothetical rate changes. Management is required to provide a description of the model, the assumptions used in the sensitivity analysis, and some parameters to help the investors understand the disclosure.
3. Potential losses in future earnings, cash flows, or fair values may be disclosed using a value at risk methodology over a selected time period. Probabilities of occurrence from changes in items such as interest rates, commodity prices, and/or exchange rates must also be disclosed. For each value at risk disclosure category, companies must include at least one of following three additional disclosures:
    a. The average, high, and low amounts or distribution of value at risk amounts for the reporting period;
    b. The average, high, and low amounts or the distribution of actual change in earnings, cash flow, or fair value from the market risk sensitive instruments that occurred over the reporting period; or
    c. The number of times or percentage of actual changes in earnings, cash flows, or fair value from the market risk sensitive instruments exceed the value at risk amounts during the reporting period.

If a material disclosure alternative is changed, management must provide the (1) reason(s) for the change and (2) comparable information for either new disclosure methodology or the current year disclosure under the prior year's methodology. In the following exhibit, we present Mondelez' quantitative market risk section.

Mondelez: Market Risk Disclosure

ITEM 7A. Quantitative and Qualitative Disclosures About Market Risk.

As we operate globally, we are primarily exposed to currency exchange rate, commodity price and interest rate market risks.. We monitor and manage these exposures as part of our overall risk management program. Our risk management program focuses on the unpredictability of financial markets and seeks to reduce the potentially adverse effects that the volatility of these markets may have on our operating results. We principally utilize derivative instruments to reduce significant, unanticipated earnings fluctuations that may arise from volatility in currency exchange rates, commodity prices and interest rates. For additional information on our derivative activity and the types of derivative instruments we use to hedge our currency exchange, commodity price and interest rate exposures, see Note 1, *Summary of Significant Accounting Policies*, and Note 10, *Financial Instruments*.

Many of our non-U.S. subsidiaries operate in functional currencies other than the U.S. dollar. Fluctuations in currency exchange rates create volatility in our reported results as we translate the balance sheets, operating results and cash flows of these subsidiaries into the U.S. dollar for consolidated reporting purposes. The translation of non-U.S. dollar denominated balance sheets and statements of earnings of our subsidiaries into the U.S. dollar for consolidated reporting generally results in a cumulative translation adjustment to other comprehensive income within equity. A stronger U.S.. dollar relative to other functional currencies adversely affects our consolidated earnings and net assets while a weaker U.S. dollar benefits our consolidated earnings and net assets. While we hedge significant forecasted currency exchange transactions as well as certain net assets of non-U.S. operations and other currency impacts, we cannot fully predict or eliminate volatility arising from changes in currency exchange rates on our consolidated financial results. See *Consolidated Results of Operations* and *Results of Operations by Reportable Segment* under *Discussion and Analysis of Historical Results* for currency exchange effects on our financial results. For additional information on the impact of currency policies, recent currency devaluations and highly inflationary accounting on our financial condition and results of operations, also see Note 1, *Summary of Significant Accounting Policies—Currency Translation and Highly Inflationary Accounting*.

We also continually monitor the market for commodities that we use in our products. Input costs may fluctuate widely due to international demand, weather conditions, government policy and regulation and unforeseen conditions. To manage input cost volatility, we enter into forward purchase agreements and other derivative financial instruments. We also pursue productivity and cost saving measures and take pricing actions when necessary to mitigate the impact of higher input costs on earnings.

We regularly evaluate our variable and fixed-rate debt as well as current and expected interest rates in the markets in which we raise capital. Our primary exposures include movements in U.S. Treasury rates, corporate credit spreads, commercial paper rates as well as limited debt tied to London Interbank Offered Rates ("LIBOR"). The Financial Conduct Authority in the United Kingdom plans to phase out LIBOR by the end of 2021. We do not anticipate a significant impact to our financial position from the planned phase out of LIBOR given our current mix of variable and fixed-rate debt. We periodically use interest rate swaps and forward interest rate contracts to achieve a desired proportion of variable versus fixed-rate debt based on current and projected market conditions. Our weighted-average interest rate on our total debt was 2.2% as of December 31, 2019, down from 2.3% as of December 31, 2018, primarily due to lower interest rates on commercial paper borrowings.

Beginning in 2018, we entered into new investment hedge derivative contracts, specifically, cross-currency interest rate swaps and forwards, to hedge certain investments in our non-U.S. operations against movements in exchange rates. See Note 10, *Financial Instruments*, for more information on our derivative activity.

Value at Risk:

We use a value at risk ("VAR") computation to estimate: 1) the potential one-day loss in the fair value of our interest rate-sensitive financial instruments; and 2) the potential one-day loss in pre-tax earnings of our currency and commodity price-sensitive derivative financial instruments. The VAR analysis was done separately for our currency exchange, fixed income and commodity risk portfolios as of each quarter end during the periods presented below. The instruments included in the VAR computation were currency exchange forwards and options for currency exchange risk, debt and swaps for interest rate risk, and commodity forwards, futures and options for commodity risk. Excluded from the computation were anticipated transactions, currency trade payables and receivables, and net investments in non-U.S. subsidiaries, which the above-mentioned instruments are intended to hedge.
The VAR model assumes normal market conditions, a 95% confidence interval and a one-day holding period. A parametric delta-gamma approximation technique was used to determine the expected return distribution in interest rates, currencies and commodity prices for the purpose of calculating the fixed income, currency exchange and commodity VAR, respectively. The parameters used for estimating the expected return distributions were determined by observing interest rate, currency exchange and commodity price movements over the prior quarter for the calculation of VAR amounts at December 31, 2019 and 2018, and over each of the four prior quarters for the calculation of average VAR amounts during each year. The values of currency and commodity options do not change on a one-to-one basis with the underlying currency or commodity and were valued accordingly in the VAR computation.

As of December 31, 2019 and December 31, 2018, the estimated potential one-day loss in fair value of our interest rate-sensitive instruments, primarily debt, and the estimated potential one-day loss in pre-tax earnings from our currency and commodity instruments, as calculated in the VAR model, were:

	Pre-Tax Earnings Impact				Fair Value Impact			
	At 12/31/19	Average	High	Low	At 12/31/19	Average	High	Low
					(in millions)			
Instruments sensitive to:								
Interest rates					$ 86	$ 70	$ 97	$ 49
Foreign currency rates	$ 15	$ 19	$ 25	$ 15				
Commodity prices	11	13	14	11				

	Pre-Tax Earnings Impact				Fair Value Impact			
	At 12/31/18	Average	High	Low	At 12/31/18	Average	High	Low
					(in millions)			
Instruments sensitive to:								
Interest rates					$ 35	$ 33	$ 36	$ 27
Foreign currency rates	$ 19	$ 30	$ 39	$ 19				
Commodity prices	15	16	17	15				

This VAR computation is a risk analysis tool designed to statistically estimate the maximum expected daily loss, under the specified confidence interval and assuming normal market conditions, from adverse movements in interest rates, currency exchange rates and commodity prices. The computation does not represent actual losses in fair value or earnings we will incur, nor does it consider the effect of favorable changes in market rates. We cannot predict actual future movements in market rates and do not present these VAR results to be indicative of future movements in market rates or to be representative of any actual impact that future changes in market rates may have on our future financial results.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Multinational companies with subsidiaries doing business in foreign currencies must determine the proper accounting for foreign currency transactions and translating financial statements into US dollars (or their home currency). Under ASC 830, there are two primary foreign currency accounting methods: the current rate method and the temporal method (a/k/a "remeasurement"). Each will have vastly different impacts on the consolidated earnings and balance sheet amounts.

CURRENT RATE VS TEMPORAL METHOD

Under the current rate method, most impacts on earnings are *implicit*. That is, changes in the foreign currency exchange rates will not show up as a translation gain or loss in earnings, but rather higher or lower revenues or expenses that were translated at the average rate throughout the period. Equity balances are directly impacted by way of the Cumulative Translation Account within Accumulated Other Comprehensive Income (AOCI) in shareholder's equity. This item is important to review as it relates to book value calculations and how it could impact tangible net worth debt covenants.

The temporal / remeasurement method will result in *explicit* earnings impacts from foreign currency exposure based on the transactional gains or losses recognized. There is no specific classification of where these gains or losses are recorded (possibly in operating expenses or other expenses), so it is important to see where they're disclosed. Below we summarize the exchange rates at which key items are translated under both the Current Rate and Temporal Method.

Financial Statements Translation Method Under Current Rate and Temporal Methods

	Translation Method	
Balance Sheet	**Current Rate**	**Temporal**
Monetary Assets	Rate at BS date	Rate at BS date
Nonmonetary assets (Inventory & Fixed Assets)	Rate at BS date	Historical rate
Monetary Liabilities	Rate at BS date	Rate at BS date
Equity	Historical rate	Historical rate
Plug to Balance	Translation adjustment	F/X Transaction gain/(loss)
	OCI -> AOCI -> Equity	Net Income -> RE -> Equity
Income Statement		
Sales	Average for period	Average for period
Cost of sales	Average for period	Historical rate
Depreciation	Average for period	Historical rate
Other	Average for period	Average for period
F/X Transaction gain (loss)	Not included	Included

Source: Wolfe Research Accounting & Tax Policy Research.

CURRENT RATE METHOD

The current rate method is most common and applies when the foreign subsidiary operates mostly independently and self-contained, where the day to day operations are not dependent on the economic environment of the parent company. The "current rate" method translates balance sheets into U.S. dollars using the quarter/year-end exchange rate (not a historical rate). Under this method, the balance sheet translation gains or losses are recorded directly as a decrease/increase to equity (AOCI) and are not reported in earnings. Income statement items are translated at the average exchange rate during the quarter/year.

TEMPORAL METHOD / REMEASUREMENT

When a subsidiary is a direct and integral component or extension of the parent company's operations, GAAP requires companies to use a different method of translation — remeasurement, or the so-called "temporal method". Under the temporal method of translation (for a U.S. parent company), assets and liabilities are classified as either monetary or non-monetary and the U.S. dollar is considered the functional currency. Monetary assets and liabilities are translated at the current period end exchange rate while nonmonetary assets/liabilities/equity are translated at the historical rate based on when the items were first purchased / occurred. With this in mind, the balance sheet exposure of companies using remeasurement is the company's net monetary asset/liability position. The financial impact of translating these balance sheet amounts under the temporal method is recorded as a transaction gain or loss through net income each period (rather than directly as an adjustment to other comprehensive income in equity as required under the current rate method). This creates more earnings volatility for companies operating in highly inflationary environments. While the transaction gain or loss may be viewed as a "one-time" item, generally it does represent a real economic cost (loss) if the monetary items are turned into cash and repatriated into US dollars.

Below we list examples of monetary and non-monetary items:

Monetary Items	Non-Monetary Items	
Cash	Marketable securities	Goodwill
Accounts receivable	Inventory	Deferred income taxes
Accounts payable	Prepaid expenses	Deferred income
	Property, plant & equipment	Common stock
	Intangibles	Preferred stock

HIGHLY INFLATIONARY ENVIRONMENTS REQUIRE USE OF THE TEMPORAL METHOD

When a subsidiary operates in a country deemed to be highly inflationary, the temporal method is required, regardless of what has been used in the past. A highly inflationary environment is defined as "cumulative inflation of approximately 100% or more over a three-year period."

Since highly inflationary currencies invariably depreciate, using the current exchange rate to translate balance sheet items into U.S. dollars would result in very low balance sheet valuations, suggesting that there has been a material decline in the economic real value of the highly inflationary subsidiaries' nonmonetary assets. The economic reality is that inventory and fixed assets would normally appreciate in a highly inflationary environment in local currency terms. GAAP attempts to fix for this phenomena by using the historical exchange rate to translate nonmonetary balance sheet items.

For example, assume a U.S. company built an Argentinian manufacturing facility two years ago for 500 million Argentine Pesos (ARS) when the exchange rate was ARS 30 per dollar (~$16 million when translated into dollars). The ARS depreciates to 60 ARS per dollar. If the current exchange rate were used to translate the historical 500 million ARS property, plant and equipment balance, its U.S. dollar translated value would be $8 million, or a decline of $8 million. Translating at the current rate would yield a counter-intuitive result as the assets have not disappeared or declined materially in value in ARS terms (arguably they would have appreciated in nominal terms, but not real terms).

BALANCE SHEET TRANSLATION EXPOSURE IS CO'S NET MONETARY ASSET/LIABILITY POSITION

Since only monetary assets/liabilities are translated at current exchange rates under the temporal method, the foreign currency impact of translating the highly inflationary subsidiary's financial statements is the subsidiary's net monetary asset or liability position multiplied by the change in the exchange rate in the current period. Non-monetary items are translated at historical exchange rates and, as such, do not result in translation gains or losses. To illustrate, assume at 12/31/19 Company Alpha's Venezuelan subsidiary's balance sheet reported $100 cash, $500 accounts receivable and $200 accounts payable. The net monetary asset position is $400. Company Alpha's net monetary position does not change at 12/31/19. The balance sheet translation loss reported in earnings is equal to the change in exchange rate multiplied by the net monetary asset position. Since the company was in a net monetary asset position and the currency depreciated, there is a translation loss of $7 reported in earnings in the 12/31/19 year end.

Illustration of Balance Sheet Translation Loss Reported in Earnings for Argentinian Subsidiary

	ARS 12/31/2018	ARS 12/31/2019
Monetary Assets		
Cash	ARS 100	ARS 100
A/R	ARS 500	ARS 500
Non-monetary Assets		
Inventory	ARS 600	ARS 600
PP&E	ARS 3,000	ARS 3,000
Monetary Liabilities		
Accounts Payable	ARS 200	ARS 200
Net monetary position		
Cash + A/R - A/P	ARS 400	ARS 400
ARS/USD exchange rate	30	60
Net monetary position in USD	$13	$7
Translation loss in Earnings	($7)	

Source: Wolfe Research Accounting & Tax Policy Research.

On the income statement, only sales and certain other items are translated at the average exchange rate for the period. Notably, cost of goods sold and depreciation expense are recorded based on the historical rate when the asset was purchased. This creates a mismatch as sales are translated at the current period average exchange rate while inventory (cost of sales) is translated at the same historical exchange rate used when it was purchased. Below we compare how a depreciation in ARS/USD will impact the earnings of the parent company when "remeasuring".

Illustration of Income Statement Remeasurement Impact Reported in Earnings for Argentinian Subsidiary

	Y/E 12/31/2018 ARS	ARS/USD	Y/E 12/31/2018 USD	Y/E 12/31/2019 ARS	ARS/USD	Y/E 12/31/2019 USD
Sales	ARS 1,200	30	$40	ARS 1,200	60	$20
Cost of Sales	ARS 800	30	$27	ARS 800	30	$27
Depreciation	ARS 200	30	$7	ARS 200	30	$7
Income	ARS 200		$7	ARS 200		-$13

Source: Wolfe Research Accounting & Tax Policy Research.

HEDGING AND DERIVATIVE DISCLOSURES

Companies use derivatives and hedge accounting to minimize volatility within their financial statements. Hedge accounting and interpreting the related derivative disclosures is one of the most complex areas of accounting. At a high level, the accounting is straightforward — record derivatives on the balance sheet at fair market value. In turn, the changes in fair value each period must be reflected either in earnings or equity and this is where the accounting guidance becomes complicated and is a function of the instrument and the related risk it hedges.

Under GAAP, three types of hedges qualify for special accounting treatment:

1. **Foreign currency hedge of a net investment:** This is when a derivative is used to hedge the foreign exchange risk in the net assets (book equity) held in a foreign subsidiary in a foreign currency.
2. **Fair value hedge:** This is when a company uses derivatives to hedge changes in the fair value of a balance sheet asset/liability or unrecognized firm commitment. As an example, a company enters into an interest rate derivative to hedge the fair value of fixed rate debt.
3. **Cash flow hedge:** This is when a derivative is used to hedge the cash flows of a specific balance sheet risk (derivative used to hedge interest expense on floating rate debt) or a forecasted transaction (foreign sales and A/R).

We find that some companies utilize foreign currency derivatives as a means to hedge exchange rate risk on sales, gross margin, or SG&A, among other items. This type of transaction is usually classified as a cash flow hedge under GAAP. Under a cash flow hedge, the unrealized gains/losses are recorded in equity in other accumulated comprehensive income (AOCI) until the forecasted transaction occurs. In the period when the transaction actually occurs (e.g., revenue is recognized along with accounts receivable), the derivative unrealized gain or loss held in AOCI is transferred out of AOCI and into the income statement. It is classified in the income statement in the same line item as the risk that it is hedging (e.g., as an addition or subtraction to revenue).

To illustrate, a company hedges its foreign subsidiary's cost of goods sold. During the period in which the derivative is outstanding, but before the sale transaction occurs, the unrealized losses are assumed to be $1,000 and, accordingly, recorded in AOCI in equity for $1,000. Next, the sale occurs. If the company is perfectly hedged, the unrealized losses on the cash flow hedge are transferred from AOCI in equity and used to offset the "natural" foreign exchange gain reported in cost of sales. Therefore, the net foreign exchange impact on cost of sales is $0.

In the next exhibit, we summarize and describe the different types of hedges under GAAP.

Description of the Different Types of Hedges Based on ASC 815, Derivatives and Hedging (formerly FAS No. 133)

TYPE OF HEDGE	DESCRIPTION	GAIN/LOSS RECOGNITION
Fair Value Hedge	Hedging an exposure to changes in the fair value of a balance sheet asset or liability or an unrecognized firm commitment attributable to a particular risk. The derivative's FMV is recorded as an asset or liability.	Derivative gain/loss recorded in earnings in each period. The change in fair value on the hedged item attributable to the hedged risk is added/subtracted to its balance sheet value with a corresponding gain/loss. If the derivative's change in fair value is different than the fair value of the hedged asset or liability, the difference is recorded as a gain or loss in earnings.
Cash Flow Hedge	Hedging exposure to variability of all or a specific portion of a balance sheet item cash flows or a forecasted transaction attributable to a particular risk. The FMV of the derivative is recorded as an asset or liability.	Portion of the derivative gain/loss equal to the change in hedged transaction's expected cash flows (the effective portion of the hedge) is deferred and reported in "other comprehensive income" in equity on the balance sheet until the hedged transaction impacts earnings. The ineffective portion of the hedge is recorded in earnings in the current period. In the period that the hedged transaction is reported in earnings, the deferred derivative gain/loss in AOCI is reported in earnings.
Hedge of Net Investment of Foreign Ops.	Macro type hedge of the change in value of a company's foreign subsidiary's net assets due to F/X movements.	Changes in fair value of the foreign subsidiaries' net assets are recorded in other comprehensive income in equity in the "cumulative translation adjustment" account until the subsidiary is sold or disposed of.
Hedge Accounting Not Met	Derivative contract recorded on the balance sheet as an asset or liability at fair value.	Derivative is market-to-market with the gain or loss reported in earnings during each period.

Source: Wolfe Research Accounting & Tax Policy Research. FASB.

If a derivative transaction does not qualify for hedge accounting treatment under ASC 815 (FAS 133), then its fair value change is recorded in earnings each period.

Derivative and hedging disclosures provide details on a company's hedging policies and the financial statement amount and location of derivative contracts. Companies are required to disclose the balance sheet and income statement location of the derivatives, their fair value amounts, the impact on earnings, and the amount of gain/loss deferred from cash flow hedges that are recorded in accumulated other comprehensive income in equity. Over the next few pages, we provide a methodology to analyze the disclosures.

It's important to keep in mind that despite many pages of detailed disclosures in the 10-K, company derivative disclosures are very high level. Therefore, we suggest using them to assess tail risks of the company, if the company is actively hedging risks, or is speculating. One common question we receive is whether these disclosures are useful in estimating the impact of foreign exchange rate changes on earnings and margins. Oddly, GAAP has no requirement in this area and the best 10-K area in which to ferret out possible exchange rate translation impacts is in the MD&A section. Disclosure is usually spotty. However, McDonald's is an exception and clearly discloses the financial statement impact of foreign exchange translation as we show in the next exhibit.

McDonald's Corp: Foreign Currency Translation Impact on Financial Statements ($ in millions)

IMPACT OF FOREIGN CURRENCY TRANSLATION ON REPORTED RESULTS

While changes in foreign currency exchange rates affect reported results, McDonald's mitigates exposures, where practical, by purchasing goods and services in local currencies, financing in local currencies and hedging certain foreign-denominated cash flows. In 2018, results reflected a positive foreign currency impact of $0.04, primarily due to the stronger Euro and British Pound. In 2017, results reflected the stronger Euro, offset by the weaker British Pound. In 2016, results were negatively impacted by the weaker British Pound as well as many other currencies.

Impact of foreign currency translation on reported results

	Reported amount			*Currency translation benefit/(cost)*		
In millions, except per share data	***2018***	*2017*	*2016*	***2018***	*2017*	*2016*
Revenues	**$21,025**	$22,820	$24,622	**$ 123**	$ 186	$ (692)
Company-operated margins	**1,747**	2,309	2,596	**4**	17	(89)
Franchised margins	**9,039**	8,312	7,609	**57**	25	(118)
Selling, general & administrative expenses	**2,200**	2,231	2,384	**(13)**	(10)	28
Operating income	**8,823**	9,553	7,745	**56**	28	(173)
Net income	**5,924**	5,192	4,686	**33**	2	(97)
Earnings per common share—diluted	**7.54**	6.37	5.44	**0.04**	—	(0.11)

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

We suggest using derivative disclosures to answer the following the questions about possible risk exposures and related hedging:

(1) What risks are derivatives used to hedge?

(2) What is the fair market value of outstanding derivatives? Are they material?

(3) What is the notional amount outstanding for derivative hedges?

(4) What is the derivative's duration? Longer-term cash flow foreign currency hedges raise a concern to us since the forecasted transaction might not occur.

(5) Does the company hold derivatives that don't qualify for hedge accounting under GAAP? Keep in mind that there are some derivative contracts not qualifying for hedge accounting since the derivative is not considered highly effective at hedging the related risk. Instead, the derivative is marked to fair value on the balance sheet and the changes therein are recorded in earnings each period. An example of this would be option contracts since an investor initially pays a premium for the derivative. In an extreme situation, holding derivatives that do not qualify for hedge accounting may be a sign that the company is inappropriately engaged in currency speculation.

(6) What is the size of the unrealized derivative gain or loss recorded in AOCI in equity from cash flow hedges (e.g., hedging future sales or gross margins)? We suggest analyzing whether there have been any large quarterly or year-over-year changes. A large unrealized gain or loss in equity (from a cash flow hedge) indicates that the company has actively hedged an underlying risk exposure (commodity, foreign margins) that has yet to occur and impact the income statement.

(7) Have there been large realized gains or losses in prior quarters impacting the income statement?

(8) Does the company hedge equity in its foreign subsidiaries?

The exhibits below use United Technologies (UTX) as an example through our checklist.

(1) WHAT RISKS ARE DERIVATIVES USED TO HEDGE?

The disclosure below describes the general risks the company is hedging.

UTX: Derivative and Hedging Activities

MARKET RISK AND RISK MANAGEMENT

We are exposed to fluctuations in foreign currency exchange rates, interest rates and commodity prices. To manage certain of those exposures, we use derivative instruments, including swaps, forward contracts and options. Derivative instruments utilized by us in our hedging activities are viewed as risk management tools, involve relatively little complexity and are not used for trading or speculative purposes. We diversify the counterparties used and monitor the concentration of risk to limit our counterparty exposure.

We have evaluated our exposure to changes in foreign currency exchange rates, interest rates and commodity prices in our market risk sensitive instruments, which are primarily cash, debt, and derivative instruments, using a value at risk analysis. Based on a 95% confidence level and a one-day holding period, at December 31, 2019, the potential loss in fair value on our market risk sensitive instruments was not material in relation to our financial position, results of operations or cash flows. Our calculated value at risk exposure represents an estimate of reasonably possible net losses based on volatilities and correlations and is not necessarily indicative of actual results. Refer to Notes 1, 9 and 14 to the Consolidated Financial Statements for additional discussion of foreign currency exchange, interest rates and financial instruments.

Foreign Currency Exposures. We have a large volume of foreign currency exposures that result from our international sales, purchases, investments, borrowings and other international transactions. International segment sales, excluding U.S. export sales, averaged approximately $27 billion over the last three years. We actively manage foreign currency exposures that are associated with committed foreign currency purchases and sales, and other assets and liabilities created in the normal course of business at the operating unit level. More than insignificant exposures that cannot be naturally offset within an operating unit are hedged with foreign currency derivatives. We also have a significant amount of foreign currency net asset exposures. As discussed in Note 9 to the Consolidated Financial Statements, at December 31, 2019 we have approximately €4.20 billion of euro-denominated long-term debt, which qualifies as a net investment hedge against our investments in European businesses. As of December 31, 2019, the net investment hedge is deemed to be effective. Currently, we do not hold any derivative contracts that hedge our foreign currency net asset exposures but may consider such strategies in the future.

Within aerospace, our sales are typically denominated in U.S. Dollars under accepted industry convention. However, for our non-U.S. based entities, such as P&WC, a substantial portion of their costs are incurred in local currencies. Consequently, there is a foreign currency exchange impact and risk to operational results as U.S. Dollars must be converted to local currencies such as the Canadian Dollar in order to meet local currency cost obligations. Additionally, we transact business in various foreign currencies which exposes our cash flows and earnings to changes in foreign currency exchange rates. In order to minimize the exposure that exists from changes in the exchange rate of the U.S. Dollar against these other currencies, we hedge a certain portion of sales to secure the rates at which U.S. Dollars will be converted. The majority of this hedging activity occurs at P&WC and Collins Aerospace Systems, and hedging activity also occurs to a lesser extent at the remainder of Pratt & Whitney. At P&WC and Collins Aerospace Systems, firm and forecasted sales for both original equipment and spare parts are hedged at varying amounts for up to 49 months on the U.S. Dollar sales exposure as represented by the excess of U.S. Dollar sales over U.S. Dollar denominated purchases. Hedging gains and losses resulting from movements in foreign currency exchange rates are partially offset by the foreign currency translation impacts that are generated on the translation of local currency operating results into U.S. Dollars for reporting purposes. While the objective of the hedging program is to minimize the foreign currency exchange impact on operating results, there are typically variances between the hedging gains or losses and the translational impact due to the length of hedging contracts, changes in the sales profile, volatility in the exchange rates and other such operational considerations.

Interest Rate Exposures. Our long-term debt portfolio consists mostly of fixed-rate instruments. From time to time, we may hedge to floating rates using interest rate swaps. The hedges are designated as fair value hedges and the gains and losses on the swaps are reported in interest expense, reflecting that portion of interest expense at a variable rate. We issue commercial paper, which exposes us to changes in interest rates. Currently, we do not hold any derivative contracts that hedge our interest exposures, but may consider such strategies in the future.

Commodity Price Exposures. We are exposed to volatility in the prices of raw materials used in some of our products and from time to time we may use forward contracts in limited circumstances to manage some of those exposures. In the future, if hedges are used, gains and losses may affect earnings. There were no significant outstanding commodity hedges as of December 31, 2019.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

(2) WHAT ARE OUTSTANDING DERIVATIVES' FAIR MARKET VALUES ON THE BALANCE SHEET? ARE THEY MATERIAL?

The next exhibit is UTXs disclosure of derivatives' fair value amounts and their balance sheet geography. Recall that all derivatives are recorded on the balance sheet at fair value. Derivatives that qualify and are designated for hedge accounting are separately disclosed. A review of this disclosure, consistent with qualitative disclosures previously analyzed, indicates that a majority of derivatives are used to hedge foreign currency risks.

The fair market value of the company's outstanding derivative asset contracts designated as hedging at 12/31/19 was $24 million and $170 million for outstanding derivative liability contracts. One reason for why there is both an asset and liability is that contracts may have been initiated at various points in time and, as such, the amounts are not allowed to be netted on the balance sheet under GAAP unless a right of off-set exists.

Although GAAP requires some of the derivatives to be reported at gross on the balance sheet as assets and liabilities, for financial analysis, we suggest netting them in assessing the overall outstanding size of derivative hedges. The net size of the outstanding net derivative liability was $140 million. In our view, this isn't very material.

Additionally, the disclosure identifies certain derivatives that are not "designated" under ASC 815 (FAS No. 133) hedge accounting since they either do not qualify or the company chose not to designate the derivative for accounting purposes. There are tedious administrative requirements with complying with ASC 815 and, to save time and money, some companies simply choose to leave the derivatives undesignated for accounting purposes. Nonetheless, it's worth investigating a company with a large percentage of undesignated derivatives to ferret out if they are used for speculative purposes or, more appropriately, risk management.

UTX: Derivative and Hedging Activities ($ in millions)

(dollars in millions)

Balance Sheet Location	December 31, 2019	December 31, 2018
Derivatives designated as hedging instruments:		
Foreign exchange contracts	Asset Derivatives:	
	Other assets, current	$ 11	$ 10
	Other assets	13	12
	Total asset derivatives	$ 24	$ 22
	Liability Derivatives:	
	Accrued liabilities	(72)	(83)
	Other long-term liabilities	(98)	(111)
	Total liability derivatives	$ (170)	$ (194)
Derivatives not designated as hedging instruments:		
Foreign exchange contracts	Asset Derivatives:	
	Other assets, current	27	44
	Other assets	5	19
	Total asset derivatives	$ 32	$ 63
	Liability Derivatives:	
	Accrued liabilities	(116)	(89)
	Other long-term liabilities	(1)	(3)
	Total liability derivatives	$ (117)	$ (92)

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

(3) WHAT IS THE NOTIONAL AMOUNT OUTSTANDING FOR DERIVATIVE HEDGES?

As shown in the next exhibit, UTX discloses $17.8 billion of outstanding notional amount of foreign exchange contracts, primarily used to hedge sales. In turn, we suggest comparing this outstanding notional amount to the company's most recently reported or forecasted foreign revenues to calculate what percentage of future sales are hedged. It's very uncommon and a concern to us if more than one year's future foreign revenues are hedged.

UTX: Derivatives Notional Amount

The four quarter rolling average of the notional amount of foreign exchange contracts hedging foreign currency transactions was $17.8 billion and $20.1 billion at December 31, 2019 and 2018, respectively.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

(4) WHAT IS THE DERIVATIVES' DURATION?

UTX notes its hedge derivatives will mature in the next three years. It's important to assess whether the duration of derivatives is consistent with the visibility into future expected sales they are designed to hedge.

UTX: Derivative Duration

At December 31, 2019, all derivative contracts accounted for as cash flow hedges will mature by January 2024

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

(5) DOES THE COMPANY HOLD DERIVATIVES THAT DON'T QUALIFY FOR HEDGE ACCOUNTING?

UTX discloses the fair value of derivatives not designated as hedging instruments in the exhibit in #2, above. As they do not qualify for hedge accounting, it's important to note any material gains and losses recognized in earnings, and where they are located on the income statement.

UTX: Derivatives Not Designated as Hedges

The effect of derivatives not designated as hedging instruments within Other income, net, on the Consolidated Statement of Operations was as follows:

	Year Ended December 31,	
(dollars in millions)	2019	2018
Foreign exchange contracts	$ 46	$ 115

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

(6) WHAT IS THE SIZE OF THE UNREALIZED DERIVATIVE GAIN OR LOSS RECORDED IN AOCI IN EQUITY FROM CASH FLOW HEDGES (E.G., HEDGING FUTURE SALES OR GROSS MARGINS)?

Within its Accumulated Other Comprehensive Income disclosure, the company notes it has $166 million in unrealized losses (net of tax). The losses remain in equity since the underlying transaction it is hedging had not yet occurred. The losses would be reclassified out of equity and into the income statement when the related hedged item was recognized in earnings.

UTX: Cumulative Unrealized Hedging Gains (Losses) ($ in millions)

(dollars in millions)	Foreign Currency Translation	Defined Benefit Pension and Postretirement Plans	Unrealized Gains (Losses) on Available-for-Sale Securities	Unrealized Hedging (Losses) Gains	Accumulated Other Comprehensive (Loss) Income
Balance at December 31, 2017	($2,950)	($4,652)	$5	$72	($7,525)
Other comprehensive income before	($486)	($1,736)		($307)	($2,529)
Amounts reclassified, pre-tax	($2)	$344		($16)	$326
Tax (expense) benefit	($4)	$326		$78	$400
ASU 2016-01 adoption impact	$	$	($5)	$	($5)
Balance at December 31, 2018	($3,442)	($5,718)	$	($173)	($9,333)
Other comprehensive loss before	$280	($584)		($33)	($337)
Amounts reclassified, pre-tax	$2	$170		$51	$223
Tax (expense) benefit	($43)	$97		($11)	$43
ASU 2018-02 adoption impact	($8)	($737)			($745)
Balance at December 31, 2019	($3,211)	($6,772)	$	($166)	($10,149)

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

(7) HAVE THERE BEEN LARGE REALIZED GAINS OR LOSSES IN PRIOR QUARTERS IMPACTING THE INCOME STATEMENT?

The excerpt below notes the income statement location and impact of derivative gains and losses for cash flow hedges. UTX recognized $33 million of foreign exchange contract losses in AOCI in equity at year-end. $51 million of net foreign currency hedging gains were removed out of AOCI in equity and reported on the income statement within Sales, as the related items that the derivative was hedging were recognized. This hedging gain presumably offset losses from the underlying revenue transactions. For forward looking analysis, we find this disclosure to be historical and not particularly useful in predicting the future. However, it provides context in assessing past hedging activities for cash flow hedges. Additionally, the company does note that assuming current market conditions, $32 million would be the amount recognized in earnings in 2020.

UTX: Realized Gains/(Losses) ($ in millions)

The effect of cash flow hedging relationships on accumulated other comprehensive income for the years ended December 31, 2019 and 2018 are presented in the table below. The amounts of gain or (loss) are attributable to foreign exchange contract activity and are recorded as a component of Product sales when reclassified from accumulated other comprehensive income.

	Year Ended December 31,	
(dollars in millions)	2019	2018
Loss recorded in Accumulated other comprehensive loss	$ (33)	$ (307)
Loss (Gain) reclassified from Accumulated other comprehensive loss into Product sales	$ 51	$ (16)

Assuming current market conditions continue, a $32 million pre-tax loss is expected to be reclassified from Accumulated other comprehensive loss into Product sales to reflect the fixed prices obtained from foreign exchange hedging within the next 12 months.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

(8) DOES THE COMPANY HEDGE EQUITY IN ITS FOREIGN SUBSIDIARIES?

UTX did not disclose that it is hedging equity currency exposure in its foreign subsidiaries and we generally find this type of hedging uncommon.

UTX: Derivatives Hedging Equity in Foreign Subsidiaries

Currently, we do not hold any derivative contracts that hedge our foreign currency net asset exposures but may consider such strategies in the future.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

There is reason for our caution. In 2003 and 2004, Baxter used long-term cross-currency swaps to hedge the net equity (book value) in certain foreign subsidiaries and was caught on the wrong side of an illiquid trade. During this time period, the U.S. dollar weakened and the net book equity in Baxter's foreign subsidiaries increased. At the same time, the related derivative used to hedge the balance sheet exposure was in a loss position. The contract came due and needed to be settled. There was no offsetting cash flow gain that could be used as payment for the hedge losses since the "gain" was related to the increase in value of the foreign subsidiary's net assets. These assets couldn't be easily liquidated (such as PP&E and working capital) to pay off the derivative losses. The company's pre-tax liability exceeded $1 billion at December 31, 2004 and resulted in significant cash payments to settle the contract. A careful reading of Baxter's prior year 10-K would have identified such hedges. However, the 10-K did not disclose the total amount of outstanding derivatives at that time. GAAP rules have since changed requiring disclosure.

OTHER HEDGING ACTIVITIES

Some companies may not hedge foreign sales, but only forecasted expenses. This may be a strategic decision (expectations on relative dollar strength, inability to properly forecast sales). It may also be due to some companies with products naturally priced in dollars, while foreign local operations (manufacturing / sales offices) have expenses that must be paid in the foreign currency.

Below is Citrix's disclosure of how and why it hedges costs with forward foreign currency contracts.

Citrix: Derivative and Hedging Activities ($ in thousands)

Exposure to Exchange Rates

A substantial majority of our overseas expense and capital purchasing activities are transacted in local currencies, including Euros, British pounds sterling, Japanese yen, Australian dollars, Swiss francs, Indian rupees, Hong Kong dollars, Canadian dollars, Singapore dollars and Chinese yuan renminbi. To reduce the volatility of future cash flows caused by changes in currency exchange rates, we have established a hedging program. We use foreign currency forward contracts to hedge certain forecasted foreign currency expenditures. Our hedging program significantly reduces, but does not entirely eliminate, the impact of currency exchange rate movements.

At December 31, 2018 and 2017, we had in place foreign currency forward sale contracts with a notional amount of $141.9 million and $128.1 million, respectively, and foreign currency forward purchase contracts with a notional amount of $119.5 million and $113.6 million, respectively. At December 31, 2018, these contracts had an aggregate fair value liability of $1.8 million and at December 31, 2017, these contracts had an aggregate fair value asset of $1.7 million. Based on a hypothetical 10% appreciation of the U.S. dollar from December 31, 2018 market rates, the fair value of our foreign currency forward contracts would increase by $2.4 million. Conversely, a hypothetical 10% depreciation of the U.S. dollar from December 31, 2018 market rates would decrease the fair value of our foreign currency forward contracts by $2.4 million. In these hypothetical movements, foreign operating costs would move in the opposite direction. This calculation assumes that each exchange rate would change in the same direction relative to the U.S. dollar. In addition to the direct effects of changes in exchange rates quantified above, changes in exchange rates could also change the dollar value of sales and affect the volume of sales as the prices of our competitors' products become more or less attractive. We do not anticipate any material adverse impact to our consolidated financial position, results of operations, or cash flows as a result of these foreign exchange forward contracts.

Note: Per 2018 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

DO FOREIGN SUBSIDIARIES RECEIVE SHORT-TERM FUNDING FROM THE U.S. PARENT COMPANY?

The foreign currency translation of short-term inter-company obligations, such as accounts payable, is an area prone to significant management discretion and where non-economic gains may be created. A shortcoming in FAS No. 52 requires gains and losses from foreign currency translations on short-term inter-company obligations to be recorded in earnings. An inter-company transaction between a U.S. company and its foreign subsidiary is rather easy to create (or eliminate) as a company may conveniently use a gain on intercompany payables to increase earnings. As the dollar has appreciated in recent years vis-a-vis other currencies in which a company conducts business, some companies have faced earnings boost headwinds from these inter-company foreign currency translation losses. If at any point the dollar weakens, companies may begin to book non-economic earnings as a source of unexpected earnings tailwinds.

To illustrate how gains on inter-company obligations may be recorded in earnings, consider a U.S. company loaning $10 to its European subsidiary (1.5 €/$ exchange rate). On its balance sheet, the U.S. company records a $10 inter-company accounts receivable. On the other side, the European subsidiary records an inter-company accounts payable of €15 on the date the transaction is initiated. Next, assume that the exchange rate changes to 1.25 €/$ at the end of the quarter. Given the change in the exchange rate, there is a new accounts payables balance of €12.50 for a €2.50 exchange rate gain. The European subsidiary reports a €2.50 gain in earnings in the current period. In turn, when translating the European subsidiary's financial statements into U.S. dollars, the gain is also translated into U.S. dollars and reported in the parent's consolidated income statement. It is not eliminated as a gain or loss in consolidation. Meanwhile, the U.S. parent company's receivable is already in U.S. dollars; therefore, there is no foreign currency translation gain or loss. Finally, the inter-company balances of accounts receivable and accounts payable are eliminated and offset each other (once translated into dollars). Economically, the transaction and gains or losses should cancel out, but they don't on a reported consolidated GAAP basis since the accounting rules don't require it (FAS No. 52).

There are several issues with this transaction. First, the inter-company gain/loss is uneconomic and generates no real cash flows. Second, a company may fully control inter-company balances and require subsidiaries to repay inter-company amounts at any time. Therefore, it's relatively easy to create non-economic gains if currencies are moving in the favorable direction. Third, inter-company short-term foreign payables (i.e., borrowings) may be turned into long-term inter-company debt. Long-term inter-company obligations' foreign exchange gains or losses are not reported in earnings in the current period. Instead, they are recorded in accumulated other comprehensive income in equity.

As an example, Baxter consistently reported gains on intercompany monetary transactions due to FX changes. In 2019, the company disclosed an investigation into the accounting for these transactions, noting the use of a "lookback" exchange rate convention that allowed these reported gains to be managed and recorded.

Baxter: Foreign Currency Gains / Losses on Intercompany Transactions

> Other (income) expense, net was income of $139 million, expense of $19 million and income of $4,275 million in 2018, 2017 and 2016, respectively. **The current year results included $73 million of income related to foreign currency fluctuations principally relating to intercompany receivables, payables and monetary assets denominated in a foreign currency**, pension and OPEB income of $48 million and a $24 million gain from remeasuring the company's previously held investment to fair value upon acquisition of a controlling interest in its joint venture in Saudi Arabia. The 2017 results included $50 million of income related to foreign currency fluctuations principally relating to intercompany receivables, payables and monetary assets denominated in a foreign currency, partially offset by the $33 million loss on the deconsolidation of the company's Venezuela operations, $8 million of losses related to investment impairments and $33 million of expense related to pension and OPEB plans.
>
> (Note: Per 2018 10-K. Emphasis added.)

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

SUBSEQUENT EVENT DISCLOSURES

A subsequent event is something of importance that happens after a company's year-end, but before the financial statements are issued. Examples of common subsequent events are a completed equity/debt offering or an announced JV/partnership with another company. The subsequent event footnote, commonly found as one of the last disclosures near the end of a 10-K, is divided into the following two events based on accounting guidelines:

- **Type I Event:** A Type I subsequent event is an event relating to something on a company's balance sheet at year-end that occurred after the balance sheet date, but prior to the issuing of financial statements. If a Type I subsequent event occurs, GAAP year-end financial statements would be adjusted to reflect the subsequent event since the event is deemed to have existed on the ending balance sheet date. A lot of estimates are made by management to prepare financial statements, including items such as probable loss accruals, bad debt expense, and PP&E salvage values, and these estimates/assumptions could change within the aforementioned timeframe. Type I subsequent events provide useful additional information about a company's condition (e.g., bad debt) that existed on the balance sheet date. An example of a Type I event would be a lawsuit, settled after year-end, but prior to the issuance of the company's financials.

- **Type II Event:** Type II subsequent events are related to circumstances that did not exist at year-end but occurred prior to issuing financial statements. Material Type II subsequent events are required GAAP disclosures, but a company's year-end financial statements are not adjusted to reflect them since the event occurred after year-end and it was not already included on the balance sheet. Common examples of Type II events include a stock issuance or JV/acquisition.

In the following exhibit, we provide an example of a Type II subsequent event disclosure.

Pfizer Design Systems: Subsequent Events Disclosure Example

Pfizer Inc.

In January 2020 we entered into an agreement to acquire PF-05251749, a novel CNS-penetrant small molecule inhibitor of casein kinase 1, for the potential treatment of patients with behavioral and neurological symptoms across various psychiatric and neurological diseases from Pfizer. In particular, we plan to develop the Phase 1 asset for the treatment of sundowning in AD and irregular sleep wake rhythm disorder in Parkinson's disease. In connection with the closing of this transaction, we will make an upfront payment of $75.0 million to Pfizer, which will be recorded as acquired IPR&D in our consolidated statements of income as PF-05251749 has not yet reached technological feasibility. We may also pay Pfizer up to $635.0 million in potential additional development and commercialization milestone payments, as well as tiered royalties in the high single digits to sub-teens.

This transaction will be accounted for as an asset acquisition and is subject to customary closing conditions, including the expiration of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 in the U.S. We expect the transaction to close in the first quarter of 2020.

2020 Credit Facility

In January 2020 we entered into a $1.0 billion, five-year senior unsecured revolving credit facility under which we are permitted to draw funds for working capital and general corporate purposes. The terms of the revolving credit facility include a financial covenant that requires us not to exceed a maximum consolidated leverage ratio. This revolving credit facility replaced the revolving credit facility entered into in August 2015.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

SUBSIDIARY FINANCIAL STATEMENTS MUST BE LESS THAN 93 DAYS OLD

When consolidating a company's financial statements, the SEC allows subsidiary financial statements to be consolidated if they are less than 93 days old. If a company has a consolidation date different than its subsidiaries, it must disclose:

- The closing date of the subsidiary;
- Why different dates were used; and
- Subsequent events to the subsidiaries' closing date that would materially affect the consolidated financial statements.

Companies use dated financial statements for various reasons, but typical reasons relate to uncompleted JV audits or foreign subsidiaries. Though not a large timing difference, dated financial statements could cause a material difference in times of great economic uncertainty or high volatility.

INTERNAL CONTROLS

The Sarbanes-Oxley Act of 2002 ("SOX") requires management teams to assess the effectiveness of the company's financial reporting internal controls. The results of management's assessment are stated at year-end in "management's annual report on internal controls over financial reporting."

There are three degrees of internal control deficiencies: (1) inconsequential deficiency, (2) significant deficiency, and (3) material weakness. A "material weakness" would be an internal control deficiency that results in more than remote possibility that a material misstatement would not be detected or prevented.

Management evaluates the effectiveness of its internal controls over financial reporting. Then the auditors issue two opinions of their own: (1) do they agree or disagree with management's assessment on the effectiveness of internal controls and (2) their official opinion. The auditor's opinion falls into one of the following three categories:

- Unqualified: No scope limitations and no material weaknesses were identified;
- Qualified or disclaimer opinion: The auditor can't express an opinion on certain controls due to a scope limitation; or
- Adverse opinion: Significant internal control deficiencies based on one or more material weaknesses in its internal controls.

Material weaknesses are more likely to be precursors to earnings restatements. Companies must disclose material weaknesses over internal controls. The severity of internal control weakness depends on facts and circumstances and should be evaluated holistically along with other information to discover the existence of larger, unknown problems at the company. It's also possible that companies with significant internal control deficiencies may choose to not correct them for cost reasons but that separately raises questions about other items on which the company is 'cutting corners'.

Below we use Ernst & Young's audit opinion of Netflix's internal controls as a common example of an opinion on the effectiveness of internal controls over financial reporting.

Netflix: Financial Reporting Internal Controls

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of Netflix, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Netflix, Inc.'s internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Netflix, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and our report dated January 29, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

AUDITOR'S OPINION

Investors should always review a company's audit opinion for an "unqualified" (clean) audit, without any "going concern" notation. An unqualified audit opinion signifies that the company's financial statements are fairly presented in accordance with GAAP. If a company receives a "going concern" audit opinion, it signifies that there is substantial doubt that it will be able to continue operations over the next year and that a potential bankruptcy might be around the corner.

Most credit indentures require companies to have unqualified audit opinions, so a "going concern" or "qualified" opinion would probably technically trigger a debt default. Another debt covenant sometimes triggered by companies is the timely filing of financial statements.

Audit opinions fall into one of the following categories:

- Unqualified: Financial statements are fairly presented in accordance with GAAP.
- Qualified: A limitation or exception to the accounting standards exists, which must be explained and disclosed in an additional paragraph within the audit opinion.
- Adverse: Material departures from accounting standards exist and the financial statements are not fairly presented in accordance with GAAP.
- Disclaimer of opinion: Unable to issue an audit opinion.

In the following exhibits, we present a "going concern" audit opinion for NeuroMetrix and then a 'clean' audit opinion for Intel based on the companies' 2019 Form 10-K disclosures.

Beginning with 2019 10-Ks, there is now a requirement for auditors to report "Critical Audit Matters" (CAM) within their opinions. CAMs are listed and described in detail, even in clean audit opinions. A Critical Audit Matter is an accounting/disclosure matter that the auditors communicated to the audit committee and involve especially challenging, subjective or complex auditor judgment. The presence of CAM is relatively common and does not necessarily mean there is a higher risk of misstatement. Still, it's an area that was most difficult to audit due to its complexity. We'd watch for situations where a CAM intersects with situations where an analyst suspects more aggressive accounting practice (e.g. revenue recognition).

NeuroMetrix: "Going Concern" Audit Opinion Example

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of NeuroMetrix, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of NeuroMetrix, Inc. (the Company) as of December 31, 2019 and 2018, and the related statements of operations, changes in stockholders' equity, and cash flows for each of the years then ended, and the related notes and schedule (collectively referred to as the financial statements). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

Going Concern Uncertainty

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the financial statements, the Company has suffered recurring losses from operations, negative cash flows from operating activities and has an accumulated deficit that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1.. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

We have served as the Company's auditor since 2017.

/s/ Moody, Famiglietti, & Andronico, LLP

Moody, Famiglietti, & Andronico, LLP
Tewksbury, Massachusetts
January 27, 2020

Note: Emphasis added. Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Intel: Example of a 'Clean' Audit Opinion (Including Critical Audit Matter noted)

TO THE STOCKHOLDERS AND THE BOARD OF DIRECTORS OF INTEL CORPORATION

Opinion on the Financial Statements

We have audited the accompanying Consolidated Balance Sheets of Intel Corporation (the Company) as of December 28, 2019 and December 29, 2018, the related Consolidated Statements of Income, Comprehensive Income, Cash Flows and Stockholders' Equity for each of the three years in the period ended December 28, 2019, and the related notes (collectively referred to as the "Consolidated Financial Statements"). In our opinion, the Consolidated Financial Statements present fairly, in all material respects, the financial position of the Company at December 28, 2019 and December 29, 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 28, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 28, 2019, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated January 23, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the Consolidated Financial Statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Inventory Valuation

Description of the Matter	The Company's net inventory totaled $8.7 billion as of December 28, 2019, representing 6.4% of total assets. As explained in "Note 2: Accounting Policies" within the Consolidated Financial Statements, the Company computes inventory cost on a first-in, first-out basis, and applies judgment in determining saleability of products and the valuation of inventories. The Company assesses inventory at each reporting date in order to assert that it is recorded at net realizable value, giving consideration to, among other factors: whether the products have achieved the substantive engineering milestones to qualify for sale to customers; the determination of normal capacity levels in its manufacturing process to determine which manufacturing overhead costs can be included in the valuation of inventory; whether the product is valued at the lower of cost or net realizable value; and the estimation of excess and obsolete inventory or that which is not of saleable quality. Auditing management's assessment of net realizable value for inventory was challenging because the determination of lower of cost or net realizable value and excess and obsolete inventory reserves is highly judgmental and considers a number of factors that are affected by market and economic conditions, such as customer forecasts, dynamic pricing environments, and industry supply and demand. Additionally, for certain new product launches there is limited historical data with which to evaluate forecasts.
How We Addressed the Matter in Our Audit	We evaluated and tested the design and operating effectiveness of the Company's internal controls over the costing of inventory, the determination of whether inventory is of salable quality, the calculation of lower of cost or net realizable value reserves including related estimated costs and selling prices, and the determination of demand forecasts and related application against on hand inventory. Our audit procedures included, among others, testing the significant assumptions (e.g., estimated product costs and selling prices, and product demand forecasts) and the underlying data used in management's inventory valuation assessment. We compared the significant assumptions used by management to current industry and economic trends. We assessed whether there were any potential sources of contrary information, including historical forecast accuracy or history of significant revisions to previously recorded inventory valuation adjustments, and performed sensitivity analyses over significant assumptions to evaluate the changes in inventory valuation that would result from changes in the assumptions.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1968.

San Jose, California

January 23, 2020

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Statement of Cash Flows

Generally, cash flows are a superior indicator of a company's prospects than accrual-based earnings as there's less management discretion and accounting leeway. Most accounting maneuvers are non-cash in nature and, as such, are shown as a negative adjustment to operating or investing cash flow. However, the statement of cash flows is not without its shortcomings, given accounting deficiencies (e.g. finance leases) and other novel ways to increase reported operating cash flow.

Below and on the next few pages, we discuss 15 items that result in non-comparable cash flows across companies. Analysts should check these items and keep in mind that many items on the cash flow statement may be netted together – items that an analyst would not consider recurring operating cash flow may not be obvious at first. Throughout the 10-K's footnotes, you may discover clues for unsustainable or "buried" cash flow benefits.

1. Extension / Delaying Payments of Accounts Payable or Accrued Expenses, Reverse Factoring

   By delaying actual cash payments for accounts payable or accrued expenses until after the period end, operating cash flow will receive a temporary boost.

   More extreme situations are companies that engage in so-called reverse factoring, or structured payable transactions. This is a transaction under which a company organizes a sale of its accounts payable from its supplier to a bank, extending terms. These may be considered in-substance debt, thus overstating operating cash flow and understating leverage. Please see our section earlier in this note for more detail.

2. Inventory Draw Downs

   Companies may draw down inventory balances when production and customer demand slows. This improves operating cash flows; however, upon recovery of the markets, inventory balances will again rise, reversing this trend and creating a cash flow headwind. This dynamic can make it difficult to obtain the "normalized" operating cash flow (and free cash flow measures) of many companies.

3. Prepaid Expenses

   A prepaid expense will impact cash flow negatively in the period the payment is made. For certain recurring costs such as advertising or marketing, companies may prepay them in a year when cash flows are increasing. This increase in prepaid assets results in an operating cash outflow in the current period. However, the following period, the company will receive an operating cash flow tailwind as no cash payments will be necessary. This is a temporary benefit for cash flow that cannot likely be sustained.

4. Reserve Reversals**:** Watch for non-cash gains as an outflow on the cash flow statement – suggests potential non-recurring reserve reversal gains in earnings.

5. Taxes Impact Cash Flows

   Income tax payments are included in operating cash flow, and periods of low cash tax payments may boost operating cash flow. Substantial differences may occur due to the timing of cash tax payments when compared to the normalized tax rate. Items resulting in this divergence include net operating losses, special tax credits, the timing of tax payments or other items. Analysts should consider using a normalized long-term tax rate for valuation and cash flow purposes and separately value any tax benefits, such as NOLs or tax credits.

6. Accelerated Cash Receipts

   Cash received before the related revenue is earned/recognized is recorded as deferred revenue (a balance sheet liability). Many examples of this accelerated cash receipt occur in areas where there is a longer time horizon, such as subscription software or a long-term supply agreement. The recording of the deferred revenue account is shown as an operating cash inflow in the current period. If more than a one period cycle of cash flows has been collected on an accelerated basis, this creates a cash flow headwind in future periods.

   As one example of front-loading cash, a company could require cash deposits or encourage customers to pay in advance. It could also lengthen the duration of certain contracts. Consider an example of a subscription license that is fully paid up-front. If the company begins switching customers to minimum 2-year contracts from one-year contracts, reported cash flow would appear to be growing. However, the increase in cash flow would be solely due to changes in the contractual term, not the volume of subscriptions sold.

7. Accounts Receivable Securitization

   Many lower-rated companies utilize accounts receivable sales as a form of low-cost financing (interest rate is typically based on short-term LIBOR or commercial paper rate). Some securitizations will meet the criteria for sale accounting (A/R removed from the balance sheet and recorded as operating cash inflow) and some will be required to be recorded as a secured borrowing (A/R remains on balance sheet, securitized debt balance recorded - under the FASB rules, if material recourse exists it's likely that the sale of the receivables would not qualify for sale accounting).

   Irrespective of the actual accounting treatment the securitization is afforded under GAAP, in our view, the transaction is a financing decision and should analytically treated as such (regardless of the non-recourse nature of receivable sales). The incoming cash flow is occurring outside the normal cash flow collection process.

   To adjust, reduce operating cash flow by the change in the uncollected receivables balance. This balance is the amount of accounts receivable sold but not collected by the third party (bank or securitization trust). Correspondingly, financing cash flow is adjusted by the same amount. Assuming the uncollected accounts receivable balances have increased year-over-year, there is a negative adjustment to operating cash flow (from the change in the uncollected balance) and a positive adjustment to financing cash flow.

   Aside from potentially boosting operating cash flow, A/R securitizations will also mask deterioration in DSOs and less conservative revenue recognition policies.

   Further complicating matters, new cash flow accounting rules that began in 2018 introduced a third treatment for A/R securitizations. When companies retain some piece or exposure to the sold receivables (typically a subordinated tranche with a higher risk profile), cash flow collections are treated as investing. In our view, this is overly punitive to cash flow and analytically, should be adjusted. See the section on securitizations later in this note.

8. Cost Capitalization (Operating vs. Investing Cash Flow)

When costs are capitalized on balance sheet, the increase in the asset account must be shown as a cash outflow somewhere on the cash flow statement. Some items are shown in operating cash flow in which case there would be no overstatement of operating cash flow. More concerning is when the amount is reported as an investing cash outflow. In these situations, operating cash flow is permanently increased. While the capitalized amount is eventually expensed through earnings, it's treated as "non-cash" and, as such, the costs are added-back to the operating cash flow amount. Note that this scenario occurs whether costs are properly or improperly capitalized.

Therefore, cash flow analysis should pay close attention to the amounts included in the cash flow statement's investing section — looking for amounts that should actually be recorded in the operating section. Most traditional measures of cash flow focus on operating cash flow and capital expenditures, so companies are incentivized to classify items as other investing cash outflows.

This leads us to WorldCom's 2000 and 2001 reported and restated cash flows. Among other things, WorldCom improperly capitalized recurring costs as capital expenditures and other costs and classified them as investing cash outflows. A quick review of WorldCom's cash flow statement revealed large unexplainable investing cash outflows.

Classifying Costs as Investing Cash Outflows – WorldCom

Items originally improperly included as investing cash outflows were reclassified to operating

	Year Ended December 31,			
WorldCom ($ mln)	2000 Reported	2000 Restated	2001 Reported	2001 Restated
Cash flow from operations	**$7,666**	**$4,227**	**$7,994**	**$2,845**
Cash flow from investing				
Capital expenditures	(11,484)	(11,668)	(7,886)	(6,465)
Acquisitions and related	(14)	0	(206)	(171)
Increase in intangibles	(938)	0	(694)	0
Decrease in other liabilities	(839)	0	(480)	0
All other investing activities	(1,110)	505	(424)	514
Cash used by investing activities	**($14,385)**	**($11,163)**	**($9,690)**	**($6,122)**

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

9. Lease Accounting a Source of Potential Cash Flow Management

As we discuss in the lease section of this report, new finance leases are not recorded as capital expenditures on the cash flow statement. This is a GAAP shortcoming that should be adjusted for analytically by adding the amount of new capitalized leases entered into in the year (a required supplemental disclosure) to reported cap-ex.

Similarly, a mix shift from operating leases to more finance leases will boost operating cash flows. Given the bright line accounting rules for classifying a lease, structuring the leases to fit accounting conventions is relatively easy. Finance leases are recorded on balance sheet and the primary related expenses will be interest costs and non-cash depreciation. Operating leases' rental expense is fully recorded in operating cash flow, so a switch to finance leases will result in only the interest expense portion of a finance lease remaining in operating cash flow.

10. Company Stock Contributions to Pension Plans

    Many companies have been contributing stock in lieu of cash in recent years. While this will result in cash savings in any given year, a company that has a materially unfunded plan cannot permanently avoid cash contributions. Only up to 10% of a company's pension plan assets are allowed to be in company stock. If the company is contributing stock at a time when their share price is depressed, it only serves to further dilute existing shareholders.

11. Stock Based Compensation

    As discussed in the stock-based compensation section of this report, stock option and restricted stock expenses are technically "non-cash" and are add-backs to arrive at operating cash flow. In our view, operating cash flow should be adjusted to include the impact of stock-based compensation costs as the payment in stock options / restricted stock is a financing choice and the compensation costs are actually cash costs. Additionally, to avoid dilution from these programs, many companies choose to repurchase stock in the market, which is classified as a financing cash outflow. This amount is often overlooked by the investment community. We believe that GAAP overstates analytical operating cash flow for companies with significant stock-based compensation plans.

12. Working Capital Benefits Post Acquisition

    Analysts should skeptically view any large working capital benefits in the quarters after a material acquisition. Companies may undertake certain actions in an acquisition to increase subsequent reported operating cash flow. The target company may either increase non-cash current assets (slower collection of accounts receivable) or decrease current liabilities (faster payment of accounts payable or accrued expenses). Upon acquisition on the parent company's cash flow statement, the cost of acquired working capital is shown as a financing cash outflow for cash acquisitions (will never appear on the cash flow statement for stock acquisitions). In subsequent periods, if and when working capital levels return to normal levels, the consolidated company will show the positive impact as operating cash flow. In this sense, for highly acquisitive companies, earnings may actually be the preferred measure of operating performance over cash flow.

13. Serial Acquirers: Include M&A Transactions as Cap-Ex

    Companies may be described as serial acquirers if acquisitions are frequent and deemed necessary to maintain revenue growth. For these companies, free cash flow should be calculated by including acquisition amounts akin to capital expenditures. When compared to other companies that internally develop new products/markets resulting in current period cash marketing/R&D costs, acquisitive companies will otherwise appear less expensive if adjustments are not made. The acquisition costs can be treated as cap-ex in full or over a number of years depending on the size and frequency of M&A.

14. Non-controlling Interests**:** Monitor financial statements for non-controlling interests which may have a claim on consolidated entity cash flows.

15. US vs IFRS Differences**:** When comparing cash flows for US and International companies, note differences in where items may be classified on the cash flow statement (e.g. operating vs. investing vs. financing).

METRICS TO MONITOR AGGREGATE CASH FLOW PRACTICES

Several financial ratios are useful in monitoring aggregate cash flows and may serve as warning signals for deeper analysis. The cash conversion ratio compares cash flow from operations (CFFO) to net income (CFFO / net income). This ratio should be greater than 1 for more mature companies with non-cash depreciation and amortization expense. A declining cash conversion ratio may suggest deteriorating business fundamentals. In fact, rising net income with flat or declining operating cash flow may signal lower quality of earnings and possibly presage a future earnings shortfall.

Over time, the cash conversion ratio should be relatively stable as earnings growth should approximate operating cash flow growth. However, since cash flows classified as operating may not always represent economic operating cash flows, investors should not necessarily take comfort in a rising cash conversion ratio without examining sources of operating cash flow.

The cash conversion ratio is best used on a yearly and last-12-months basis (LTM) because it is often volatile on a quarterly basis due to business seasonality and cyclicality. The ratio is also not always meaningful for higher growth companies, and below we discuss some ratios that are more useful for growth companies.

The following metrics are important to monitor as a means of analyzing a company's cash flow for earnings persistence and accuracy. They should be reviewed both on a time-series basis and compared to competitors in the same industry for consistency.

Cash Flow Ratios to Monitor:

- **Cash Conversion Ratio:** Operating Cash Flow / Net Income (or EBITDA)
- **Current Accruals:** (Net Income – Operating Cash Flow) / Revenue
- **Working Capital Accruals:** (Change in WC per CF) / Revenue
- **Total Accruals:** (Net Income – (Operating Cash Flow + Investing Cash Flow)) / Revenue
- **Cash Tax Rate:** Cash Taxes Paid (or Current Tax Expense) / Pre-tax Income
- **Days Sales Outstanding, Days Inventory Outstanding, Days Payable Outstanding, Days Accrued Expense Outstanding**

ALTERNATIVE TO THE CASH CONVERSION RATIO FOR GROWTH COMPANIES

The cash conversion ratio isn't always meaningful for growth companies as cash flow is often less than earnings due to working capital investments, cumulative net operating losses often result in lower and volatile cash tax payments, and there may be other phenomena due to rapid growth. The company may also report net losses. Therefore, it is helpful to standardize or scale the ratio by comparing the difference in EBITDA less cash flow from operations to revenues, which neutralizes the impact of depreciation and amortization expense, which may depress net income. One might also compare free cash flow (FCF) to net income. However, since capital expenditures and acquisitions are often volatile, this ratio tends to be more relevant for mature and stable companies and more definitionally dependent on items included or excluded in calculating free cash flow. Further, FCF to net income is often negative for growth companies due to high capital expenditures, resulting in a less meaningful ratio.

BEWARE NONCONTROLLING INTERESTS' "SHARE" OF CASH FLOWS

In an M&A transaction where the target is not 100% acquired (e.g., own 80%), a company will still fully consolidate the target company's financial statements and report on a full entity level basis, offset by a 'noncontrolling interest' in certain financial statements. Despite the fact that earnings and shareholders' equity must be disaggregated between amounts attributable to the parent company shareholders and amounts attributable to noncontrolling interests, this does not apply to cash flows. Instead, reported operating cash flow is only at the consolidated entity level (as if the company owned 100%), regardless of any distributions from the parent company to the noncontrolling interests. In situations where the parent company consistently makes cash distributions to those noncontrolling interests, we suggest reclassifying those amounts from a financing cash outflow to an operating cash outflow.

Charter Communications ($ millions)

	Year Ended December 31,		
	2019	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:			
Consolidated net income	$ 1,992	$ 1,506	$ 10,115
Adjustments to reconcile consolidated net income to net cash flows from operating activities:			
Depreciation and amortization	9,926	10,318	10,588
Stock compensation expense	315	285	261
Accelerated vesting of equity awards	—	5	49
Noncash interest income, net	(106)	(307)	(370)
Other pension (benefits) costs, net	69	(192)	(1)
Loss on extinguishment of debt	25	—	40
(Gain) loss on financial instruments, net	54	110	(69)
Deferred income taxes	320	110	(9,116)
Other, net	158	175	16
Changes in operating assets and liabilities, net of effects from acquisitions and dispositions:			
Accounts receivable	(505)	(98)	(84)
Prepaid expenses and other assets	(397)	(270)	76
Accounts payable, accrued liabilities and other	(103)	125	449
Net cash flows from operating activities	11,748	11,767	11,954
CASH FLOWS FROM INVESTING ACTIVITIES:			
Net cash flows from investing activities	(7,331)	(9,736)	(8,098)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Borrowings of long-term debt	19,685	13,820	25,276
Repayments of long-term debt	(13,309)	(10,769)	(16,507)
Payments for debt issuance costs	(103)	(29)	(111)
Purchase of treasury stock	(6,873)	(4,399)	(11,715)
Proceeds from exercise of stock options	118	69	116
Purchase of noncontrolling interest	(885)	(656)	(1,665)
Distributions to noncontrolling interest	(154)	(153)	(153)
Borrowings for real estate investments through variable interest entities	—	342	—
Distributions to variable interest entities noncontrolling interest	—	(107)	—
Other, net	(112)	(5)	(11)
Net cash flows from financing activities	(1,633)	(1,887)	(4,770)

Operating cash flow will reflect fully consolidated amounts, not just those "attributed" to the parent company

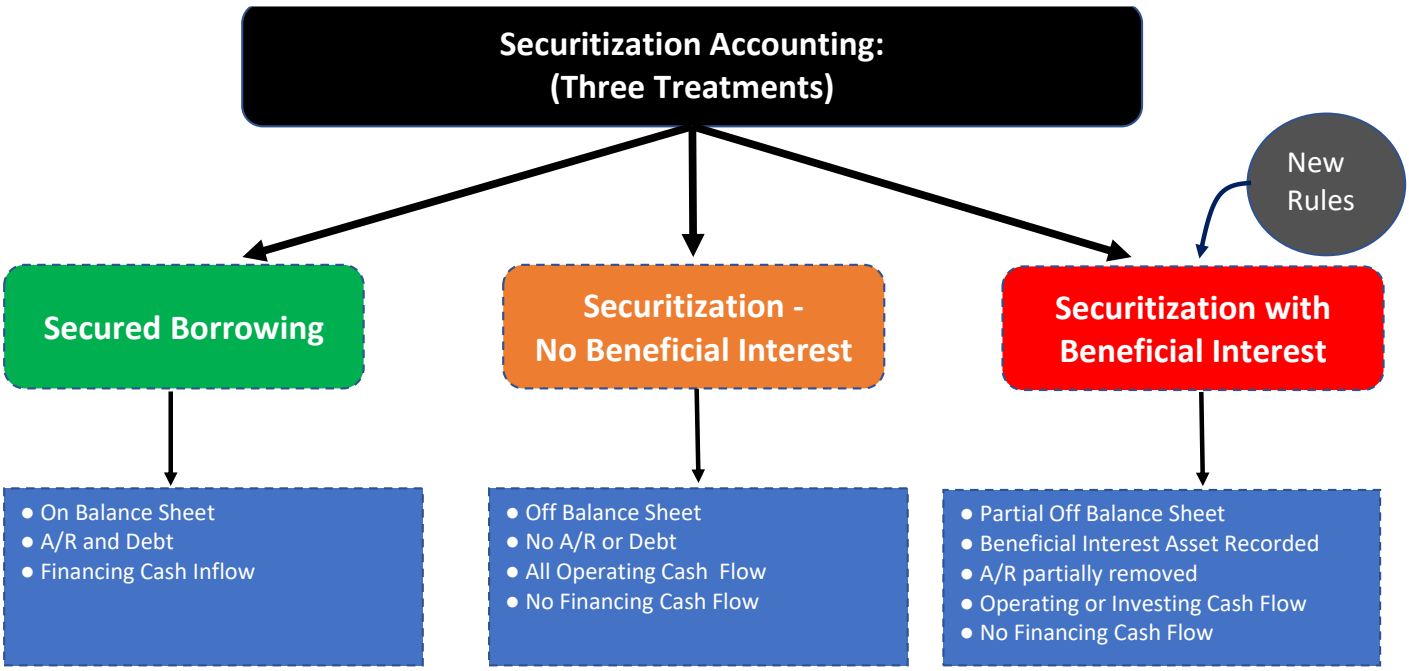
Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

ACCOUNTS RECEIVABLE SECURITIZATIONS SKEW CASH FLOW

Recently, the FASB changed the rules on where certain securitization related cash flows must be recorded on the cash flow statement. Specifically, beginning in 2018 under ASU 2016-15, cash flows received related to the 'beneficial interest' of sold receivables are required to be classified as *investing* cash flows. Also referred to as "deferred purchase price receivables", a beneficial interest is when a company retains some piece or exposure to the collection of the sold receivables (typically a subordinated tranche with a higher risk profile). Previously, most companies classified these as operating cash flows.

Below is a summary of the three accounting treatments for accounts receivable securitizations. First, there's secured recourse type securitizations under which the A/R remains on the books and a new debt liability is recorded. Second, there's securitization transactions with no beneficial interest under which A/R is removed, no debt is recorded, and the cash flow impact is fully reported in operating cash flow. (Note 'factoring' is another term commonly used for securitization that received off balance sheet sale treatment). Third, there's securitization transactions with beneficial interests under which A/R is removed, no debt is recorded, but a beneficial interest is recorded as an asset on the books. It's the latter for which the accounting has changed. Previously, the collections on these sales were included fully in operating cash flow. Under the new rules (explained later), the sale impact is now included as an investing cash flow.

Accounts Receivable Securitizations: Accounting Impacts



Source: Wolfe Research Accounting & Tax Policy Research. FASB.

EXAMPLE: IMPACT OF NEW RULES ON CASH FLOW

As an example, Graphic Packaging Company has an off-balance sheet receivable securitization program with a beneficial interest component that was historically recorded in operating cash flow upon collection. The new accounting rules required these amounts to be classified in the investing section of the cash flow statement. Additionally, the initial recording of the beneficial interest will be treated as a non-cash transaction, meaning collections on some components of sold accounts receivable would *never* be captured in operating cash flows. In our view, this accounting treatment has become too draconian and, analytically, we'd reclassify the beneficial interest cash flows back into the operating section.

New Cash Flow Classification for Beneficial Interests – Graphic Packaging Company

Classifying beneficial interests in investing cash flow is too punitive on operating cash flows…
We'd reclassify as an operating cash flow and adjust operating cash for the change in the outstanding securitized balance

Years Ended December 31,		Restated	Original
$ mlns	2018	2017	2017
Cash flows from operating activities			
Net earnings	294	300	300
Non Cash Items	453	153	153
Changes in operating assets and liabilities, excluding the effects of the business acquisition:			
Accounts receivable	(1,158)	(659)	50
Inventories	(82)	(7)	(7)
Other assets	(1)	(32)	(32)
Accounts payable	76	27	27
Other current and long-term liabilities	44	25	25
Net cash used in operating activities	(374)	(193)	516
Cash flows from investing activities			
Cash receipts on beneficial interest in sold receivables	1,131	709	NA
Capital expenditures	(395)	(260)	(260)
Other investing activities	(47)	(181)	(181)
Net cash provided by investing activities	689	268	(441)
Supplemental disclosures:			
Non-cash investing: Beneficial interest obtained in exchange for securitized receivables	1,026	735	NA

Note: Certain line items collapsed and summarized for presentation purposes.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

ACCOUNTING FOR SECURITIZATION TRANSACTIONS

For background, in general, securitization transactions are accounted for either as secured loans or sales. The treatments of an A/R sale / secured borrowing transaction are summarized below:

Accounts Receivable Securitization: Accounting Impacts

Accounting Treatment	Balance Sheet Impact	Cash Flow Impact
Secured Borrowing	Receivables remain on balance sheet Liability recorded	No operating cash flow impact Financing cash inflow
Sale	Receivables removed from balance sheet No liability recorded	Operating OR Investing cash inflow No financing cash flow impact

Direct collection of cash for A/R sales are classified as operating, while any beneficial interest components are investing

Source: Wolfe Research Accounting & Tax Policy Research.

If a secured loan, the company records an increase of cash and debt on its balance sheet. The receivables remain on the company's balance sheet. On the cash flow statement, the loan proceeds received from the financial institution are shown as cash inflows from financing activities, and there's no operating cash flow impact. The accounting for these types of transactions was unaffected by the new rules.

Second, a company may factor or securitize accounts receivable, which is very similar to a secured borrowing, but may have different accounting impacts. If the transaction receives sale treatment under the accounting rules, the receivables are removed from the balance sheet. There are several forms of these transactions receiving sale treatment, and that's what determines whether they are subject to the new accounting rules. If the sale into the securitization structure is received fully in cash up front, the receivables are removed from the balance sheet and the cash is recorded as an operating cash inflow. However, in some transactions, companies do not receive the full cash up-front, but instead retain some interest in the securitized asset pool — so called beneficial interests or deferred purchase price receivables. These assets are repaid if and when collections from customers occur on the sold receivables. Historically, these transactions were treated identically to sales where all cash is received up front. Importantly, the new accounting rules require collections on these beneficial interests to be recorded as an *investing* cash inflow. That is, the FASB opined that because the company is collecting the cash an investment asset (i.e., retained interest), as opposed to a traditional account receivable, the cash flow should be classified as investing.

Importantly, some of these securitization structures are revolving and new receivables can be sold / beneficial interests acquired and collected on a *daily* basis. Therefore, even if companies are only retaining a small piece as a beneficial interest, the high volume of collections through the securitization structure may create a large reclassification into investing cash flow. The accounting requires all cash that flows through these beneficial interest collections to be recorded in investing cash flow, which oftentimes has been very material.

Last, there's no economic impact based on any of the accounting mechanics above; it's simply a re-classification between operating and investing or financing cash flow sections.

Regardless of the actual accounting treatment the securitization receives under GAAP (irrespective of the non-recourse nature of receivable sales), we believe that, economically, the transaction is a financing decision and should analytically be treated as such. The incoming cash flow is occurring outside the normal cash flow collection process. However, we also believe that the investing cash flow classification of effective A/R collections is too punitive on operating cash flow and does not properly align with the operating sales revenues that are recorded.

Below, we illustrate the cash flow statement impacts from an accounts receivable securitization transaction that receives sale treatment with some classification of collections in investing due to beneficial interests, continuing the GPK example. Generally, the impact of a securitization program will be buried within the footnotes described as something akin to the "uncollected receivable balance" or "amounts utilized". This balance of uncollected receivables is the amount of accounts receivable that has been sold to, but not collected by, the third party (bank or securitization trust). To estimate the annual impact of receivables sold on cash flow, we would calculate the year-over-year change in the disclosed uncollected receivable balance.

In order to adjust the cash flow statement for the impact of the securitizations, we'd first add back the "cash collections on deferred purchase price receivables or beneficial interests" to operating cash flow, then adjust for change in uncollected balance (amount "utilized"). This would be used to reduce (in the case of an increase in the utilized balance) or add to operating cash flow. Correspondingly, financing cash flow is adjusted by the same amount. Assuming the uncollected accounts receivable balances have increased year-over-year, there's a negative adjustment to operating cash flow (from the change in the uncollected balance) and a positive adjustment to financing cash flow. Continuing our GPK example, we adjust the operating cash flow by these amounts, as shown below.

Adjusting Cash Flow for Accounts Receivable Securitization – Graphic Packaging

Add back impact from beneficial interests, then adjust for net impact from receivables sold as opposed to collected in ordinary course of business

Reclassify changes in utilization of securitization programs from operating cash flow to financing cash flow

$ millions	2018	2017
O/S Securitized A/R Balance Beginning	$583	$376
O/S Securitized A/R Balance Ending	$602	$583
Change in Securitized Outstanding A/R Balance	$19	$207
Reported Cash From Operations	($374)	($193)
Add: Cash receipts on beneficial interests	*$1,131*	*$709*
Less: Increase in O/S Securitized A/R Balance	*($19)*	*($207)*
Adjusted Cash Flow From Operations	$738	$309
Reported Cash From Investing	$689	$268
Less: Cash receipts on beneficial interests	*($1,131)*	*($709)*
Adjusted Cash Flow From Financing	($442)	($441)
Reported Cash From Financing	($311)	($70)
Add: Increase in O/S Securitized A/R Balance	*$19*	*$207*
Adjusted Cash Flow From Financing	($292)	$137

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Companies are required to disclose supplemental cash flow information in their 10-K, otherwise known as significant non-cash activities. This schedule may be found either at the bottom of the cash flow statement or in the 10-K footnotes and can be used as a quick way to find the cash paid for interest and income taxes. It includes such items as new finance leases initiated during the year, conversions of debt into equity, stock acquisitions, and debt/liability assumptions. We use Amazon.com's 10-K to illustrate this disclosure in the next exhibit.

We carefully review this schedule for large transactions that are accounted for as non-cash under GAAP but may analytically be cash expenses. As an example, assets acquired under finance leases during the year are disclosed. As we explain in the lease section of this report, we believe finance leases are capital expenditures and, as such, should be deducted from free cash flow calculations. Additionally, we find this schedule useful in assessing earnings quality as it provides an input into assessing if a company is capitalizing interest expense or has an unsustainably low cash tax rate.

Amazon.com: Supplemental Cash Flow Information

	Year Ended December 31,		
	2017	2018	2019
SUPPLEMENTAL CASH FLOW INFORMATION:			
Cash paid for interest on long-term debt	$ 328	$ 854	$ 875
Cash paid for operating leases	—	—	3,361
Cash paid for interest on finance leases	200	381	647
Cash paid for interest on financing obligations	119	194	39
Cash paid for income taxes, net of refunds	957	1,184	881
Assets acquired under operating leases	—	—	7,870
Property and equipment acquired under finance leases	9,637	10,615	13,723
Property and equipment acquired under build-to-suit arrangements	3,541	3,641	1,362

Note: Per 2019 10-K.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings.

Earnings Quality

ACCOUNTING QUALITY

Holistically, the analysis and assessment of accounting quality is imperative to understanding the return profile and valuation of a company. Ultimately, the most important conclusion to reach analyzing an earnings or cash flow stream is whether this amount is reflective of the business economics and an accurate baseline from which to project future results. That is, is one comfortable applying a growth rate to this number or multiple thereon for relative valuation? From a static point in time perspective (balance sheet), does it paint a clear and complete picture of the financial condition of the company?

In our view, assessing general accounting quality for a company follows three key objectives:

1. Measurement / Timing: Is the appropriate amount recorded and is it recorded in the proper period?
2. Completeness: Are there items that are not recorded that should be?
3. Classification: Is the item correctly classified as to its nature within the financial statements?

Importantly, all accounting quality assessments must be made in context. At different points in time for the same company and in different companies' life-cycles, managements make accounting choices so as to manage the financial statements in various directions (e.g. one company may be incentivized to pull earnings forward, while another may choose to smooth out evenly over time).

While the income statement, and EPS in particular, is still by far the most widely` used measure for evaluating companies, we suggest spending more time focusing on the balance sheet and cash flow statement. Both are leading indicators of the income statement due to the accrual system of US GAAP and IFRS. As such, many accounting irregularities may be "sniffed out" by an analysis of cash flow and balance sheet, before they impact the income statement.

Next, we highlight some of the most common warning signs of lower accounting quality. In turn, we summarize our Earnings Quality (EQ) score.

ACCELERATING REVENUE RECOGNITION

Recognizing revenue in a higher amount or earlier than the natural flow of goods/services is, in effect, borrowing from the future. Not only can topline growth rates be overstated, but so will margins if expenses are not properly matched with the aggressive revenue recognition. Some common items to watch for:

1. Sell-in revenue recognition models (allows for “stuffing the channel”)
2. Increasing days sales outstanding – watch for A/R securitization
3. Expanding sales to lower credit quality customers (watch the bad debt allowance)
4. Aggressive use of percentage completion accounting
5. Declining deferred revenue balances
6. Bill and hold type sales
7. Non-cash transactions
8. Related party sales that may not be at arms-length

DECELERATING REVENUE RECOGNITION

Another way to manage earnings is through delayed revenue recognition. Later recognition may allow the company to manage revenues to portray an earnings stream that is smoother and less volatile than in economic reality.

Some common items to watch for:

1. Declining days sales outstanding
2. Using sales return and allowance reserves to manage the revenue amounts
3. Aggressive use of percentage of completion accounting
4. Growing deferred revenue balances

REVENUE CLASSIFICATION ISSUES

Revenue should be reviewed for any one-off items, such as gains on sales of assets or businesses.

DEFERRING EXPENSE RECOGNITION

Recognizing expenses later or in smaller amounts may overstate margins. Some common items to watch for:

1. Capitalization of costs (interest, pension, software development as required by GAAP)
2. Under-reporting or drawing down of accrued expenses instead of taking expense
3. Consistently reporting recurring expense items as “special items”
4. Changing depreciation policies or managing / changing expected useful life or salvage values
5. Reversing of reserves into earnings (warranty, restructuring, inventory, etc.)
6. Unsustainable tax benefits
    a. Managing tax reserves and valuation allowance
    b. Excess stock compensation benefits
    c. Profit shifting at risk under tax reform
7. Aggressive pension accounting assumptions (expected rate of return, discount rate)
8. Changing inventory policies
9. LIFO liquidation “gains” (or treating LIFO “charge” as one-time)
10. Increasing days inventory outstanding
11. Understate value of stock options granted
12. M&A accounting abuse
    a. Aggressive purchase price allocations to reduce future D&A
    b. Changing purchase price allocation
    c. Cherry picking accounting policies

ACCELERATING EXPENSE RECOGNITION

Some companies may manage earnings through accelerating expense recognition. While it is technically “more conservative” to recognize expenses earlier, it provides an opportunity to artificially improve margins in future periods.

Some common items to watch for:

1. ‘Big bath’ charges for restructuring or other reserves pulling forward expenses
2. Asset write-downs / impairments that will impact future return metrics (i.e. reduce the denominator in ROA calculation)
3. Mark to market pension accounting may create comparability issues

EXPENSE CLASSIFICATION ISSUES

Watch for items recorded as ‘below the line’ in ‘other’ or ‘financing’ expense that should actually be an operating expense.

BALANCE SHEET

The balance sheet and related footnotes should be analyzed to ascertain if balance sheet valuations for assets/liabilities are appropriately stated. Some common items to watch for:

1. Cash overstated due to one-time deemed repatriation tax due
2. Use of joint ventures, equity method investments that can create off balance sheet risk exposures
3. Off balance sheet debt guarantees
4. Understatement of lease debt due to use of short-term leases or material contingent rental expense
5. Goodwill and intangible asset values overstated due change in market or aggressive M&A accounting
6. Inventory recorded at LIFO vs FIFO
7. Securitized receivables – off balance sheet financing
8. Reverse factoring / structured payable transactions – off balance sheet financing
9. Deferred tax assets overstated / understated due to need for valuation allowance or reversal
10. Deferred tax liability equivalent of equity if not expected to reverse in the future

CASH FLOW

Cash flow should be carefully reviewed for temporary tailwinds / headwinds and classification issues:

1. Inventory drawdowns
2. Delaying A/P payments until next period – reverse factoring
3. Prepaying expenses during high cash flow periods
4. Accelerated cash receipts – one-time boost to deferred revenue
5. A/R securitization
6. Cost capitalization and classification in investing cash flow
7. New capital leases bypass cash flow
8. Low cash tax rate
9. Stock-based compensation
10. Post-acquisition working capital benefits
11. Reserve reversals indicate non-cash gains in earnings
12. Serial acquirers – M&A ~ capex
13. Non-controlling interests claim on operating cash flows
14. Using company stock for pension contributions
15. Accrued capex bypassing cash flow
16. Classification differences vs. IFRS comps

WATCH FOR RISING DAYS' SALES AND DAYS' INVENTORY BALANCES

Our favorite two metrics for monitoring earnings quality at companies selling products are days sales outstanding and days inventory outstanding. A rise in days sales outstanding may presage future accounts receivable credit issues and higher bad debt expense. Similarly, a rise in days inventory may presage slowing end demand and perhaps the need for an inventory write-down charge.

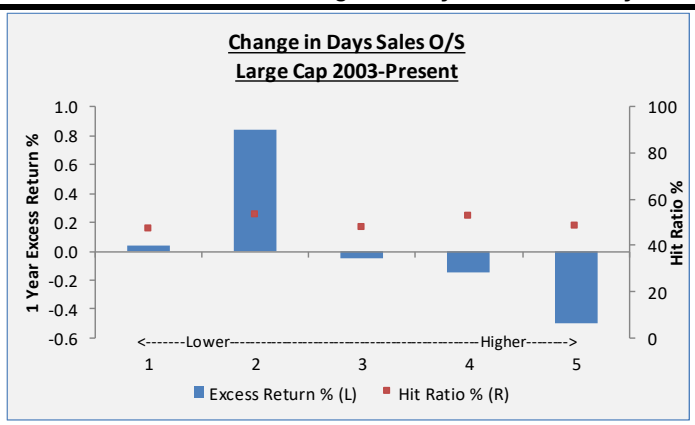
We've found the best way to observe and standardize these metrics is through the year-over-year percentage change in their levels.

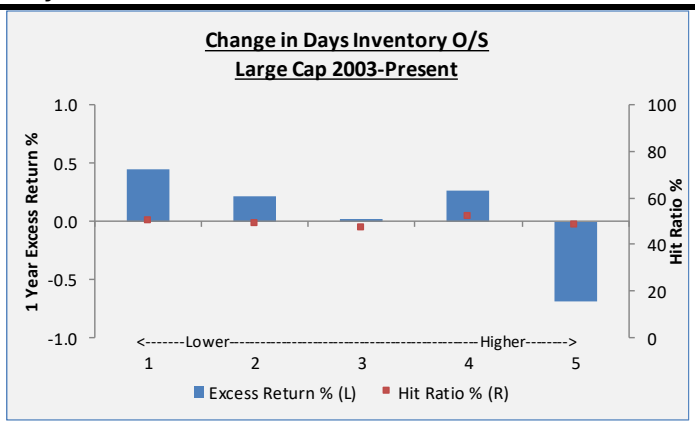
- Percentage Change in Days Sales Outstanding is defined as Days Sales Outstanding Current / One-year Ago Days Sales Outstanding where Days Sales Outstanding = Accounts Receivable / Most recent quarter Sales * 90

- Percentage Change in Days Inventory is defined as Days Inventory Current / One-year Ago Days Inventory where Days Inventory = Inventory / Most recent quarter COGS * 90

Based on our quantitative work, companies with the lowest changes (~declines) in Days Sales and Days Inventory tend to outperform their peers on a sector neutral basis, while those with the largest change (~increases) tend to underperform (5th quintile below).

Relative Performance for Changes in Days Sales and Days Inventory Balances





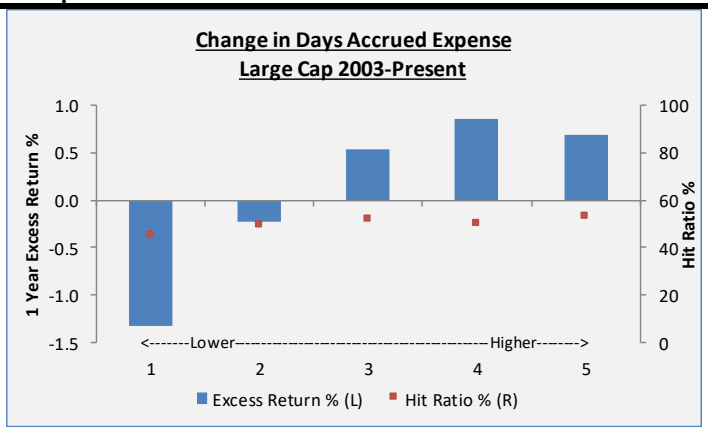
Note: Universe is 1000 largest U.S. market cap companies, ex. financials, utilities and telecom. Sector neutral. Year over year change in most recent quarter's DSO or DIO. Annualized monthly returns through 2018. Rebalanced monthly.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings; Standard & Poor's; FactSet.

FALLING ACCRUED EXPENSES: STOCKS UNDERPERFORM

Falling accrued expenses may be a sign of business weakness or low earnings quality. As shown below, the evidence suggests falling days' accrued expenses are a potential signal of business weakness or less conservative accounting as the accrued expense liability may be drawn down to avoid expensing an item through earnings. As shown below, companies with the largest *decrease* in days accrued underperformed historically (largest 1000 stock universe).

Historical Stock Returns: Accrued Expenses



Note: Universe is 1000 largest U.S. market cap cos. Sector neutral ex. Financials. Annualized monthly rebalanced returns 1990-date. Days accrued defined as Average other current liabilities (ex. Deferred revenues) / LTM sales * 365. Change defined as % changes vs. prior year.

Source: Wolfe Research Accounting & Tax Policy Research; Company filings; Bloomberg; Standard & Poor's; FactSet.

OUR "EQ SCORE": AN OBJECTIVE FRAMEWORK FOR IDENTIFYING UNDERPERFORMING STOCKS

Our earnings quality (EQ) model is an objective measure used to assist investors in avoiding underperforming stocks and finding high quality new stock ideas. Underlying EQ is the strong belief that the balance sheet and cash flow statement are leading indicators of potential income statement problems and that management teams may mask deteriorating business fundamentals (e.g., slowing revenue growth rate) through various accounting maneuvers (e.g., cost capitalization, aggressively recognizing revenue, changing depreciation policies, etc.). In short, it's a summary metric that incorporates many of the concepts expounded in this report and what we consider to be the first line of defense prior to a more detailed analysis of financial statements.

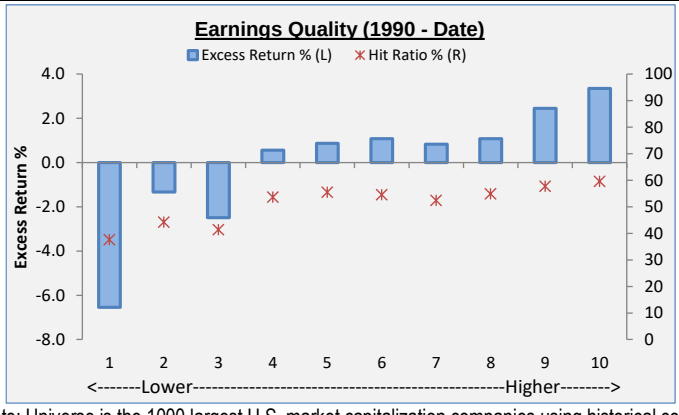
In creating this model, we used our accounting/auditing background and analyzed past accounting financial restatements to find a series of leading ratios and indicators. In turn, we tested these ratios for historical predictive power to see if they identified cohorts of underperforming stocks.

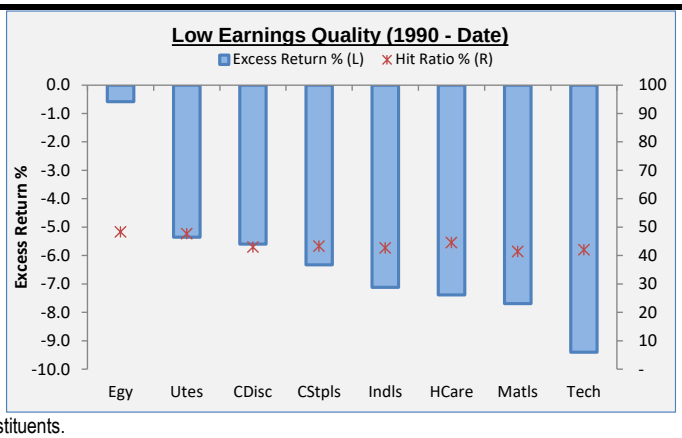
For each of the seven equally weighted financial metrics in our EQ score, we used a ranking system whereby each company is ranked high to low based on where the metric fell *relative* to all the other companies *within* the sector. Based on this ranking, each company is placed into a decile numbered 1 through 10 (10% buckets). A lower numbered decile indicates lower earnings quality for that particular metric. For example, for any given factor, if the company were ranked into the bottom 10%, or decile, of the total sector, it received a "1". If it placed in the top 10% of companies, it would receive a "10" and be considered one of the highest earnings quality companies in its sector. Each company receives 7 individual decile ranks. Finally, we add the seven decile ranks together, rank the companies within each sector by this sum, and scale the rankings to 100. This results in an overall EQ score for each company of 0 to 100 (0 = worst earnings quality; 100 = highest earnings quality).

To further identify companies with other negative signals, we qualitatively reviewed additional factors (such as increasing share count, increase in leverage, pension risk, restructuring charges, and increases in goodwill and intangibles). While these factors are not explicitly included in the EQ score due to their binary nature, we believe that the presence and frequency of these factors is suggestive of lower earnings quality. The more additional factors separately identified, the lower the overall earnings quality, all else being equal.

The charts below summarize the earnings quality model's historical 1-year excess share price returns. Computationally, companies were placed in sector neutral deciles each period to determine the future relative performance of the related factor. Not surprisingly, the strongest excess performance was found among the top and bottom 10% deciles. Therefore, our EQ score is best used to avoid underperformers (bottom 10% or an EQ score of 0 to 9 out of 100) and for potential future outperformers (top 10% or an EQ score greater than 90).

Earnings Quality Model & Short Indicators: Historical Excess Stock Returns





Note: Universe is the 1000 largest U.S. market capitalization companies using historical constituents.

Source: Wolfe Research Macro Research; Company filings; Standard & Poor's; FactSet.

EARNINGS QUALITY (EQ) MODEL COMPONENTS

In the exhibit below, we explain the various components of our earnings quality model. We include several "additional factors" that are indicative of potential issues (e.g., CFO Change, M&A risk). However, such items are binary and, therefore, we cannot rank companies within a sector on that basis. We calculate ratios on an LTM basis as we've found this to be more predictive historically.

Earnings Quality Framework Summary Descriptions

EQ SCORE COMPONENTS	Calculation	Description
(1) Current Accruals (↑ ratio = ↓ earnings quality)	(NI - CFFO) / LTM Revenue	Measures the level of non-cash net current assets on the balance sheet and whether earnings are supported by cash flow
(2) Change in Working Capital (↑ ratio = ↓ earnings quality)	Changes in Working Capital Accounts per Cash Flow Statement / LTM Revenue	Measures the growth in net operating assets on the balance sheet
(3) Total Accruals (↑ ratio = ↓ earnings quality)	(NI - CFFO - CFFI) / LTM Revenue	Measures the level of both net current and non-current assets on the balance sheet and whether earnings are supported by cash flow
(4) Tax Rate (↓ rate = ↓ earnings quality)	Taxes paid / Earnings Before Taxes	A low tax rate is often unsustainable and indicative of low earnings quality
(5) Other Asset Growth (↑ ratio = ↓ earnings quality)	Change in Other Total Assets / LTM Revenue	Measures other growth in the balance sheet and identifies possible excess cost capitalization
(6) Operating vs. GAAP Earnings (↑ difference = ↓ earnings quality)	Number of quarters out of last 12 where Non-GAAP "Operating" EPS was at least 10% larger than GAAP	Larger differences from GAAP for management reported "operating" or Non-GAAP earnings have higher risk for non-recurrence or SEC scrutiny
(7) High Cap-Ex (↑ ratio = ↓ earnings quality)	LTM Cap-Ex / PP&E	Measures the over investment tendency of companies on which there often are decreasing marginal returns

ADDITIONAL NEGATIVE SIGNALS	Calculation	Description
Industry Group Specific Quality Risk Rank	Ranking of 1 (lowest quality) to 5 (highest quality) based on number of "hits" out of total quaity metrics found to be historically predictive of stock underperformance within industry group.	Specific metrics vary based on industry group. Please contact us for more information.
M&A Risk	Largest year-over-year increase in goodwill and intangibles / current market cap. (top 20%)	Measures the tendency of companies completing acquisitions to underperform and identify roll-up type situations
Non-GAAP / Pro Forma Earnings	Companies with consistent adjustments that increase GAAP earnings at least 10%, for more than 10 out of last 12 consecutive quarters	We believe that items commonly added back such as stock based compensation and intangible amortization should be appropriately reflected as recurring costs for consesus EPS ests. Consistent differences in GAAP and Non-GAAP earnings may indicate lower likelihood of persistence of those earnings.
CFO Changes	Date of any recent turnover in the CFO position	In studying stock blow-ups in the past, we found CFO departures as a common variable.
Sales & Earnings Growth Acceleration / Deceleration	The growth rate in sales growth or earnings growth (e.g. 2nd derivative)	Companies with deceleration in sales growth may be higher risk of lower earnings quality manifesting itself in an upcoming quarter. Measured as the rate of change in recent sales growth (2nd derivative)
Working Capital Changes	Rankings based on changes in working capital accounts, such days sales outstanding, days inventory outstanding and days accrued outstanding	Our research found companies with the largest increase in DSOs or DIOs or largest decreases in Days Accrued underperformed
WR Governance Grade	Grade based on the presence/absence of the following: Staggered Board; Poison Pill; Dual CEO / Chairperson; Low % Independent Board; Larger Board Size; Clawback Provision.	Weaker governance grades may be representative of management environments and tone prone to more potential accounting manipulations

Source: Wolfe Research.

EARNINGS QUALITY (EQ) MODEL EXAMPLE METHODOLOGY

Each of the underlying EQ components are assigned a decile rank (1-10) relative to other companies in its sector. The deciles are equally weighted and summed, and then compared again within the sector to assign an EQ scores of 0 - 100 (with 0 being the worst) based on relative percentage rank.

Earnings Quality Example Calculation

Individual ratios are ranked within sectors to assign a 1-10 decile for each metric

Components - Underlying Financial Ratios

Company	Current Accruals	Chg. Working Capital	Total Accruals	Tax Rate	Other Asset Growth	Median % Non-GAAP > GAAP EPS	Capex / Net PP&E
Company A	-5.0%	3.0%	0.5%	18%	3.0%	0%	35%
Company B	-8.0%	0.0%	4.7%	7%	-2.0%	110%	30%
Company C	-20.0%	-2.0%	17.8%	15%	0.5%	23%	32%
Company D	-7.0%	-1.0%	6.8%	35%	0.8%	0%	22%
Company E	-10.0%	-1.0%	5.8%	10%	1.0%	40%	45%
Company F	-7.0%	-2.0%	42.6%	14%	0.7%	20%	20%
Company G	-8.0%	-0.5%	-2.6%	10%	-0.1%	5%	6%
Company H	-3.0%	-0.5%	-0.5%	22%	0.8%	0%	9%
Company I	2.0%	2.0%	-6.6%	38%	0.4%	0%	10%
Company J	4.0%	1.0%	1.1%	12%	-0.9%	5%	19%

Final EQ score calculated by adding up deciles for raw score (ranges from 7-70 for US), then taking percentage rank on a 0-100 basis

Individual Component Decile Ranks | **Final EQ Score**

Company	Current Accruals	Chg. Working Capital	Total Accruals	Tax Rate	Other Asset Growth	Median % Non-GAAP > GAAP EPS	Capex / Net PP&E	Sum (RAW SCORE)	Earnings Quality Score (0 = Worst, 100 = Best)
Company A	4	1	7	7	1	7	2	29	**11**
Company B	7	4	5	1	10	1	4	32	**22**
Company C	10	9	2	6	6	3	3	39	**56**
Company D	5	7	3	9	3	7	5	39	**56**
Company E	9	7	4	2	2	2	1	27	**0**
Company F	5	9	1	5	5	4	6	35	**33**
Company G	7	6	9	2	8	6	10	48	**100**
Company H	3	5	8	8	4	7	9	44	**78**
Company I	2	2	10	10	7	7	8	46	**89**
Company J	1	3	6	4	9	5	7	35	**33**

Source: Wolfe Research.

Differences Between
U.S. GAAP and IFRS GAAP

BALANCE SHEET: FINANCIAL ASSETS

Summary: IFRS classifies more assets at amortized cost and maintains a bucketed approach to expected credit losses vs. full lifetime under US GAAP. We believe that this accounting lowers a company's overall quality of reported book value/shareholder's equity.

Detailed Financial Asset Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Marketable securities:*** Classified as trading, available-for-sale, or held-to-maturity. (Equity securities must be trading).
- ***Non-traded equity investments:*** Recorded at historical cost, unless elected to be accounted for at fair value under *ASC 825 - Financial Instruments* (formerly FAS No. 159).
- ***Loans:*** Classified as either held for sale (lower of cost or market) or held for investment (amortized cost). Most loans fall under the "held for investment" category. Similar to non-traded equity investments, management may elect to record loans at fair market value under Fair Value Option.
- ***Impairment (General):*** New rules in 2020 implement a cumulative expected credit loss (CECL) model. Financial asset reserves / allowances will be based on the estimated losses expected to be experienced over the entire life of the instrument.
- ***Impairment (Available for Sale Securities):*** Formerly OTTI, AFS securities are not specifically subject to CECL expected loss model. Will still follow the traditional model of determining need to loss recognition. However, any AFS impairment loss will now be recorded as an allowance and can be reversed upon recovery of credit impairment. Occurs based on a two-step test: (1) management does not intend on selling the security and there's a 50%+ chance that it wouldn't have to sell before recovering in value to at least cost and (2) management expects to recover the entire cost basis. If the answer is "no" to either one of these steps, then an impairment is recorded.
- ***Loans held for sale:*** Carried on the balance sheet at the lower of cost or market.
- ***Classification of debt:*** Driven by legal form.
- ***Netting assets and liabilities:*** Generally allowed when a right of set-off exists under a master netting agreement. Because of this rule, many items such as off-setting derivatives with the same counterparty are reported net on the balance sheet.
- ***Transfer of assets between categories:*** Strict rules for reclassifying securities from available-for-sale to held-to-maturity.

IFRS

- ***Marketable securities:*** Classified as Fair Value Through Profit or Loss or Fair Value Through Other Comprehensive Income.
- ***Non-traded equity investments:*** Recorded at fair value.
- ***Loans:*** Recorded on the balance sheet at fair market value or amortized cost. Loans are not carried at the lower of cost or market.
- ***Impairment / Credit Losses:*** Applicable to loans, held to maturity and FVOCI instruments. 3 stage bucketed approach for expected losses based on changes in credit quality since inception. 1) no increase in credit risk since inception – only record 12 month expected credit loss, 2) increased credit risk since inception – record lifetime expected credit loss, accrete interest revenue based on gross amount 3) objective evidence of impairment – lifetime expected credit loss, interest based on net carrying amount.
- ***Loans held for sale:*** This category does not exist. Loans held for sale / securitization are classified as trading at fair value.
- ***Classification of debt:*** Not driven by legal form. Thus, financial assets that are a security in the legal sense are often classified as a loan/receivable under IFRS, resulting in more "securities" being recorded at historical cost.
- ***Netting assets and liabilities:*** Generally allowed when a legally enforceable right to set off exists and the company intends on either settling on a net basis or realize asset and settle liability simultaneously. Master netting agreements alone are not enough to offset unless all of the above criteria are met, leading to significantly more presentation at gross on the balance sheet.
- ***Transfer of assets between categories:*** More common than under U.S. GAAP. Trading and/or available-for-sale debt instruments (carried at fair value) may be classified into the loan category (recorded at amortized cost) if the company has both the intent and ability to hold it for the foreseeable future.

Source: Wolfe Research Accounting & Tax Policy Research.

BALANCE SHEET: INVENTORY

Summary: U.S. GAAP allows either FIFO or LIFO accounting methods, but IFRS does not allow LIFO accounting. Moving from LIFO to FIFO would typically increase a company's net income and decrease operating cash flow, during a period of normal inflation. Operating cash flow would decline because the LIFO tax shield would disappear.

LIFO inventory accounting is most often used in the following industries: retail, industrial, gas, and pharmaceutical. Approximately 250 companies in the Russell 3000 account for at least a portion of their inventories using the LIFO method.

Detailed Inventory Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Costing methodology:*** A few of the commonly allowed inventory methods include LIFO, FIFO, and average cost. The IRS' "LIFO book/tax conformity rule" requires companies that use LIFO for tax purposes also use LIFO for GAAP purposes.
- ***Write-downs:*** Inventory write-down reversals are not allowed. Recovery in inventory value is captured through higher gross margins when the written-down inventory is subsequently sold.

IFRS

- ***Costing methodology:*** FIFO and weighted average are allowable inventory costing methods. LIFO is not allowed under IFRS.
- ***Write-downs:*** Inventory write-down reversals are required to be recorded in COGS, up to the original inventory value, before the inventory is sold.

Source: Wolfe Research Accounting & Tax Policy Research.

Summary: IFRS allows the revaluation of PP&E to fair market value, which may lead to asset and equity balance distortions. This may also lead to non-comparable and/or highly volatile financial ratios such as ROE and ROIC. Under IFRS, real estate companies may also account for their investment properties at fair value, with the changes in value recorded into earnings.

Detailed PP&E and Intangible Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Cost:*** Generally depreciable and recorded at historical cost. PP&E can't be revalued to fair market value unless the company is acquired and purchase accounting rules apply.
- ***Depreciation:*** Usually depreciated, straight-line, over X number of years. U.S. GAAP does not require a components-based approach for depreciation expense.
- ***Investment properties:*** Recorded at historical cost for most real estate companies; no revaluations to fair market value permitted.
- ***Intangible assets:*** No revaluations to fair market value permitted.
- ***Leveraged lease accounting:*** Permitted. Under leveraged lease accounting, the lessor often recognizes leasing income quicker and the non-recourse leveraged lease debt amount is netted against the leveraged leased investment asset on the lessor's balance sheet.

IFRS

- ***Cost:*** Generally depreciable and recorded at historical cost. PP&E can be revalued to fair market value with a gain credited to equity under a "revaluation surplus" account. If a future impairment occurs, the loss may be offset against the revaluation surplus. Historical cost and depreciated amounts must be disclosed.
- ***Depreciation:*** Components based approach used to depreciate assets. Material components of PP&E with different useful lives are depreciated separately.
- ***Investment properties:*** Recorded at fair market value or historical cost. The change in fair market value is recorded in earnings in each period and investment property is not depreciated. These rules also apply to leased properties.
- ***Intangible assets:*** Revaluations to fair market value are permitted, although this is uncommon since the standard requires the fair market value to be in specific reference to an active market for the specific intangible asset.
- ***Leveraged lease accounting:*** Not permitted. Under IFRS, non-recourse debt is recorded at gross on the balance sheet.

Source: Wolfe Research Accounting & Tax Policy Research.

Summary: Due to IFRS' impairment testing mechanics, companies under IFRS might recognize impairments before companies in the same situation that report under U.S. GAAP. Furthermore, these impairments may be reversed back into the income statement as gains if certain criteria are met. These differences generally result in more volatile earnings.

Detailed Asset Impairment Differences Between U.S. GAAP and IFRS

U.S. GAAP

- Impairments are tested under a two-step approach (indefinite lived intangibles are now subject to a preliminary qualitative more-likely-than not impairment test assessment before moving to step 1):
  - Initial recoverability test based on an asset's carrying value vs. total undiscounted future cash flows. If the asset's carrying value is greater than the sum of the asset's undiscounted future cash flows, proceed to step 2.
  - In step 2, the asset's carrying value is written down to fair market value.

- ***Reversing impairment charges:*** Not allowed.

IFRS

- Under IFRS, impairments are tested based on a one-step approach:
  - If impairment indicators exist, an impairment loss should be calculated. An impairment charge is recorded if an asset's carrying value is greater than the future discounted cash flows or the asset's fair market value, less cost of selling.

- ***Reversing impairment charges:*** Allowed if certain criteria are met. The reversal of an impairment charge is recorded and flows through the income statement as a gain. However, the reversals of goodwill impairment charges are not permitted.

Source: Wolfe Research Accounting & Tax Policy Research.

BALANCE SHEET: LEASES

Summary: Comprehensive lease accounting rules beginning in 2019 increased divergence between the US GAAP and IFRS. While both new standards required essentially all leases to be recorded on balance sheet as an asset and debt, only the IFRS rules changed the income statement impact to mirror finance lease accounting. The net result is generally lower earnings for companies that use IFRS.

Detailed Lease Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Leases:*** Four bright line criteria to determine whether a lease is classified as a finance lease or operating lease. Both operating leases and finance leases are recorded on balance sheet as assets and liability. However, income statement and resultant cash flow are different. Operating lease expense is recognized on a straight-line basis, as rental expense. Finance leases will be recorded as a combination of depreciation expense on the asset and interest expense on the liability.

IFRS

- ***Leases:*** Single model for leases. All leases recorded on balance sheet at asset and liability. Income statement treatment is equivalent to US finance leases – combination of depreciation expense on asset and interest expense on liability.

Source: Wolfe Research Accounting & Tax Policy Research.

BALANCE SHEET: PENSIONS

Summary: Pension accounting is one of the major differences between U.S. and IFRS GAAP. The most significant differences relate to recording gains and losses, and treatment of interest cost and actuarial gains and losses.

Detailed Pension Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Types of plans:*** Multi-employer plans are typically considered to be defined contribution "pay as you go" plans.
- ***Terminology:*** Post-retirement benefits (OPEB) include post-retirement benefits other than pensions and other post-employment benefits.
- ***Pension plan asset value:*** U.S. GAAP permits the use of a smoothed plan asset value (up to 5 years) to calculate expected rate of return on plan assets. Expected Return on Plan Assets = Market Value x Expected Rate of Return.
- ***Funded status:*** The actual economic funded status is recorded on the balance sheet. The pension's assets minus liabilities (PBO) are booked as an asset or liability.
- ***Pension cost component classification:*** Service cost will follow employee's compensation cost, thus allocated to line items such as COGS, SG&A, or R&D. Remaining costs will be considered below the line "other".
- ***Actuarial gains/losses:*** Arise from changes in the discount rate, actuarial table changes, and differences between the pension plan's expected rate of return and actual returns. These gains or losses are either recognized over time based on the corridor approach (more common) or immediately recognized through the income statement ("mark-to-market").

IFRS

- ***Types of plans:*** Multi-employer plans that are similar in structure to a defined benefit plan are classified as defined benefit plans.
- ***Terminology:*** Post-employment includes pension, post-retirement (OPEB), and other post-employment benefits.
- ***Pension plan asset value:*** Smoothed market related plan asset values are not allowed. Plan assets used to calculate expected returns (now part of net interest income / (expense) – see below) must be based on current fair market value.
- ***Funded status:*** The balance sheet will be marked-to-market so that the actual funded status of the plan is recorded on the balance sheet. Same as US GAAP.
- ***Pension cost component calculation:*** For recognition of periodic pension and OPEB costs, there will be one amount recorded that comprises the US GAAP equivalent of interest cost and expected return on plan assets: "net interest income/(expense)". This amount will be based on the discount rate of the plan x the net funded status. The pension components are disaggregated so that the net interest income or expense will be below operating income in the financing section of the earnings statement similar to other interest cost items.
- ***Pension cost component presentation:*** For presentation, only service cost component will be included in the same line item with the remainder of the employee's compensation. The pension components are disaggregated so that the net interest income or expense will be below operating income in the financing section of the earnings statement similar to other interest cost items.
- ***Actuarial gains/losses:*** "Remeasurements", or actuarial gains/losses, will be recognized annually directly into Other Comprehensive Income, an equity holding account. These amounts will not be subject to recycling through earnings (e.g. there will be no amortization or "charges"). Essentially, the only items that will go through earnings on a periodic basis will be the service cost and the net interest income/(expense).

Source: Wolfe Research Accounting & Tax Policy Research.

BALANCE SHEET: JV AND M&A ACCOUNTING

Summary: A company's net income will be the same irrespective of whether it accounts for its investments/partnership/acquisitions under the consolidation, equity, or proportional accounting method. Although net income will be the same under each methodology, a company's margins and financial ratios might be skewed depending on whether or not operating metrics are included in EBITDA.

Detailed JV and M&A Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Consolidation:*** Must be used if a company owns >50% of the voting rights and risks/rewards of an entity (regardless of ownership interests, is the company the primary beneficiary of the entity and does it have the power to direct its activities?).
- ***Proportionate consolidation:*** Not allowed under U.S. GAAP.
- ***Joint ventures (50-50% ownership):*** Equity method of accounting is required.

IFRS

- ***Consolidation:*** There is greater flexibility under IFRS to issue financial statements that do not consolidate all entities with over a 50% ownership. More leniency to use the equity method under IFRS.
- ***Proportionate consolidation:*** No longer allowed under IFRS. A distinction between joint ventures and joint operations delineates accounting. See below for joint ventures. The accounting model for a joint operation is a line by line accounting for the underlying assets, liabilities and income items.
- ***Joint ventures (50-50% ownership):*** Equity method of accounting is required (same as US GAAP, began in 2013).

Source: Wolfe Research Accounting & Tax Policy Research.

BALANCE SHEET: RESERVE ACCOUNTS – RESTRUCTURING AND OTHER ACCRUED LIABILITIES

Summary: Based on IFRS, restructuring and other accrued liability charges are typically recorded in earlier periods and often in larger amounts than U.S. GAAP. These differences arise because of IFRS' lower probability threshold (~50%) of when the charges are recorded on the books.

We believe that higher reserve account balances and the lack of policing result in a higher probability of booking excess reserves to manage earnings. We've observed that companies under IFRS tend to reverse accrued liabilities as gains in earnings with greater frequency than companies under U.S. GAAP.

Detailed Reserve Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Recording reserves/provisions:*** Based on *ASC 450 – Contingencies* (formerly FAS No. 5), reserves (accrued liabilities) are recorded on the books when the liability is both probable and reasonably estimable. "Probable" is generally interpreted to mean at least a 70% chance of occurring.
- ***Recorded reserve amounts:*** The most likely outcome should be recorded on the books. If each outcome has the same probability, the lowest liability among the range of possible outcomes should be recorded.
- ***Restructuring cost expensing and timing:*** Once management decides and commits to a detailed restructuring plan, each cost is reviewed for when it should be recognized and recorded as an expense in earnings.
- ***Unfavorable contracts:*** Recorded once the company stops using the asset.

IFRS

- ***Recording reserves/provisions:*** Recorded when "probable," interpreted to mean "more likely than not" or a greater than 50% chance of occurring. This is a lower threshold than under U.S. GAAP.
- ***Recorded reserve amounts:*** Similar to U.S. GAAP, the most likely outcome should be recorded on the books, but when a range of potential liabilities exist, the mid-point should be selected, resulting in a higher recorded reserve.
- ***Restructuring cost expensing and timing:*** Less restrictive, with restructuring charges being recognizable earlier, than U.S. GAAP. IFRS, specifically IAS 37, only requires that management as "demonstrably committed" to a restructuring (detailed exit plan) and focuses on an exit plan as a whole rather than individual cost components of the plan. The restructuring does not need to be communicated to the company's employees.
- ***Unfavorable contracts:*** Recorded for an unfavorable contract, despite the fact that the company is still using its rights under the contract. Under IFRS, amounts are typically expensed sooner.
- ***Contingent liabilities:*** Reduced disclosure for contingent liabilities is allowed if it is severely prejudicial to an entity's position in a dispute.

Source: Wolfe Research Accounting & Tax Policy Research.

BALANCE SHEET: COST CAPITALIZATION

Summary: Under IFRS, if certain criteria are met, development costs may be capitalized and expensed over the asset's life resulting in higher earnings as costs are capitalized on the balance sheet instead of being immediately run through the income statement.

Detailed Cost Capitalization Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Advertising:*** Companies may either expense as incurred or capitalize costs (prepaid asset) and expense through earnings when the advertising actually happens. Direct response advertising costs may be capitalized and subsequently amortized if certain requirements are met.
- ***Research:*** Expensed as incurred.
- ***Development:*** Typically expensed as incurred, unless specific guidance suggests capitalization instead (e.g., *ASC 985 – Software* (formerly FAS No. 86)), resulting in the capitalization of certain costs such as software development).

IFRS

- ***Advertising:*** Not allowed to defer costs until advertising occurs and must be expensed immediately. Capitalization of direct response advertising costs as assets is not permitted.
- ***Research:*** Expensed as incurred.
- ***Development:*** If certain criteria are met, development costs may be capitalized as an intangible asset and amortized over the asset's expected life. Does not distinguish between assets developed for internal or external uses.

Source: Wolfe Research Accounting & Tax Policy Research.

BALANCE SHEET: CONVERTIBLE BONDS

Summary: IFRS requires companies to allocate convertible debt into debt and equity amounts on the balance sheet. On the income statement, interest expense is recorded at the company's straight-debt interest rate compared to the convertible bond's cash coupon rate. Only cash settled principal convertible bonds in the U.S. use "bifurcation accounting."

Detailed Convertible Bond Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Accounting:*** In general, the entire amount of a plain vanilla convertible bond is recorded as debt on the balance sheet. FASB Staff Position No. APB 14-1 changed the accounting for certain types of convertible bonds to a "bifurcation" accounting model, discussed in depth in the convertible debt section.

- ***Interest expense:*** Recorded based on a bond's effective interest rate, which is typically the cash coupon rate (unless a zero-coupon discount bond for plain vanilla converts). Bifurcated convertible bonds will record interest at the effective interest rate.

IFRS

- ***Accounting:*** Recorded as both debt and equity on the balance sheet. IFRS requires bifurcation calculated under the "residual approach." The initial debt amount recorded on the balance sheet is the fair value of debt without considering the equity conversion option and the residual amount (par value less fair value of debt) is recorded as equity.

- ***Interest expense:*** Recorded at the bond's effective interest rate without considering the equity conversion option.

Source: Wolfe Research Accounting & Tax Policy Research.

Summary: The FASB and IASB converged revenue recognition standards to remove inconsistencies and achieve direct comparability across global companies. Outside of some small industry specific differences, the primary remaining difference between US GAAP and IFRS is the threshold for determining collectability. Due to the somewhat looser revenue recognition definitions and the presence of more management discretion, we believe that under certain situations, IFRS may lead to earlier recognition of revenue than US GAAP.

Detailed Revenue Recognition Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Revenue recorded when collectability is Probable:*** "Probable" is generally interpreted to mean at least a 70% chance of occurring.

IFRS

- ***Revenue recorded when collectability is Probable:*** Recorded when "probable," interpreted to mean "more likely than not" or a greater than 50% chance of occurring. This is a lower threshold than under U.S. GAAP.

Source: Wolfe Research Accounting & Tax Policy Research.

Summary: Analysts should pay extra attention when comparing margins across companies as certain expenses are classified in different areas of the income statement under U.S. GAAP and IFRS.

Detailed Income Statement Classification & Presentation Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Expenses:*** Reported based on function (COGS, SG&A, etc.) and may be classified in differing areas of the income statement than under IFRS.
- ***Comparative financial information:*** The SEC requires at least two years of comparative financial statements, excluding the balance sheet, which only requires one year.
- ***Performance measures:*** The SEC mandates certain presentation requirements such as headings and subtotals.

IFRS

- ***Expenses:*** Reported by either function or nature and may be classified in different areas of the income statement than under U.S. GAAP.
- ***Comparative financial information:*** One year of comparative financial information is required for all numerical financial statement information.
- ***Performance measures:*** Traditional U.S. GAAP concepts such as operating income are not defined, so significantly diverse practices may exist with regard to income statement headings, subtotals, and line items.

Source: Wolfe Research Accounting & Tax Policy Research.

INCOME STATEMENT: STOCK BASED COMPENSATION

Summary: Most of the stock-based compensation accounting differences have been eliminated. The largest remaining difference between U.S. GAAP and IFRS relates to deferred taxes – IFRS uses more of a mark to market approach for recording future tax deductions, while US GAAP requires waiting for the actual tax deduction to occur (based on upon option exercise or restricted stock vesting).

Detailed Stock Based Compensation Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Stock based compensation:*** Expense recognized on a straight-line or accelerated basis. An accelerated expense recognition is optional for service-time based compensation with graded vesting (e.g. 33% each year for 3 years). Using accelerated basis is used for options with graded vesting schedules and front-end loads stock-based compensation expense into earlier years of the vesting schedule.

- ***Deferred tax accounting:*** Deferred tax asset grows as non-cash stock-based compensation cost is recorded and reversed upon option exercise / restricted stock vesting. Not adjusted for changes in underlying stock price.

IFRS

- ***Stock based compensation:*** Options with graded vesting schedules (e.g. vest 33% each year over 3 years) are required to be recognized/expensed on an accelerated basis, resulting in expense amounts being recognized earlier.

- ***Deferred tax accounting:*** Re-measured each period based on changes in the company's stock price with the impact typically flowing through earnings. For example, if a company's stock price declines, a lower future tax deduction results when the stock vests. The existing DTA must be written down by increasing income tax expense in the current period, resulting in more volatile quarterly income tax rates.

Source: Wolfe Research Accounting & Tax Policy Research.

Summary: Under IFRS, income tax rates may be highly volatile for companies with high stock option expense. This is the result of recording stock-based compensation deferred tax benefits through earnings as they occur. As a result of new US rules on excess tax benefits from stock compensation, US tax rates will be volatile as well.

Additionally, due to differing income tax rules, effective tax rates may not be comparable to a U.S. company.

Other highly technical tax differences exist, but we've excluded them from the lists below since they typically lead to only small differences.

Detailed Income Tax Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Deferred tax assets:*** Recognized in full on the balance sheet. A valuation allowance is also recorded that reduces the DTA to the amount that is "more likely than not" (greater than 50% chance) to be realized.

- ***Stock based compensation:*** Tax benefit and DTA recorded as the stock awards vest based on GAAP expense amount, and not trued-up for a stock's exercise price or changes in a stock's intrinsic value until exercise or maturity. Upon exercise / maturity, any excess tax benefits (cash tax savings above previously recorded GAAP tax benefit) will impact tax expense and cash flow from operations.

IFRS

- ***Deferred tax assets:*** Recognized only if it is probable (similar to U.S. GAAP's "more likely than not" standard (>50%)) that the DTA will be realized, but no valuation allowances are recorded. This is similar to U.S. GAAP, which reports DTAs at gross amounts and records a valuation allowance for amounts "more likely than not" to be realized.

- ***Stock based compensation DTA:*** Only recorded when the stock award is tax deductible and has "intrinsic value." For stock options, as the company's stock price changes, the DTA changes are recorded through earnings via the income tax expense, resulting in a much more volatile effective tax rate.

Source: Wolfe Research Accounting & Tax Policy Research.

STATEMENT OF CASH FLOWS

Summary: The format of a company's cash flow statement is the same under U.S. GAAP and IFRS. However, there are a few differences in the classification of certain items within the cash flow statement, resulting in differing operating and free cash flows.

We believe that management teams using IFRS have greater flexibility in the interpretation of cash flows from operations or investing, resulting in "cash flow arbitrage" (i.e., classifying cash outflows as investing and inflows as operating).

Detailed Cash Flow Statement Differences Between U.S. GAAP and IFRS

U.S. GAAP

- ***Interest income:*** Cash flow from operations.
- ***Interest expense:*** Cash flow from operations.
- ***Dividends received:*** Cash flow from operations.
- ***Dividends paid:*** Cash flow from financing.
- ***Taxes paid:*** Typically, cash flow from operations.
- ***Overdrafts:*** Classified as borrowings within cash flow from financing and not included as a part of cash and equivalents. VIEs and jointly controlled entities may result in different cash balances.

IFRS

- ***Interest income:*** Cash flow from investing or operations.
- ***Interest expense:*** Cash flow from financing or operations.
- ***Dividends received:*** Cash flow from investing or operations.
- ***Dividends paid:*** Cash flow from financing or operations.
- ***Taxes paid:*** Typically, cash flow from operations, unless it is related to a specific financing or investing activity.
- ***Overdrafts:*** May be included in cash balance. Different entities consolidated under IFRS will result in different reported cash amounts on the balance sheet.
- ***Note:*** An accounting policy choice must be made regarding the classification of these items and must be consistently followed.

Source: Wolfe Research Accounting & Tax Policy Research.

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