

Line-Item Analysis of Earnings Quality

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Abstract

In this paper, we discuss earnings quality and the related concept of earnings management, focusing on the primary financial accounts. For each key line-item from the financial statements, we summarize accounting and economic considerations applicable to that item, discuss implications for earnings quality, evaluate the susceptibility of the item to manipulation, and identify potential red flags. The red flags and specific issues discussed for the individual line-items provide a framework for fundamental and contextual analysis by academic researchers and practitioners.

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1

Introduction

Baruch Lev, in his influential 1989 critique of empirical research on the usefulness of accounting earnings, argued that the generally low R^2 values in market-based tests of earnings quality were disconcerting and implying limited usefulness of accounting earnings. Lev suggested that capital market research in accounting should shift its focus to the examination of the role of accounting measurement rules in asset valuation. He further suggested that a promising direction for future research is to examine earnings quality account-by-account.¹

In the last 20 years, a number of studies have employed fundamental and contextual analyses in an attempt to improve our understanding of the usefulness of earnings and other accounting variables. Two of the earlier attempts were Bernard and Stober (1989) and Bernard and Noel (1991). Both studied the incremental usefulness of working capital accounts. Bernard and Stober (1989) investigated the ability of inventory and account receivable balances to predict future sales. Bernard and Noel (1991) examined alternative economic models of the

¹A similar recommendation was made by Penman (1992), who called for concentrated accounting research aimed at studying “fundamentals” — that is, key value-drivers such as components of earnings, risk, growth, and competitive position.

production-inventory cycle and their implications for using inventory disclosures to predict future sales and future earnings. Results were generally null or “mixed” at best. Bernard and Stober (1989) concluded that further progress in this line of research would require a better understanding of the economic context in which the implications of detailed earnings components are interpreted. They also suggested that any research based on short-run association tests would require better knowledge of the process by which information is transmitted from firms to the public.

Another notable attempt at fundamental analysis was made by Lev and Thiagarajan (1993). Lev and Thiagarajan identified a set of financial variables (fundamentals) claimed by analysts to be useful in security valuation and examined these claims by estimating the incremental value-relevance of these variables over earnings. Their findings support the incremental value-relevance of most of the identified fundamentals. Indeed, looking at data from the 1980s, fundamentals added about 70% to the explanatory power of earnings with respect to excess returns. A follow-up on this study by Abarbanell and Bushee (1997) found somewhat weaker results. Specifically, the associations between the individual signals and future earnings changes were insignificant for many of the fundamental signals identified by Lev and Thiagarajan. Lev and Zarowin (1999) reexamined the usefulness of reported earnings and other financial variables and found that it has deteriorated during the period 1977 to 1996. They attributed the deterioration to the increase in the level of change experienced by companies during the period.²

Assessing the fundamental analysis literature over the last two decades, many of the results are either null or mixed. As suggested by many researchers, including the above authors, fundamental analyses are difficult because the relation between earnings and returns is too highly contextual to model parsimoniously. One grim speculation articulated by Bernard and Stober was that, “it is possible that the links between detailed earnings components and valuation are so highly contextual that no parsimonious model would ever capture more than

² Another possible explanation might be an increase in earnings management and manipulation during that period as management rewards for improved financial performance have grown.

a small portion of the story” (1989, p. 648). With the benefit of the last 20 years of fundamental analysis research, Bernard and Stober’s cautionary note seems even more profound today.

In this paper, we present a comprehensive summary and analysis of the specific earnings quality issues pertaining to key line-item components of the financial statements. After providing an overview of earnings quality (Section 2) and earnings management (Section 3), we turn to the analysis of the key line-items from the financial statements (Section 4 through Section 18). For each key line-item, we review accounting principles, discuss implications for earnings quality, evaluate the susceptibility of the item to manipulation, and describe analyses and red flags which may inform on the item’s quality. We hope that our analysis and evaluations will prove useful in conducting fundamental and contextual analyses.

2

Overview of Earnings Quality

According to Statement of Financial Concepts (SFAC) No. 1, readers of financial statements use reported earnings in various ways, including

to help them (a) evaluate management's performance, (b) estimate "earnings power" or other amounts they perceive as "representative" of long-term earning ability of an enterprise, (c) predict future earnings, or (d) assess the risk of investing in or lending to an enterprise. (para. 47)

Arguably, this statement regarding how investors use reported earnings implies how one should evaluate earnings quality — for example, earnings are of high quality if they are representative of long-term earning ability. Yet this statement suggests diverse uses of earnings information and, accordingly, alternative definitions of earnings quality. Indeed, there seems to be no consensus in the academic and professional literatures on how to define earnings quality. The following alternative definitions have been employed by different

researchers:

Conservatism — The quality of conservatively determined earnings is high because they are less likely to prove overstated in the light of future developments.

Economic earnings — Earnings are of high quality when they accurately reflect the change in net asset value due to earning activities.

Persistence (sustainability) — Earnings are of high quality when they are expected to recur, that is, when the current level of earnings is a good proxy for the expected level of earnings in future years. This definition does not preclude earnings from being volatile over-time, but it does imply that such volatility should be related to changes in expected future earnings.

Stability — High quality earnings exhibit low volatility over-time.

Predictability — High quality earnings are predictable.

Relation to cash flows — High-quality earnings include relatively small accruals (e.g., Sloan, 1996) or have accruals which are strongly related to past, current or future cash flows (e.g., Dechow and Dichev, 2002).

While some of these views are related, they are generally quite distinct from one another and often have contradictory implications. For example, fair value accounting — that is, measuring assets and liabilities at fair value with unrecognized gains and losses included in income — may improve the accuracy of earnings as a measure of change in value, but is likely to reduce the persistence and predictability of earnings. As another example, when managers smooth earnings over-time — a widespread form of earnings management — they increase the persistence and predictability of earnings but weaken the relationship between earnings and cash flows, since earnings management is often conducted through the management of accruals.

The theoretical work on earnings quality has interpreted earnings quality as the precision of an accounting signal with respect to a fundamental (e.g., Dye, 1990; Penno, 1996; Jorgensen and Kirschenheiter, 2003; Dye and Sridhar, 2007), or defined high-quality earnings as earnings that are relatively “permanent” (e.g., Sankar and

Subramanyam, 2001; Kirschenheiter and Melumad, 2008). Empirical research has focused on the sustainability view of earnings quality, and investigated the information in various accounting quantities and ratios regarding future earnings changes. For example, studies have examined future earnings implications of various measures of accruals and cash flow (e.g., Sloan, 1996; Dechow and Dichev, 2002; Xie, 2001; Lev and Nissim, 2006), financial statement decomposition (e.g., Fairfield et al., 1996; Abarbanell and Bushee, 1997; Nissim and Penman, 2001, 2003; Penman et al., 2007) conservatism distortions (e.g., Lev and Sougiannis, 1996; Penman and Zhang, 2002), and tax and pension disclosures (e.g., Amir and Benartzi, 1998; Shevlin, 2002; Lev and Nissim, 2004).

Similar to academics, practitioners appear to equate earning quality with earnings persistence or sustainability. This is due in part to the extensive use of multiple-based valuation, where equity value is estimated by applying a multiple to some measure of earnings (e.g., EPS or EBITDA). A primary determinant of earnings multiples is the perceived persistence of earnings — the higher the persistence, the larger the multiple. Relatedly, higher earnings persistence implies that multiple-based valuation is likely to yield precise valuations because current earnings are a good predictor of future earnings and hence a good indicator of intrinsic value.¹ Further, to the extent that high earnings persistence reduces uncertainty and helps mitigate information asymmetries between insiders and investors, we may see a reduction in the cost of capital and a further increase in the multiple. We, therefore, adopt the persistence view of earnings quality and use it as the primary benchmark when evaluating the impact of accounting choices and methods on earnings quality.

While we focus on the persistence of reported earnings, we also evaluate the impact of accounting choices which do not change bottom-line income but rather affect other financial disclosures. This generalized view of earnings quality, which is often referred to as accounting quality, is important because many accounting choices that do not affect

¹That is, high earnings persistence implies not just large multiple but also small magnitude of valuation error.

bottom-line earnings still inform on future earnings, cash flows or risk. For example, investors and other market participants pay more attention to recurring revenues and expenses than to “one-time” items. This may induce firms to classify one-time gains as recurring revenues, to net gains against expenses,² or to classify recurring expenses as one-time losses.³ As another example, investors in some companies focus on revenue rather than earnings as a primary measure of performance (e.g., firms in early growth stage, firms operating in industries where expense measurement is particularly problematic). Such companies may therefore overstate revenue in ways that do not necessarily affect earnings (e.g., by overstating barter revenues or by reporting gross revenues when serving as an agent). In addition, the accounting treatment of some transactions — such as leases and sale of receivables — impacts the information content of reported leverage, coverage ratios, and other risk measures.

Persistence may be the prevalent interpretation of earnings quality for practitioners, academics, and originally, the FASB (see citation above), but currently the FASB and IASB appear to be moving toward setting standards that require recognition of fair value estimates, which tend to reduce the persistence of bottom-line earnings. Whereas historical-cost measures of income focus on realized earnings from persistent core operating activities, fair value gains and losses are generally uncorrelated over-time. Consequently, fair value income is less informative about future income compared to historical-cost earnings. At the extreme, under perfect fair value accounting, the mark-to-market adjustment anticipates and recognizes in current earnings all the value implications of current operations, so future earnings only

²The Securities and Exchange Commission (SEC) issues Accounting and Auditing Enforcement Releases (AAER) pertaining to financial reporting enforcement actions against companies, auditors, and officers. One example of SEC enforcement action regarding netting of gains is AAER No. 1405. According to this release, in 2001 Waste Management netted one-time gains against operating expenses.

³For example, according to AAER No. 1721, in 1997 SmarTalk inflated earnings before one-time charges by reporting a one-time restructuring charge that included recurring operating expenses. Academic research provides large-sample evidence regarding this form of earnings management. For instance, McVay (2006) finds that managers opportunistically shift expenses from core expenses (cost of goods sold and selling, general, and administrative expenses) to special items, in order to overstate “core” earnings.

reflect future shocks to profitability and are therefore unrelated to current earnings.⁴

Firms have substantial discretion in measuring earnings. Accordingly, an important determinant of earnings quality is the extent to which earnings have been “managed” (i.e., manipulated). We next discuss the concept of earnings management and its impact on earnings quality.

⁴For detailed discussions of the impact of fair value accounting, see Nissim and Penman (2007, 2008).

3

Overview of Earnings Management

Arthur Levitt, former Chairman of the SEC, noted:

Flexibility in accounting allows it to keep pace with business innovations. Abuses such as earnings management occur when people exploit this pliancy. Trickery is employed to obscure actual financial volatility. This in turn, masks the true consequences of management's decisions. (Levitt, 1998)

Accounting researchers have adopted a similar definition of earnings management. For example:

Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers. (Healy and Wahlen, 1999)

Common to these definitions is the following feature: earnings management induces an intentional bias in financial reports.

Accounting research has paid greater attention to earnings management, which affects earnings quality, than to earnings quality *per-se*. Empirical studies have used large sample statistical models to test whether firms manage earnings or to identify cases of earnings management. This stream of research employs two complementary approaches:

- (1) Examination of the shape of the distribution of earnings, earnings changes, or analysts' forecast errors to evaluate whether firms overstate earnings to meet or beat important benchmarks (e.g., Burgstahler and Dichev, 1997).
- (2) Tests of the correlation between estimates of the magnitude of earnings management and proxies for incentives or ability to manage earnings (e.g., Dechow et al., 1995).

The first approach involves testing the frequency of slightly positive earnings, earnings changes, or analysts' forecasts errors. This approach interprets abnormally large frequencies of slightly positive values, evaluated compared to the entire distribution, as evidence of earnings management. The second approach requires one to obtain estimates of both the magnitude of earnings management and the underlying incentives. As detailed below, cases where managers may have strong incentives to manipulate earnings include appointment of new management team, engagement in capital-raising transactions, existence of restricting debt covenants, and negotiations with employees or suppliers. Common measures of earnings management include qualitative variables that indicate whether earnings are just above an important benchmark (e.g., a small earnings increase), estimates of discretionary accruals (e.g., the residual from a regression of total accruals on proxies for non-discretionary accruals such as sales and fixed assets; e.g., Jones, 1991), and income smoothing measured by earnings volatility (e.g., Leuz et al., 2003).

The theoretical literature on earnings management has focused on the practice of earnings smoothing, with the objective of showing

demand for income smoothing. One strand of the literature has taken an optimal contract design approach (e.g., Dye and Verrecchia, 1995; Demski, 1996; Lambert, 1984; Fudenberg and Tirole, 1995), typically with risk-averse managers who value smooth compensation. Another part of the literature has adopted a signaling approach (e.g., Ronen and Sadan, 1981; Chaney and Lewis, 1995; Fudenberg and Tirole, 1995), where smooth earnings signal a desirable characteristic, like better management skill. A third line of research has adopted a rational expectations setting (e.g., Trueman and Titman, 1988; Sankar and Subramanyam, 2001; Kirschenheiter and Melumad, 2008), where income smoothing is practiced in an attempt to mimic higher quality earnings and thereby influence stock price.

People often refer to earnings management as synonymous with earnings overstatement. However, earnings management also includes situations where firms make accounting choices that result in understated earnings.¹ Moreover, firms might manage line-items from the financial statements or other financial disclosures in ways that do not affect bottom-line earnings (e.g., classifying recurring expenses as “unusual items” or manipulating fair value disclosures). Such activities are often conducted for the same reasons that firms manage bottom-line earnings (e.g., to influence investors’ perception of performance or risk). We follow the common practice of referring to these activities as “earnings management,” although “accounting management” would be a more appropriate description.

Earnings are the total of cash flow from operations and accruals. Thus, firms might manage earnings by manipulating either accruals estimates or cash from operations. Traditionally, earnings management has been conducted by manipulating accruals, but increasingly firms appear to be managing cash from operations.² Unlike accruals

¹ For example, according to AAER 2676, Nortel Networks Corporation established excess reserves in order to lower its consolidated earnings to bring it in line with internal and market expectations.

² According to a recent survey of financial executives, decreasing discretionary spending is the most likely earnings management choice to meet an earnings target (Graham et al., 2006). Discretionary expenses may include research and development (Dechow and Sloan, 1991; Bushee, 1998), advertising, and maintenance and training expenses (Roychowdhury, 2006).

management, the management of cash from operations typically involves real transactions. Yet, when the primary objective of these transactions is to inflate earnings or otherwise manipulate financial disclosures, they are viewed as earnings management activities. This distinction, however, is not always clear. When a company “strategically” chooses to invest in R&D and brand-creating activities during a highly profitable period, is it managing earnings? When a company proactively attempts to reduce the volatility of its results through hedging, is it managing its earnings? When an insurer reinsures some of its portfolio, is it managing earnings?

Accruals vary in their susceptibility to manipulation. Expenses such as bad debt, warranty, depreciation, impairment and restructuring involve substantial measurement discretion and are therefore easy to manipulate. Accruals related to investing or financing activities, such as gains and losses from sales of long-lived assets or early retirement of debt, involve little measurement discretion but their timing can easily be changed to affect reported income. On the other hand, transaction-related operating accruals such as changes in accounts payable, involve little if any estimation, and their timing, while often discretionary, does not affect reported income (e.g., payment of accounts payable increases the accruals component of earnings but reduces cash from operations, leaving earnings unchanged).

Substantial research on earnings quality uses accruals as a proxy for earnings management, which in turn affects earnings quality. However, accruals may have implications for earnings quality for reasons other than earnings management. For example, when firms experience negative demand shocks, their inventories typically increase. Moreover, in such cases, firms often extend lenient credit terms resulting in increases in accounts receivables. Suppliers are often among the most informed parties regarding the prospects of their customers, and so changes in accounts payable (a negative accrual) may be positively related to future earnings changes. Thus, accruals may inform on economic shocks in addition to manipulation.

Arguably, many earnings management activities reduce earnings quality. However, some forms of earnings management, particularly earnings smoothing, may in fact improve the persistence of reported

earnings. In addition, rather than to mislead investors, firms might manage earnings to convey private information to the market. Therefore, when evaluating earnings management activities for valuation purposes, one should not focus on whether earnings have been managed, but rather on the potential implications for earnings quality and intrinsic equity value. Doing so requires an understanding of the objectives of earnings management, to which we turn next.

3.1 Incentives for Earnings Management

While information relevant for valuing companies is provided through various channels (e.g., analysts research, business press, government statistics, management communications, etc.), company-issued financial reports constitute the primary source of information. Under US GAAP,

Financial reporting should provide information that is useful to present and potential investors and creditors and other users in assessing the amounts, timing, and uncertainty of prospective ... net cash inflows to the related enterprise. (SFAC No. 1, para. 37)

It is interesting to note that this is precisely the information that one would need to calculate the value of an enterprise. Thus, in setting accounting principles, the FASB appears to be emphasizing the valuation role of accounting information over other uses.

The use of accounting information in valuation generates capital-market incentives to manage earnings.³ Managers may manipulate earnings to improve market participants' perception of the firm's risk and performance. For example, extant research indicates that investors use benchmarks such as previous year earnings or analysts' forecasts in evaluating performance, thus motivating firms to overstate earnings

³Dechow et al. (1996) investigated 92 AAERs on earnings manipulation between 1978 and 1990. They find that among 39 AAERs that provided at least one explanation for earnings management, the main motivations included issuing of securities at higher prices (22 cases), reporting upward trending EPS (11 cases), increasing the size of earnings-based bonuses (7 cases), and profiting from insider trading (6 cases).

to meet or beat these targets (e.g., Burgstahler and Dichev, 1997). Anecdotal and empirical evidence suggests that investors prefer smooth earnings and persistent patterns of increasing earnings over volatile ones (e.g., Dechow and Dichev, 2002; Tucker and Zarowin, 2006). This may induce firms to smooth earnings over-time. Firms might also manage earnings to change investor perception of “core” vs “one-time” earnings (e.g., McVay, 2006), or they may take a “big bath” charge (e.g., overstate estimated liabilities such as accrued restructuring costs or write-down assets) hoping that investors will treat it as a one-time item, and use the charge to reduce future recurring expenses (e.g., reversal of estimated liabilities, lower depreciation).⁴ While incentives to overstate earnings are common, they are likely to be particularly strong when firms engage in capital-raising activities or M&A transactions (e.g., Teoh et al., 1998a; Erickson and Wang, 1999). In such cases, a temporary increase in price has lasting implications since it may cause an increase in issue price (in IPOs, SEOs or mergers), or allow firms to borrow at lower interest rates. In contrast, managers may be inclined to understate earnings when they engage in a management buyout, hoping that such manipulation will reduce the transaction price.

Financial information is also used for contracting and regulatory purposes. These uses may motivate managers to manipulate financial disclosures for reasons such as avoiding the violation of debt covenants (e.g., DeAngelo et al., 1994; Sweeney, 1994); increasing management’s compensation or job security (e.g., Healy, 1985); increasing regulatory capital of financial service firms (e.g., Collins et al., 1995); setting a low target for future compensation (Holthausen et al., 1995); and appearing less profitable when negotiating with customers, unions or suppliers, or when being subject to regulatory actions such as antitrust (e.g., Cahan, 1992), import relief (e.g., Jones, 1991), or rate determination.

In extreme cases of earnings management, firms might conduct fraudulent financial reporting to conceal criminal charges such as

⁴For examples of anecdotal, empirical, and analytical evidence regarding “big bath” charges, see Jackson and Pitman (2001), Elliott and Hanna (1996) and Kirschenheiter and Melumad (2002), respectively.

bribery,⁵ fictitious transactions,⁶ or other illegal conducts. Although criminal earnings management is beyond the scope of our analysis, it demonstrates the extent to which managers may manipulate financial reporting.

3.2 Indicators of Earnings Management

The potential benefits that arise from managing earnings suggest potential red flags of earnings management. Indicators of possible earnings overstatement include the following:

Earnings are just above an important benchmark — Studies have demonstrated that the likelihood that earnings have been overstated is higher when reported earnings are slightly larger than zero, or slightly larger than the following: previous period earnings, analysts' consensus forecast, or management forecast (e.g., Hayn, 1995; Burgstahler and Dichev, 1997; DeGeorge et al., 1999; Kasznik, 1999). This is especially true for firms that consistently meet or beat analysts' expectations.

Issuance of capital — Research has demonstrated that companies are more likely to overstate earnings when they raise capital (e.g., Teoh et al., 1998b) or engage in M&A transactions (e.g., Erickson and Wang, 1999). Thus, the likelihood that earnings have been inflated is higher in periods preceding such activities.

High accruals — Earnings equal the total of cash from operations and accruals. While both components of earnings can be managed, manipulation of cash from operations generally requires engaging in “real” transactions. In contrast, many accruals are calculated using subjective information and are therefore more easily manipulated. Thus, when

⁵ For example, according to AAER No. 2727, AirLog International, Ltd., through its Nigerian affiliate, Pan African Airlines Nigeria Ltd., incorrectly recorded improper payments to Nigerian Lagos State as legitimate payroll tax expenses and underreported payroll expenses in order to conceal the fraudulent reporting practice; According to AAER No. 2658, Delta & Pine Land Co. made improper payments to Turkish officials and failed to record sales generated in order to offset the effect of illegal payments; According to AAER No. 2725, A.T. Kearney India, a subsidiary of Electronic Data Systems Inc., maintained inaccurate books and records in order to hide the bribery scheme in India.

⁶ For example, according to AAER No. 2665, Power Phone Inc. fraudulently included two assets that the company did not own which collectively accounted for 95% of Power Phone's total assets.

accruals are relatively large, earnings are more likely to have been overstated (Sloan, 1996).

Low taxable income relative to book income — Book income is measured in accordance with Generally Accepted Accounting Principles (GAAP), while taxable income is calculated based on the tax code. Both systems require making estimates for measuring income, but the tax code allows for significantly less discretion. Therefore, when taxable income is significantly smaller than book income, earnings are more likely to have been overstated (e.g., Lev and Nissim, 2004).

A change in accounting policy — Firms might increase reported income by changing accounting policies to less conservative or more aggressive ones. In the period of change, income reflects the cumulative effect of the change, that is, earnings that would have been recognized in previous periods under the new policy.

A change of auditors, lawyers, executives or directors — Such changes may indicate disagreement regarding accounting policies, and therefore higher likelihood that earnings have been overstated (DeFond and Subramanyam, 1998).

Material related-party transactions — When the party to a transaction is not independent of the company or its shareholders, the transaction price and other terms may not reflect fair value. Therefore, a material related-party transaction indicates the potential for earnings management.

Leverage — High levels of or changes in leverage ratios may indicate high likelihood of violating debt covenants and accordingly strong incentives to overstate earnings (e.g., Sweeney, 1994). Also, financial institutions have strong incentives to report high regulatory capital (e.g., Collins et al., 1995), further strengthening the relationship between leverage and the likelihood of earnings overstatement.⁷

⁷For example, undercapitalized banks are required to submit capital restoration plans to regulators and are subject to restrictions on operations, including prohibitions on branching, engaging in new activities, paying management fees, making capital distributions such as dividends, and growing without regulatory approval.

When it comes to understatement of earnings, potential indicators include:

One-time items — Large negative one-time or unusual items could be a red flag for “big bath.”

Extreme earnings — Very low or very high earnings could imply earnings understatement. Very low earnings could be a reflection of a big bath, while unexpectedly high earnings could entice management to create reserves for future periods.

Management buyout — In such cases, management has strong incentives to lower the firm’s perceived value. One way of achieving this goal is to understate accounting measures of performance (e.g., Perry and Williams, 1994).

Change of CEO — Big bath charges allow managers to understate current and future recurring expenses, by classifying recurring expenses as unusual items, creating reserves for future periods or by reducing the book value of assets to be expensed in future periods. An important cost management faces in recognizing big bath charges is the implication that they have performed poorly in past periods. For new CEOs, this cost is not relevant. Therefore, the likelihood of big bath charges increases significantly following a change in management (e.g., Moore, 1973).

Low accruals — See “high accruals” above.

High taxable income relative to book income — See “low taxable income relative to book income” above.

Important negotiations or investigations — When negotiating with some stakeholders or their representatives (e.g., unions, see DeAngelo and DeAngelo, 1991), firms often have incentives to appear less profitable. Firms subject to antitrust (e.g., Cahan, 1992) or import relief investigations (e.g., Jones, 1991) may also understate their earnings.

3.3 Consequences of Earnings Management

Earnings management is not cost-free. There are two types of costs associated with manipulating financial disclosures: those incurred only

when earnings management activities are detected by market participants, and those incurred independently of whether the manipulation is detected. Costs associated with detected EM include the negative effect on management's reputation, the decline in management's ability to convey information to financial markets due to these past abuses, and the increase in fees required to compensate auditors for additional audit work and/or increased audit risk. In extreme cases, auditors may issue qualified audit reports, the firm may be required to restate its earnings, or it may be subject to Securities and Exchange Commission (SEC) enforcement actions or shareholder litigation.

Undetected earnings management is also costly. When a firm overstates current earnings, the expected growth in subsequent earnings will be lower because: (1) overstating current earnings increases the base from which future earnings grow, thereby decreasing the potential for future growth; and (2) since earnings approach net cash inflows over the long run, an overstatement of current earnings will generally be followed by an understatement of future earnings.

The timing of this reversal, and therefore the near-term consequences of earnings management, differs across accrual types. For example, when a firm understates the amount of bad debt (thereby increasing net receivables and overstating current earnings), it is likely to report a large bad debt expense and lower earnings in the next period when uncollectible receivables are written-down.⁸ In contrast, when a firm overstates impairments of fixed assets or finite-life intangibles (a negative accrual which reduces the book value of the assets), the reversal occurs gradually over many subsequent periods through reduced depreciation or amortization expense.⁹

⁸Essentially all working capital items share this near-term reversal property, including inventories, prepaid expenses, current deferred taxes, accounts payable, accrued expenses and restructuring costs (changes in assets are positive accruals; changes in liabilities are negative accruals).

⁹Additional accruals which can be used to manage earnings and reverse slowly include depreciation and amortization (negative accruals), impairment of goodwill and other intangibles with indefinite lives (negative accruals), depreciation-related deferred taxes (usually negative accruals), and gains/losses from sale of assets other than inventory or from early retirement of debt (positive/negative accruals). When a firm understates depreciation or amortization charges by overstating the assets' useful lives or salvage values, reversals occur through future depreciation, amortization, impairment charges, or disposal losses.

Another cost of undetected earnings management is the impact on taxable income and the likelihood of a tax audit. While financial reporting choices and estimates do not necessarily affect tax returns, firms with total assets of \$10 million or more are required to provide to the Internal Revenue Service (IRS) a reconciliation of financial accounting net income to taxable income, which the IRS uses to assess compliance risk.¹⁰

We next turn to a systematic line-item analysis, starting with revenue.

Impairment of goodwill and other intangible assets with indefinite life either do not reverse at all, or reverse through future impairment charges. Gains and losses from early retirement of debt reverse through interest expense.

¹⁰This disclosure, referred to as Schedule M-3, “enables the IRS to more readily distinguish returns with potentially higher compliance risk from those with lower compliance risk” (Deborah M. Nolan, IRS Large, and Mid-Size Business Division Commissioner).

4

Revenue

4.1 Accounting Principles

Revenues are inflow of assets (cash, receivables, other assets) or settlement of liabilities (unearned revenue) during a period resulting from the delivery or production of goods, the rendering of services, or other recurring earnings activities.

The realization principle states that revenue should be recognized and reported in the income statement when:

1. The amount and timing of net cash flows from the revenue are reasonably determinable, and
2. The earnings process with respect to the revenue is complete or virtually complete.

The first criterion requires that revenue be recognized in the income statement only if cash has already been collected or the amount and timing of cash to be collected can be estimated with reasonable precision. The second criterion means that the entity has substantially accomplished what it must do to be entitled to the benefits represented by the revenue. For most transactions, this criterion is satisfied

at the time of delivery, given that by providing the merchandise or service the firm has performed most or all of what it is supposed to do to be entitled to the revenue. Because firms deliver products or render services to customers who are expected to pay, the first criterion is usually not binding. In contrast, firms often receive advance payments from customers (so the first criterion is satisfied), but they still delay the recognition of revenue until delivery, as required under the second criterion.

For both product and service transactions, the two revenue recognition criteria generally require that the following four conditions be satisfied: (i) persuasive evidence of an arrangement exists, (ii) product delivery has occurred or services have been rendered, (iii) pricing is fixed or determinable, and (iv) collection is reasonably assured.

For most sale transactions, delivery occurs soon after sale so the distinction between “the time of delivery” and “the time of sale” is negligible. Indeed, many firms do not make this distinction and report in the summary of significant accounting policies that they recognize revenue at the time of sale. However, this is not always the case. When there is a substantial gap between the time of sale and the time of delivery, revenue should be recognized at the time of delivery. For example, in subscription transactions delivery occurs gradually after the sale, so revenue should be recognized gradually in proportion to the delivery of the subscribed item. This is also true for most service transactions, including operating, rent and interest income, for which revenue is recognized over the contractual period or as services are rendered.

In most cases, at the time of delivery the earnings process is considered sufficiently complete for recognizing revenue even when (1) the firm provides warranty or is expected to incur other after-delivery costs or (2) the customers have the right to return the goods for refund. Expected after-delivery costs and expected returns are accounted for by recognizing accrued expenses (for after-delivery costs) or deductions from revenue (for returns).¹

¹ As discussed below, when after-delivery costs are both potentially significant and cannot be estimated with sufficient precision, or when right of return exists and the firm experiences high and volatile returns (as is often the case in the publishing industry), revenue should be recognized when the uncertainty is resolved. Such cases are very uncommon, however.

Some transactions comprise multiple elements. Revenues from contracts with multiple element arrangements are recognized as each element is earned based on the relative fair value of each element, provided the delivered elements have value to customers on a standalone basis.

While in most cases revenue is recognized at the time of delivery, in some cases revenue is recognized before the delivery (either during production or at completion of production), and in other cases delivery does not trigger revenue recognition and additional criteria have to be satisfied before revenue is recognized. We next discuss three exceptions.

4.1.1 The Percentage-of-Completion Method

For many long-term transactions, the accounting period is “too short” to include a complete business cycle (e.g., construction of buildings, ships, and bridges; long-term service contracts where the deliverables are provided at the end of the service period). In addition, long-term transactions typically involve “large” projects, so at any point in time a company may be involved in a small number of projects. Thus, recognizing revenue at the time of delivery would result in an untimely reporting of economic events. Consequently, recognition rules are modified.

The method used for recognizing revenues during production is the percentage-of-completion method. This method requires a company to estimate total costs and revenues as well as to measure progress. Conceptually, the method recognizes the economic substance of a transaction by allocating income to periods of performance of the work, so that income is recognized as it is earned. Gross profit each period is calculated as the difference between gross profit earned as of the balance sheet date and gross profit recognized in prior periods, where gross profit earned to date is calculated as the product of estimated total gross profit (i.e., the difference between the contract price and estimated total costs) and the percentage of completion as of the balance sheet date.² Expense is equal to cost incurred during

²One exception is that losses are recognized in full when anticipated, independent of the percentage of completion.

the period, and revenue is measured as the total of the gross profit and expense.³

The percentage of completion is measured based on either cost incurred (cost-to-cost method) or physical progress. The cost-to-cost method utilizes incurred costs as an indicator of progress: the percentage of completion is the ratio of costs already incurred to estimated total costs, both incurred and expected to be incurred. Variants of this approach involve using only direct costs in the ratio or excluding raw materials. When progress is measured using physical units, either input units (e.g., hours of labor to date compared to estimated total labor hours needed for the project) or output units (e.g., miles of road completed compared to total contract miles) are used.

Unlike other exceptions to recognizing revenue at the time of delivery (discussed below), the percentage of completion method is relatively common. For example, according to *Accounting Trends and Techniques* (2006), about 14% of 600 surveyed firms used this method in their 2005 annual reports.

The percentage-of-completion method provides opportunities for earnings management since revenue and income are based on estimates of completion costs and progress. For example, a firm may use an estimate of completion costs which is lower than the true expected amount in order to report high current income.⁴ Another issue with the percentage-of-completion method is that it may generate high volatility in reported earnings, because current year income reflects the cumulative effect of changes in estimates in addition to the progress made in the current period.

4.1.2 The Completed Contract Method

Long-term contractors are required to use the percentage-of-completion method when there is reasonable certainty about future cash inflows (e.g., fixed or determinable contract price) and cash outflows

³ Alternatively (and typically equivalently), revenue is measured as the change in the percentage of completion during the period times the contract price, and expense is measured as the difference between revenue and gross profit.

⁴ Naturally, this will lower future income because total income from the project cannot be manipulated.

(completion costs). If there is substantial uncertainty about either cash inflows or outflows, the firm should not use the percentage-of-completion method.

When the uncertainty is about the amount of cash outflows, the firm should use the completed contract method; i.e., it should recognize revenue, expense and income when the project is complete.⁵ The completed contract method is more conservative than the percentage-of-completion method since it defers all revenue and income recognition to the period in which the project is complete. Few firms in the US use the completed contract method; indeed, according to *Accounting Trends and Techniques* (2006), only 1% of the 600 surveyed firms used this method in their 2005 annual reports.

When the uncertainty is about cash inflows, the firm should recognize revenue when the uncertainty is resolved. For example, if a company constructs an asset for sale, revenue should be recognized at the time of sale (or using the percentage-of-completion method from the time of sale if the project is incomplete).

4.1.3 Revenue Recognition at Completion of Production

When the market for the product is liquid (so selling is relatively assured), production is the critical event in the earnings process and the realization principle is satisfied at completion of production. In such cases, revenue should be recognized at completion of production. This method though is uncommon. It is used primarily for precious metals and agricultural products, where uncertainty about selling and selling price is relatively low.

4.1.4 Cash-Basis Revenue Recognition

When the amount and timing of cash flows from the revenue cannot be estimated with sufficient precision, revenue should be recognized when cash is collected; i.e., reported revenue each period should equal the amount of cash collected (excluding any explicit or implicit interest payments which are accounted for separately as interest income). Gross

⁵One exception is that losses should be recognized when anticipated.

profit and expense can be measured using either the installment or cost recovery methods. Under the installment method, gross profit is calculated as the product of revenue and the gross profit margin, and expense is measured as the difference between revenue and gross profit. Under the cost recovery method, gross profit is zero (expense equals revenue) until the cost is recovered. After cost recovery, gross profit equals revenue (expense equals zero). This method is rarely used in the United States.

4.1.5 Revenue Recognition by Lessors

Lessors classify leases as a sales-type, direct financing, leveraged, or operating lease. For a lease to be classified as a sales-type, direct financing, or leveraged, it must meet at least one of the following four criteria:

1. The lease transfers ownership of the property to the lessee by the end of the lease term.
2. The lease contains an option to purchase the leased property at a bargain price.
3. The lease term is equal to or greater than 75% of the estimated economic life of the leased property.
4. The present value of the minimum lease payments equals or exceeds 90% of the fair value of the leased property.

as well as the following two additional criteria:

1. Collectability of the minimum lease payments is reasonably predictable.
2. No important uncertainties surround the amount of unreimbursable costs yet to be incurred by the lessor under the lease.

Leases that do not satisfy the above criteria are classified as operating leases. Revenue under the operating lease method consists of rent income which is reported over the lease term in a systematic manner (usually straight-line). Leased property under operating leases is recorded and depreciated in the same way as other property, plant, and equipment.

A lease that meets the above criteria is classified as a sales-type lease if the fair value of the leased property is different from its carrying amount. Otherwise, unless the lease meets certain additional criteria for leveraged leases, it is classified as a direct financing lease.

For sales-type leases, the present value of the minimum lease payments is reported as sales and the carrying amount of the leased property plus any initial direct costs, less the present value of any unguaranteed residual value, is charged as cost of sales. On the balance sheet, the lessor reports the net investment in the lease as the present value of the minimum lease payments and the unguaranteed residual value. The net investment is the difference between the gross investment (the total of the minimum lease payments and unguaranteed residual value) and unearned interest income. Unearned interest income is amortized and recognized in earnings over the lease term so as to produce a constant periodic rate of return on the net investment.

For direct financing leases, the lessor reports as an asset on the balance sheet the net investment in a lease consisting of gross investment less unearned interest income, plus the unamortized initial direct costs. The gross investment is calculated by adding the minimum lease payments and the unguaranteed residual value. Unearned interest income is determined by subtracting the carrying amount of the leased property from the gross investment. Unearned interest income and the initial direct costs are amortized over the lease term so as to produce a constant periodic rate of return on the net investment.

A leveraged lease is a direct financing lease that involves at least three parties (a lessee, a long-term creditor, and a lessor) and has a few additional characteristics. In a leveraged lease, the lessor puts up some of the money required to purchase the asset and borrows the rest from a lender. The lender is given a mortgage on the asset and an assignment of the lease and lease payments. The lessee makes payments to the lessor, who in turn makes payments to the lender.

Lessor transactions are quite common. According to *Accounting Trends and Techniques* (2006), about 11% of the 600 surveyed firms reported lessor leases in their 2005 annual reports.

4.1.6 Revenue Measurement

Revenues are generally reported at the cash or cash-equivalent value (i.e., fair value) of the assets or services received (e.g., cash, notes receivable, other financial instruments, goods and services provided by customers in barter transactions).

Revenues from credit sales associated with accounts receivable (as opposed to notes receivable) are reported undiscounted, i.e., ignoring the time value of money.⁶

Revenues are reported on a net basis, i.e., net of (actual and expected) discounts for prompt payment, allowances for damaged or unsatisfactory merchandise, returns, and rebates and other credits. Actual discounts, allowances, returns and rebates reduce the balance of accounts receivable (or cash if the customers receive a refund). Expected discounts, allowances and returns increase either a contra asset to accounts receivable or a current liability (less common, appropriate when the customers have already paid).

Sales returns have an additional effect on the financial statements: besides the reduction in revenue and accounts receivable (or cash), inventory is increased and cost of goods sold is reduced for the cost of inventory returned.

In addition to the above deductions from sales, some firms treat bad debt as a contra-revenue account and report revenues net of bad debt. Most firms, however, treat bad debt as an expense and include it in Selling, General and Administrative (SG&A) expenses.

4.2 Accounting Quality

Revenue recognition is particularly vulnerable to manipulation. For example, according to a 1999 report by The Committee of Sponsoring Organizations of the Treadway Commission (COSO), “Fraudulent Financial Reporting: 1987–1997 — An Analysis of US Public Companies,” more than half of financial reporting frauds in the study involved revenue misstatements. More recently, Dechow et al. (2007) examined

⁶When collection is expected to occur more than an one year after the sale (very uncommon), revenue and accounts receivables are measured at present value.

2,191 AAERs issued between 1982 and 2005, and found that revenue was the most frequently affected item, with alleged manipulations in 55% of sample firms. In this section, we discuss problematic practices of revenue recognition and revenue measurement.

4.2.1 Material Uncertainties

Under the realization principle, firms should defer the recognition of revenue when there are material uncertainties regarding net cash flow. Factors which could cause such uncertainties include performance guarantees, contingent pricing, product returns, financial condition of customers, warranty costs, unguaranteed residual value (leases), and unreimbursable costs (leases). In most cases, such uncertainties are not considered material enough to defer revenue recognition. But when there is high uncertainty regarding any of the above, revenue recognition should be deferred until the uncertainty is resolved or reduced. Usually, firms are reluctant to defer the recognition of revenue and sometimes recognize highly uncertain revenues. For instance, according to AAER No. 2719, Penn Traffic Company prematurely recognized promotional allowances in advance of the company's performance of certain key, contingent activities. Also, according to AAER No. 2673, in 2003 and 2004 Integrated Electrical Services Inc. recognized change orders which were highly in dispute.

4.2.2 Remaining Performance

Under the realization principle, firms should not recognize revenue before the earnings process is complete or virtually complete. Some firms recognize revenue at the time of sale although significant performance is required after the sale (e.g., substantial installation or service costs). When the remaining performance relates to a separate element, partial revenue recognition may be required (discussed below).

4.2.3 Mark-to-Market Revenue

Financial service firms and other firms increasingly use fair value measurement for assets and liabilities, particularly financial instruments,

with unrealized gains and losses recognized in income (e.g., trading assets and liabilities). For many instruments, measuring fair value involves significant assumptions and estimates, which may be exploited to manipulate reported fair values and holding gains and losses. In addition, in some cases, marking-to-market is essentially early recognition of gross profits that are yet to be earned, analogous to marking inventory to market value prior to the sale.

4.2.4 Multiple-Element Transactions

Firms that engage in multiple-element transactions sometimes manage revenue by overstating amounts associated with immediately recognized elements and understating amounts of gradually recognized elements. For example, according to AAER No. 1542, Xerox managed reported revenues during the years 1997–2000 by shifting revenues from servicing and financing, which require gradual recognition, to equipment sales, which are recognized immediately.

4.2.5 “Stuffing the Channels”

Some firms recognize revenue when they ship products to distributors, even when the distributors’ obligation to pay is contingent on resale of the products. Under GAAP, in such cases, revenue should be recognized only when the dealer resells the products. An extreme version of this practice is to recognize consignment shipments as revenue, which is essentially fraud (discussed below).

Firms that engage in this practice may overstate revenue by overshipping products. For example, according to AAER No. 2016, in 2000 Lucent Technologies recognized revenues when shipping products to distributors who were guaranteed that Lucent would accept a return of the products if sales to end-customers did not materialize.

4.2.6 “Bill and Hold” Sales

“Bill and hold” sales, i.e., the sale is made but the goods are retained by the seller, may be recognized as revenue by the seller before delivery to the buyer if the buyer requested that the transaction occur on a

“bill and hold” basis and certain additional conditions are satisfied. Some firms overstate revenue by initiating “bill and hold” sales.

4.2.7 Sales Pulls-In

Some firms might increase revenues by enticing customers to buy earlier than they originally intended. To do that they might offer customers excessive discounts and/or extend credit terms.

4.2.8 Improper Sales Cut-Off

Some firms manage earnings by using improper recognition timing cut-offs. For example, according to AAER No. 1786, “From at least 1989 through May 2001, Minuteman International Inc., a manufacturer of commercial floor care products, intentionally recognized quarterly revenue from sales occurring in a new quarter in the prior quarter’s financial statements. The company left its sales registers open for several days after a quarter ended and improperly recorded post-period sales in that quarter. For these post-period sales, the sales invoices were falsely dated with the last date of the prior quarter. The date of shipment and invoice processing, however, was after quarter-end. The practice was not followed at year-end.”

4.2.9 Non-Monetary Revenues

Revenues are generally reported at the cash or cash-equivalent value (i.e., fair value) of the assets or services received (e.g., cash, accounts receivables, notes receivable, other financial instruments, goods or services). Firms might manage revenue by manipulating the estimated value of the assets or services received in non-cash transactions.

4.2.10 Expected Returns, Discounts, Rebates, Credits, and Write-Offs

As discussed above, revenues are reported on a net basis, i.e., net of discounts for prompt payment (actual and expected), allowances for damaged or unsatisfactory merchandise (actual and expected), returns (actual and expected), and rebates and other credit (actual

and expected). Some firms might manage revenue by exploiting discretion in estimating expected returns, discounts, rebates or other credits. For example, in 2000 Lucent Technologies allegedly overstated revenue by delaying recognition of credits and discounts offered to customers (AAER No. 2016).

Some firms treat bad debt as a contra-revenue account and report revenues net of bad debt. Most firms, however, treat bad debt as an expense and include it in SG&A expenses. Because the estimation of bad debt involves substantial discretion, firms that treat bad debt as contra revenue have additional flexibility in manipulating net sales.

4.2.11 Percentage-of-Completion Method

As discussed above, under the percentage-of-completion method firms are required to estimate total costs and income as well as to measure progress. Based on these estimates, income is allocated to periods in which work is expected to be performed. These estimates are often imprecise and difficult to verify, thereby allowing firms to easily “manage” revenue and income. For example, when the cost of raw material is included in the percentage of completion calculation, firms can inflate estimated progress by transferring materials to construction sites.

4.2.12 Unguaranteed Residual Value

Lessors engaging in sales-type leases include in reported gross profit the present value of any unguaranteed residual value. This estimate involves substantial discretion that may be exploited to manipulate reported income.

4.2.13 Changing Methods or Estimates

When firms change their revenue recognition principles, current period revenue includes a “correction” for over/underreporting of revenues in prior periods, depending on whether the change implies more conservative/aggressive revenue recognition. To the extent that the change in policies or its impact is not properly disclosed, investors may be misled. For example, according to AAER No. 1966, WorldCom

misrepresented or failed to disclose material changes in revenue recognition practices. In addition to the “catch-up” effect, a change to a more aggressive revenue recognition method implies overstated revenue during growth years.

4.2.14 Gross vs Net Revenue

When valuing stocks, especially stocks of firms in early growth stage, investors tend to focus on revenues. They often apply larger valuation multiples to revenue compared with other income statement items. This has induced some firms to overstate revenues in ways that do not necessarily increase earnings. One such method is to include in revenue product sales derived from acting as a broker or an agent on behalf of other firms.⁷ That is, the firm does not assume the risks and rewards of ownership of the goods, collection of receivables, or warranty, and has little latitude in establishing prices, selecting suppliers, or making changes in the products. In such cases, sales should be reported on a net basis — that is, the amount billed to a customer less the amount paid to a supplier.

4.2.15 Barter Transactions

Some firms, particularly internet, media or telecom, report revenues from two-way (“barter”) transactions. In a barter transaction, each of the firms commits to purchase some assets or services from the other (e.g., add space on web pages). Each firm recognizes both revenue and expense. While reported income is generally not affected, the increase in reported revenue may benefit firms which are valued by investors using sales multiples (e.g., firms/industries in early growth stage). Moreover, in some cases (e.g., telecom capacity swaps), firms might capitalize the expense side of the transaction and report it as part of capex, hence inflating income in addition to revenue. (Note, however, that unlike the inflation of revenue, the income overstatement will reverse in future periods.) For example, according to AAER No. 2127, in 2001

⁷This issue arises in internet commerce, advertisements, mailing lists, event tickets, travel tickets, auctions and reverse auctions, magazine subscription brokers, and catalog, consignment, or special-order retail sales.

Qwest engaged in IRU⁸ “swaps” whereby Qwest bought IRUs from other companies in exchange for agreements from those companies to buy IRUs from Qwest, for the purpose of inflating reported revenues and income.⁹

4.2.16 Improper Classification

Investors and other market participants pay closer attention to recurring revenues than to “one-time” gains. This may induce firms to classify one-time gains or rebates from suppliers as revenues. For example, according to AAER No. 2127, in 2001 Qwest characterized non-recurring revenue from IRU and capital equipment sales as recurring “data and Internet service revenues.” Also, according to AAER No. 2654, Cardinal Health, Inc. inflated operating revenue by misclassifying bulk sales as operating revenue.

4.2.17 Related-Party Transactions

When the customer is not independent of the firm or its shareholders (e.g., when both the customer and the firm are controlled by the same entity or individual, or when either the customer or the firm holds non-controlling interest in the other), the transaction price and other terms may not reflect fair value. Firms might use related-party transactions to inflate or even create revenues.

4.2.18 “Round-Tripping” Transactions

Round-tripping transactions are effectuated through “circles” of entities, each of which includes the firm, a third-party “customer,” and a related “vendor.” Typically, the customer and the vendor in each circle share a common owner. The firm “sells” product to the customer, the customer “sells” the product to the vendor, and finally the vendor sells the product back to the firm. This process allows firms to recognize fictitious revenues and inflate reported assets. For example,

⁸IRU, or Indefeasible Rights of Use, are irrevocable right to use a specific fiber strand or specific amount of fiber capacity for a specified time period.

⁹Under GAAP, Qwest should either have not recognized any revenue on these transactions or recognized revenue ratably over the lives of the contracts.

According to SEC Litigation Release No. 18534, Suprema engaged in “round-tripping” transactions that generated approximately \$700 million in fictitious sales revenue during the period 1998–2002.

4.2.19 Fictitious Sales

The most extreme form of revenue manipulation is the creation of fictitious sales. For example, according to AAER No. 1542, Anicom Inc., a distributor of wire and cable products, falsely reported millions of dollars of non-existent sales during 1998–2000, including sales to a fictitious customer. As another example, according to AAER No. 2723, OM Group, Inc. inflated net income during 1991–1993 by duplicating entries made at the operating unit level. Finally, according to LR No. 19156, iGo overstated its 1999 and 2000 income by improperly recording revenue on consignment sales.

4.3 Red Flags and Other Analyses

4.3.1 Receivables vs Sales

A significant increase in the ratio of accounts receivables (A/R) to sales may indicate that sales are overstated. When a firm recognizes credit sales before they are earned, revenue and A/R increase by the same amount. Since the balance of A/R is typically smaller than sales, the ratio of A/R to sales increases.¹⁰

The level of the A/R-to-sales ratio may also be informative. A high ratio implies aggressive revenue recognition practices — sales are potentially recognized before they are earned. For mature firms, a stable A/R-to-sales ratio implies that current period sales are not materially overstated, even if the ratio is high. This follows because any revenue overstatement implied by a high A/R-to-sales ratio is offset by the reporting of some current revenues in the previous period, as implied by a high A/R-to-sales ratio in the previous year. However, for growing

¹⁰ For example, if without manipulation revenue would have been \$200 and A/R \$40, overstating revenue by shipping \$20 of additional merchandise to dealers and booking it as revenue would increase the ratio from 20% (= 40/200) to 27.27% (= 60/220).

firms the first effect dominates, so a high A/R-to-sales ratio implies that revenue is overstated.

As discussed in Section 5, reported A/R may include non-sales related receivables (e.g., expected refunds from the IRS), or may not include all sales-related receivables (e.g., notes receivable from trade may be included in “other assets”). Also, factoring and securitization of receivables distort the relationship between receivables and sales and so reduce the information in the A/R-to-sales ratio regarding revenue management.

4.3.2 Unearned Revenue or Order Backlog vs Sales

Unearned revenue and order backlog are reduced when the firm recognizes revenue from the related transactions. Thus, unexpected decreases in the ratios of unearned revenue-to-sales or order backlog-to-sales may indicate revenue overstatement.

4.3.3 “Bill and Hold” Sales vs Sales

As discussed above, some firms might initiate bill and hold sales to inflate revenues. Accordingly, increases in bill and hold sales, particularly when measured relative to sales, may indicate revenue overstatement.

4.3.4 Disclosures Regarding Revenue Recognition Practices and Related-Party Transactions

Given the possibility of revenue overstatement by changing revenue recognition rules or through transactions with related parties (see Section 4), it is important to carefully read the related information in the footnotes and MD&A.

4.3.5 Revenue Mix

Different types of transactions require different revenue recognition rules. Thus, it is not uncommon for firms to use more than one revenue recognition method. Since management’s discretion varies across methods, examination of the relative magnitude of revenue recognized under

each method may inform on the potential for earnings management. For example, the percentage-of-completion method involves significant assumptions and estimates, and as a result the potential for material revenue manipulation is greater when a relatively large proportion of a company's revenue is recognized using this method.

4.3.6 SFAS 157 Disclosures

Firms recognizing mark-to-market revenues do so using fair value estimates of the related financial instruments. Under SFAS 157, companies are required to provide information on these estimates which is useful for evaluating their quality. For example, the quality of so-called level 1 estimates is significantly higher than the quality of level 2 or level 3 estimates, so higher relative magnitude of level 1 unrealized gains and losses is likely to be associated with higher revenue quality.

5

Accounts Receivable

5.1 Accounting Principles

Accounts receivables (A/R) represent amounts due from customers for goods or services provided in the normal course of business operations. A/R are informal credit arrangements which are supported by invoices. Receivables accompanied by formal promissory notes are referred to as notes receivables. A/R are reported as a current asset on the balance, net of expected write-offs, returns, discounts and other credits. Unlike notes receivable, A/R are reported undiscounted.

For financial reporting purposes, firms are required to account for bad debt using the allowance method if its impact is potentially material. According to *Accounting Trends and Techniques* (2006), about 91% of the 600 surveyed firms disclosed in their 2005 annual reports that they use the allowance method. Under this method, all credit losses as of the balance sheet date — actual and expected — should be accounted for. The periodic bad debt expense should be calculated using either the income statement or the balance sheet approaches. When a company uses the income statement approach, the bad debt expense is calculated as the product of credit sales during the period

and a percentage that reflects management's estimate of the proportion of credit sales that will never be collected. This percentage is determined by considering the firm's past experience, industry experience, current economic conditions, and other relevant factors. When a company uses the balance sheet approach, it first estimates the amount of accounts receivables which, based on current economic conditions, is not likely to be collected. This amount is the appropriate balance of the allowance for uncollectible accounts — a contra asset account which reduces net A/R to the amount expected to be collected. The bad debt expense is calculated as the required increase in the allowance to bring it to its proper level. Most firms calculate the allowance by aging A/R; i.e., they classify accounts based on their age, multiply each group of receivables by a corresponding percentage (larger percentages are applied to more delinquent receivables), and aggregate the estimated expected losses across the age groups. When A/R includes large balances, firms are required to evaluate these accounts on an individual basis.

5.2 Accounting Quality

5.2.1 Time Value of Money

Accounts receivables are reported undiscounted, so the book value overstates the underlying economic asset.

5.2.2 Manipulation of the Allowance for Uncollectible Accounts and Bad Debt Expense

Because its estimation involves substantial discretion, it is relatively easy for firms to “manage” the allowance for uncollectible accounts and related expense. This accounting quality issue is particularly important for financial service entities and other firms with significant receivables, but is relevant for firms in most industries.¹ For example, according

¹ Examples of studies providing evidence on the manipulation of the allowance or provision for loan losses (the items corresponding to the allowance for doubtful accounts and bad debt expense, respectively, in the banking industry) include Beaver et al. (1989), Elliott et al. (1991), and Griffin and Wallach (1991).

to AAER No. 1921, in 2000 Akorn — a manufacturer and marketer of surgical instruments — understated the allowance for doubtful accounts and related expense. As another example, according to AAER No. 2097, in 2001 Fleming — a supplier of consumer packaged goods to retailers — released portions of previously established bad debt allowance to increase reported earnings.

5.2.3 Manipulation of Expected Returns, Credits, and Discounts

Some firms might overstate revenue and receivables by understating expected returns, discounts, rebates or other credits. For example, according to AAER No. 2016, in 2000 Lucent Technologies overstated receivables by delaying recognition of credits and discounts offered to customers. As another example, according to AAER No. 2005, Warnaco — an apparel manufacturer — overstated accounts receivables during the period 1998–2000 by not accruing sufficient reserves for customer returns and discounts.

5.2.4 Distortions Related to Securitization or Factoring of Receivables

Some firms factor (sell) or securitize their receivables, or pledge them as collateral. According to *Accounting Trends and Techniques* (2006), about 22% of the 600 surveyed firms disclosed either the sale or pledging of receivables in their 2005 annual reports. These transactions often have important implications for the quality of reported receivables and related amounts:

- When factored or securitized receivables are removed from the balance sheet, the relationship between A/R and sales becomes distorted and consequently the ability to detect earnings management is reduced. In particular, these transactions increase both receivables turnover and reported cash from operations, which are often used as indicators of earnings quality.

- To the extent that a firm is required or expected to provide recourse on uncollectible accounts, the de-recognition of factored or securitized receivables creates off-balance-sheet risk. Thus, unlike recognized A/R, the potential for loss is not reflected on the balance sheet.
- Firms typically recognize gains/losses from sale or securitization of receivables. These gains/losses are relatively easy to manipulate, since they depend on fair value estimates of items that are difficult to value, such as retained servicing rights, recourse obligations, and retained interests in securitized receivables.
- In some cases, firms report A/R combined with retained interests from securitizations or net of recourse obligations, which further distorts the A/R-to-sales ratio. For example, when a firm nets recourse obligations against A/R, the A/R-to-sales ratio declines and thus implies improved earnings quality. The inclusion of retained interests and recourse obligations in A/R reduces accounting quality also because of the discretion involved in the measurement of these items and the subordinated nature and low credit quality of retained interests.

5.2.5 Credit Losses from Items Other than Recognized Accounts Receivables

The bad debt expense and allowance may also cover non-trade receivables or off-balance sheet items such as receivables which have been factored or securitized with recourse. This may distort the information in ratios such as the allowance-to-receivables (discussed below).

5.2.6 Fictitious Accounts Receivable

An extreme case of manipulation is fictitious recognition of A/R. For example, according to AAER No. 2717, Ferro Corporation recorded fictitious entries to increase accounts receivable and reduce expenses.

5.3 Red Flags and Other Analyses

5.3.1 Receivables Turnover and Days Receivables Outstanding

The following ratios are used to evaluate credit policy, efficiency in collecting receivables, and liquidity:

$$\text{A/R turnover} = \frac{\text{credit sales}}{\text{average A/R}}$$

$$\text{Days A/R outstanding} = \frac{\text{average A/R}}{\text{credit sales}} \times 365 = \frac{365}{\text{A/R turnover}}.$$

Specifically, receivables turnover is used to evaluate the company's efficiency in collecting receivables, where high turnover implies efficient collection. Days receivables outstanding indicates the average credit period extended to customers as well as the liquidity of reported receivables. It also informs on the implicit interest cost associated with granting credit to customers and the extent to which reported receivables overstate their present value, given that receivables are reported undiscounted on the balance sheet. Increases in days receivables outstanding may suggest that the company extended unusual credit terms to increase current period revenue or engaged in other sales pull-in activities. Alternatively, it might suggest that unsatisfied customers are refusing to settle receivables due to poor product/service quality.

Receivables turnover ratios are normally calculated in the context of cross-sectional analysis (e.g., when comparing credit policies of firms from the same industry). In the context of time-series analysis, one may simply examine the ratio of the ending balance of A/R to sales. An increase in this ratio may indicate a change in credit policies, problems in collecting receivables, or as discussed in Section 4, overstatement of revenues.

Receivables on the balance sheet may include non-sales related receivables, or may not include all sales-related receivables (e.g., firms might include sales-related receivables in "notes receivable" or in "other assets"). When comparing A/R with sales, one should include in A/R all sales-related receivables and exclude other receivables (information required for such adjustments is sometimes provided in the footnotes or MD&A). Similarly, sales should not include non-operating revenues

(such as interest revenue) or gains (such as gain on sale of PP&E), nor should they be measured net of expenses (such as the bad debt expense).

As discussed above, securitization or factoring of receivables may distort the relationship between A/R and sales. When analyzing receivables, therefore, it may be informative to recalculate the A/R-to-sales ratio adding an estimate of factored or securitized receivables to A/R, and removing any retained interests or recourse obligations.

Ratios that use both income statement and balance sheet numbers may be affected by seasonality. Many firms select their fiscal year-end to be at times of low activity. Accordingly, the level of A/R at the end of the fiscal year is often substantially smaller than the average balance during the year. In such cases, estimating days A/R outstanding using the balance of A/R at the end of the year would yield an estimate that understates the correct amount. One approach to mitigate this distortion is to calculate the average balance of A/R during the year using quarterly information.

5.3.2 Evaluating Credit Quality and Bad Debt Provisioning

The following ratios are useful for analyzing the credit quality of receivables and evaluating whether a firm over- or under-estimated bad debt: bad debt expense/sales, net write-offs/sales, allowance for uncollectible accounts/gross receivables, and bad debt expense/net write-offs. Another useful ratio, which is relevant for financial institutions, is the allowance/non-performing loans.

Of the above ratios, the following inform on the credit quality of customers: net write-offs/sales, bad debt expense/sales, and allowance/gross receivables. High or increasing values for these ratios may indicate low or deteriorating credit quality. The latter two ratios also inform on earnings quality: relatively small bad debt expense or allowance may indicate insufficient bad debt provisioning, which in turn implies that earnings have been overstated. Similarly, low values of bad debt expense/net write-offs or allowance/non-performing loans may indicate insufficient bad debt provisioning, since the denominators of these ratios are relatively objective measures of credit losses.

Old receivables are more likely to be written-off. Indeed, aging of accounts receivables — the most common approach for determining bad debt provisions — is based on this observation. As discussed above, days A/R outstanding indicates the average credit period extended to customers and so informs on the average age of receivables. Thus, in the absence of earnings management, the allowance/gross receivables ratio should increase with days A/R outstanding (or decrease with receivables turnover).

As discussed above, factoring or securitizations of receivables may distort the reported amount of A/R or affect their credit quality. Therefore, when analyzing A/R, it is important to carefully read those sections of the notes and MD&A that discuss securitizations.

6

Inventory

6.1 Accounting Principles

For merchandising firms, inventories include all the goods that are owned by the firm and are held for sale in the ordinary course of business. For manufacturing firms, inventories include raw materials, incomplete products (work in progress inventory), and complete products (finished goods inventory). Inventories are classified under current assets and appear on the balance sheet at the Lower of Cost or Market value (LCM). Inventory write-down due to the application of LCM cannot be subsequently reversed.

The calculation of market value of inventory for the purpose of LCM is based on three inputs: (1) the current cost to purchase or produce the inventory (i.e., replacement cost), (2) the current selling price minus selling and completion costs (referred to as net realizable value), and (3) the gross profit normally expected to be earned from selling the inventory. Specifically, the market value of inventory is defined as replacement cost, unless: (1) replacement cost is above the net realizable value, in which case market value is measured as net realizable value; or (2) replacement cost is less than the difference between net realizable value and normal profit, in which case market value is measured as that difference.

The cost of inventory includes all expenditures incurred to purchase or produce the inventory and get it ready for sale. For merchandising firms, this includes the purchase price (net of any discounts or allowances), purchase fees and taxes, insurance while in transit, transportation, etc. For manufacturing firms, the cost includes variable production costs (e.g., raw material, direct labor) and allocated fixed production costs (indirect labor, depreciation, rent, property taxes, utilities, etc.).

To determine the cost of inventory, firms are required to:

- Identify and measure all costs incurred to purchase or produce inventory items and get them ready for sale.
- Measure the flow of costs between the inventory accounts and, eventually, to the income statement. This involves the following choices: cost allocation (i.e., how to allocate production cost — particularly overhead — to units produced), inventory system (i.e., the method of measuring and recording inventory transactions — perpetual vs periodic), cost flow assumption (i.e., the approach for assigning costs to units — FIFO, LIFO, weighted average, or specific identification), and inventory count (e.g., physical count vs estimates, timing of count, estimation approaches). In some cases, firms have the additional choice of using cost estimates (standard cost or retail method) instead of actual cost.

There are two alternative inventory accounting systems. The perpetual inventory system keeps a running, continuous record that tracks inventories and cost of goods sold (COGS) on a day-to-day basis. The periodic inventory system computes COGS periodically on the basis of physical counts. The perpetual system offers two important managerial advantages: it lowers the probability of being out of stock by providing up-to-date information on inventory on hand, and it aids in controlling inventory losses (e.g., due to breakage, theft, waste, obsolescence, etc.) by providing information that facilitates the measurement of such losses. As discussed below, the periodic system increases the benefits that LIFO accounting offers. For these reasons, LIFO firms

typically use the periodic system for financial reporting purposes and the perpetual system for managerial purposes.

Inventory units are either sold during the year or remain in inventory at the end of the year. The cost of units sold during the year is reported as an expense in the income statement (COGS), while the cost of units held in inventory is reported as an asset on the balance sheet. Since the cost per unit is not the same for all units of inventory, the assumption that firms make with respect to the flow of units from inventory to COGS affects net income, total assets and equity. There are four possible cost flow assumptions:

FIFO (first-in, first-out) method — This method assumes that the first units purchased are the first ones to be sold. So COGS is based on old costs and ending inventory is based on recent costs.

LIFO (last-in, first-out) method — This method assumes that the last units purchased are the first ones to be sold. So COGS is based on recent costs and ending inventory is based on old costs.

Weighted-average cost method — Weighted-average unit cost is calculated by dividing the total cost of goods available for sale by the number of units available for sale. The COGS and the balance of inventory are measured by multiplying the weighted-average unit cost by the corresponding number of units.

Specific identification method — Units in COGS and ending inventory are matched to specific purchases and assigned the corresponding prices.

Thus, there are eight possible combinations of inventory systems and cost flow assumptions, which result in six different cost allocations between inventory and COGS (and hence different values of income, equity, and assets). In particular, given the inventory system the four cost flow assumptions result in different cost allocations between goods sold and ending inventory. In addition, when the LIFO or weighted-average assumptions are used, the cost allocation is also affected by the choice of inventory system (when FIFO or specific identification are used, the choice of inventory system does not affect the cost allocation).

The most important determinant of US firms' choice of cost flow assumption is the effect on income taxes. While firms might generally use different methods for tax and financial reporting purposes, an important exception in the United States is that when the LIFO cost flow assumption is used for tax purposes, it must also be used for financial reporting. In a rising costs environment, the LIFO assumption results in lower income and hence deferred tax payments. Thus, firms operating in industries where prices are increasing over-time may benefit from using the LIFO assumption. In addition, LIFO usually results in a better matching of costs and prices in the income statement, as both sales and COGS are based on recent prices (under FIFO, in contrast, the gross margin reflects inventory holding gains/losses in addition to current margins). Another appealing feature of LIFO, although one which managers are not likely to acknowledge, is that it provides opportunities to manage earnings by timing inventory transactions. Since LIFO and COGS include the latest units purchased, in a rising costs environment managers can reduce income by purchasing abnormal quantities of inventories close to the end of the year, or they can increase income by postponing normal purchases (and so liquidate old LIFO layers — see below).

An important disadvantage of LIFO is the resulting understatement of assets and equity, which increases reported leverage and generally reduces the quality of balance sheet information. For growing firms, LIFO also results in lower reported income. From the investor's perspective, LIFO may result in low earnings quality when (1) the company manipulates income by changing the timing of inventory transactions or (2) old inventory layers are "dipped into."

As mentioned above, LIFO firms prefer the periodic system. This is due to two considerations. First, the periodic system reduces the likelihood of dipping into old LIFO layers by ignoring volatility in the quantity of inventory during the year. Second, the periodic system gives greater latitude for LIFO firms to manage reported income by timing inventory transactions. For example, when inventory costs are increasing over-time, LIFO firms can reduce reported income by purchasing inventory close to the end of the year, since these last-in units will be included in COGS (first out). This form of earnings management is

more difficult to achieve under the perpetual system since this system recognizes that units have to be purchased before they are sold.

The most commonly used cost flow assumption in the United States is FIFO, followed by LIFO and average cost. The specific identification assumption is used only in cases where the number of units is small and the products are heterogeneous such as with antiques or used cars. It is quite common for firms to use more than one method in determining the total cost of inventory. In particular, many firms use FIFO for foreign inventories and LIFO for domestic inventories. According to *Accounting Trends and Techniques* (2006), about 64% of the 600 surveyed firms used the FIFO method to determine the cost of inventory in their 2005 annual reports, 38% used LIFO, 28% used average cost, and only a few firms used specific identification.

LIFO use varies substantially across industries. While this method is common in industries such as chemicals, metals, metal products, forest and paper products, furniture, and petroleum refining, it is rarely used in computer-related industries.

Public firms that use the LIFO assumption are required to provide information in the notes to the financial statements that allows users to convert the financial statements from LIFO basis to FIFO basis.¹ The primary component of this disclosure is the so-called LIFO reserve — the difference between the FIFO (or current) cost of inventory and the book value of inventory, where the book value of inventory is at least partially based on the LIFO assumption. That is, the LIFO reserve measures the difference between inventory that would have been reported had the firm used the FIFO assumption to value all inventories, and inventory as reported by the company. As discussed above, the balance sheet effects of LIFO are related to the level of the LIFO reserve, while the income statement effects are proportional to the change in the LIFO reserve during the period. Increases in the LIFO reserve are due primarily to rising costs, while decreases in the LIFO reserve are typically due to falling costs or depletion (liquidation) of LIFO layers.

¹Specifically, the SEC requires that the excess of current replacement cost over LIFO cost and the income effect of depleting LIFO layers (relative to replacement cost) be disclosed in 10-K filings. Many firms use the FIFO cost of inventory as a proxy for its current replacement cost.

6.2 Accounting Quality

6.2.1 Inventory Write-Downs

As discussed above, inventory is reported at the LCM, where the determination of market value involves three estimates: replacement cost, net realizable value, and normal profit. Each of these estimates, and therefore the valuation of inventory, involves substantial judgment which may be exploited by management to manipulate the financial statements. Two forms of manipulation may occur:

- First, firms experiencing economic losses due to a decline in the market value of inventory may overstate earnings by not recognizing sufficient write-downs. For example, according to AAER No. 1518, IGI Inc., a producer and marketer of animal health products, failed to write-off defective inventory during the period 1995–1996. As another example, according to AAER No. 2674, Saks Inc. deferred permanent mark-downs of inventories from period to period, resulting in an overstatement of inventory and net income.
- A second form of manipulation results when firms overstate inventory write-downs to reduce COGS in subsequent periods, when the written-down units are actually sold.

Inventory write-downs are quite common. For example, according to *Accounting Trends and Techniques* (2006), more than 9% of the 600 surveyed firms disclosed in their 2005 annual reports that they used a valuation account to adjust the cost of inventory for obsolescence.

6.2.2 Excess Capitalization

Many firms, especially manufacturing firms, have substantial discretion in deciding which costs to include in inventory (i.e., capitalize). These decisions impact both the balance sheet and income statement: excess capitalization implies larger inventory, smaller operating expenses and higher income. However, the income effect reverses in future periods when the inflated cost units are sold.

6.2.3 Manipulating Production

Because fixed costs are spread over the units produced, fixed cost per unit declines with the level of production. Some firms take advantage of this accounting treatment to manage reported earnings by changing production levels. For example, when firms over-produce, the same fixed costs are spread over a larger number of units and so reported COGS is reduced thereby overstating earnings.

6.2.4 LIFO Liquidation and Timing of Inventory Transactions

LIFO liquidation — i.e., the expensing of low-cost old LIFO layers which inflates reported income — may occur in the ordinary course of business. More concerning is the deliberate timing of transactions to exploit LIFO distortions. LIFO firms might postpone purchases to liquidate old LIFO layers and increase reported income, or increase year-end purchases to reduce reported income (assuming inflation). For example, according to AAER No. 2666, Nicor Inc. increased net income during 1999–2002 by accessing low-cost LIFO layers of gas inventory.

6.2.5 Misrepresentation of Inventory Owned

Firms might include in inventory items that do not belong to the company (e.g., inventory in consignment, inventory sold under “bill and hold” sales), or misrepresent the quantities or types of items owned by the firm. For example, according to LR 18534, between 1998 and 2002 Suprema re-labeled imitation cheese and non-cheese products as premium cheese to fraudulently inflate reported inventory.

6.2.6 Managing Estimates in Interim Reports

Accounting procedures for preparing quarterly reports are not identical to those used for preparing annual statements. Fiscal years are viewed as discrete periods, while quarters are viewed as an integral part of the fiscal year (Accounting Principles Board (APB) Opinion No. 28). Accordingly, some items in the quarterly reports are adjusted to reflect the effect of actual and expected transactions in other (past or

future) quarters of the same fiscal year. This has two implications on inventory. First, Write-downs due to the implementation of the “lower of cost or market” rule are recognized only if they are not expected to be recovered in subsequent quarters of the same fiscal year. And second, the effect of liquidating old LIFO layers is recognized in quarterly income only if it is not expected to reverse in subsequent quarters of the same fiscal year.

That is, in quarterly reports, firms might manipulate the valuation of inventory and consequently income by arguing that permanent LIFO liquidations or permanent market value declines are temporary or *vice versa*.

Another important difference between quarterly and annual data, which is especially relevant for inventories, is that quarterly data is often based on estimates rather than actual amounts. For example, when preparing quarterly reports, merchandising firms are permitted to estimate COGS and ending inventory based on the level of sales during the quarter and the “normal” level of gross profit. In contrast, when preparing the financial statements for the year, firms must use the actual level of inventory, as measured using a physical count. Thus, in quarterly reports, firms might manipulate the valuation of inventory and consequently income by manipulating estimates of the quantity or cost of inventory.

6.3 Red Flags and Other Analyses

6.3.1 Inventory Turnover and Days Inventory Held

The following two ratios are often calculated for the purpose of evaluating the efficiency of inventory management, or the liquidity of reported inventories. In addition to informing on demand stocks, these ratios may also indicate some form of earnings management.

$$\text{Inventory turnover} = \frac{\text{cost of goods sold}}{\text{average inventory}}$$

$$\text{Days inventory held} = \frac{\text{average inventory}}{\text{COGS}} \times 365 = \frac{365}{\text{inventory turnover}}$$

Inventory turnover measures the number of times a company sells (“turns”) its inventory annually. Days inventory held is an estimate of

the average number of days from the beginning of the operating cycle (i.e., the purchase of raw materials) to the sale of finished goods. High inventory turnover (or low days inventory held) implies high efficiency in production and sale. For example, firms that implement “just in time inventory” are attempting to improve inventory turnover. High inventory turnover also implies that reported inventory is relatively liquid — it turns into receivables or cash in a relatively short period.

Inventory turnover ratios are sometimes calculated with sales instead of COGS in the numerator. The advantage of this approach is that it offers a more direct interpretation, as it compares sales to the investment in inventories that generated them. The disadvantage is that the resulting ratio mixes profitability with efficiency. For example, when inventory turnover is measured relative to sales, a firm might have an improvement in inventory turnover even when it experiences declining efficiency (higher investment in inventory) due to relatively higher margins.

When used to evaluate liquidity, earnings management, or demand shocks, it is more informative to calculate inventory turnover using the ending balance of inventory instead of the average balance during the year. The reason is that in such analyses the focus is on the ending balance of inventory, not the beginning or average balance.

Low inventory turnover, and in particular, a decrease in inventory turnover, may indicate that earnings have been overstated. This could be due to excess capitalization or failure to recognize write-downs, both of which resulting in overstatement of inventory and reduction in inventory turnover. Furthermore, low inventory turnover — especially of finished goods — implies that inventories potentially include relatively old products which are more likely to be written-down in future periods.

For manufacturing firms, a decrease in inventory turnover — especially of work in progress and finished goods — may suggest that earnings are overstated due to over-production. When firms increase the quantity of units produced, the same amount of fixed production costs is spread over a larger number of units, and consequently average cost per unit and COGS (= average cost per unit \times # units sold) decrease and income increases. Over-production reduces inventory turnover both

because of the decline in COGS and the increase in the quantity (and hence book value) of inventory.

Changes in the relation between inventory and sales may also indicate actual or expected demand shocks. For example, an increase in the ratio of finished goods inventory to COGS may result from the company having trouble selling its goods. In contrast, an increase in the ratio of raw material inventory to COGS is often considered as indication of anticipated demand for the company's products (the company is accumulating raw materials to satisfy anticipated demand).

Other factors that affect inventory turnover include LIFO liquidation, inflation, seasonality (for quarterly analysis), and changes in the mix of products and service revenues.

Using arguments similar to those provided above, Lev and Thiagarajan (1993) include the abnormal change in inventory as one of the "signals" or fundamentals in their analysis. Thomas and Zhang (2002) find that inventory changes are a particularly important accrual for predicting future earnings changes. They speculate that this is due to earnings management activities such as excess-capitalization of costs into inventory, over-production to reduce reported COGS, and management of inventory write-downs.

6.3.2 Payables Days

Payables days — the ratio of accounts payable to average purchases per day — reveals how quickly the firm is paying for the inventory it purchases. High payables days may indicate good cash management ("free" financing) or imply that the company has market power in its input markets. However, taking advantage of cash discounts may be optimal if the company's cost of capital is relatively low. Also, delaying payments to suppliers may affect future costs. Suppliers are likely to know more about their customer's business than others. Thus, a reduction in payables days, or low payables days relative to industry benchmarks, may be interpreted as a negative signal. Two common measurement issues with these ratios are: (1) for manufacturing firms it is difficult for outsiders to estimate the amount of purchases and (2) accounts payable may include payables unrelated to purchases.

6.3.3 “Undoing” LIFO Effects

To undo the LIFO effects, one has to (1) add the product of the LIFO reserve and one minus the marginal tax rate to both current assets and retained earnings, (2) add the change in the LIFO reserve to COGS, and (3) add the product of the change in the LIFO reserve and the marginal tax rate to the income tax expense. The resulting pro-forma FIFO financial statements are informative because:

- LIFO liquidation and timing of inventory transactions reduce the quality of financial information.
- Pro-forma FIFO financial statements facilitate more informative comparisons of LIFO and FIFO firms. For example, LIFO firms have lower current ratios compared to FIFO firms, but this difference does not indicate lower liquidity. Adjusting from LIFO to FIFO makes current ratio comparisons across LIFO and FIFO firms more informative.

7

Property, Plant and Equipment

7.1 Accounting Principles

Property, plant and equipment (PP&E) are long-lived assets that provide the firm with operating capacity and have physical substance, such as land for plant site, buildings, equipment, and furniture. PP&E are reported on the balance sheet at cost less accumulated depreciation, possibly adjusted downward for impairment. We first discuss the measurement of cost, then depreciation, expenditures after acquisition, and finally impairment.

7.1.1 Measurement of Cost

The cost of each fixed asset includes all expenditures directly attributable to bringing the asset to the location and working condition of its intended use (e.g., acquisition cost, site preparation, delivery and handling, installation, assembly, testing, and professional fees).

For assets that require relatively long construction periods, for example buildings and plants, cost may also include interest on borrowings during the construction period that could have been avoided had construction not occurred. Interest is capitalized when the following

three criteria are met (SFAS 34): construction has begun, expenditures on construction are being made, and interest costs are being incurred. The amount of interest capitalized depends on the amount and timing of expenditures, and the amount and cost of borrowings. The rationale of this standard is that the benefits from the borrowing will be realized in future years, once construction is complete and the asset is used in operations. Therefore, consistent with the matching principle, the borrowing cost is added to the asset's cost during construction, and is expensed through depreciation when the asset is used in operations.

For an asset that require significant dismantlement, restoration or other disposal costs at the end of their useful life, cost includes the present value of expected cash outflows at retirement. A corresponding asset retirement liability is recognized to balance this cost (SFAS 143).

When an asset is purchased by issuing debt or equity instruments, such as notes payable or common shares, the asset and the financial instruments are recorded either at the asset's estimated fair value or at the financial instruments' estimated fair value, whichever is more readily determinable. Usually, it is the fair value of the financial instruments that is more readily determinable. No gain or loss is recognized.

When an asset is purchased in exchange for another asset, the accounting treatment depends on whether the exchange has commercial substance or not. An exchange is deemed to have commercial substance if it is expected to significantly change the future cash flows of the entity. If the exchange has commercial substance, the new asset is recorded at its fair value and the difference between the fair value of the new asset and the net book value of the old asset is recognized as a gain or loss. If the exchange has no commercial substance, the new asset is recorded at the book value of the old asset and no gain or loss is recognized.

When an asset is purchased in a combined transaction that involves additional assets and (possibly) liabilities, cost determination involves the following steps:

- (a) The fair values of all acquired assets and liabilities are estimated.

- (b) The fair value of the liabilities is added to the purchase price, and
- (c) The amount calculated in (b) is allocated to the assets acquired based on their relative fair values (some exceptions apply).

Assets acquired in business combinations are generally recorded at their estimated fair value. Depending on the asset, its intended use, the availability of market prices, and the cash flows expected to be generated by the asset, fair value is determined using one of the following methods: market price, replacement cost, net realizable value, net realizable value minus normal profit, present value of expected cash flows, or appraisal. For PP&E, fair value is generally estimated using replacement cost, adjusted for differences between the acquired asset and similar assets for which cost information is available. However, if replacement cost is greater than the present value of cash flows expected to be generated by the asset, the asset should be recorded at that present value. Also, if the asset is expected to be sold, it should be recorded at its net realizable value.

7.1.2 Depreciation

The accounting procedure of allocating the cost of PP&E to the periods that benefit from them is called depreciation. It is important to realize that depreciation is an allocation process, not a valuation process. Accordingly, the net book value of PP&E is not a measure of market or fair value.

The mechanics of depreciation are as follows:

- Assets are depreciated over their expected economic or useful life, which is often shorter than the physical life (e.g., computers). Land is not subject to depreciation because it has indefinite useful life. Idle assets are depreciated, but assets held for sale are not.¹

¹ Assets held for sale are reported at the lower of the carrying amount or estimated fair value less selling costs.

- The depreciation period begins when the firm starts to use the asset in operations; assets under construction are not depreciated.
- The amount to be depreciated — called depreciable cost — is equal to the cost estimated to expire during the economic life, i.e., the difference between the asset’s cost and the estimated residual value. (Residual value is equal to the estimated proceeds from selling the asset at the end of its economic life.)
- Separately depreciating major components of an asset is allowed but not required under US GAAP.
- Estimates of useful life and residual value, and the method of depreciation, are reviewed when events or changes in circumstances indicate that the current estimates or depreciation method no longer are appropriate. Any changes are accounted for prospectively.
- Firms might select one (or more) of several alternative methods of depreciation. We discuss these methods below.

The most commonly used depreciation method for financial reporting purposes is straight-line (SL). This method allocates the same amount of depreciation to each period of use. Another application of SL, which is much less common, is the unit-of-production/use method. Under this method, the same amount of depreciation is associated with each unit of output or input (instead of time), and periodic depreciation is calculated as the product of the number of units produced or used during the period and the depreciation per unit.

The alternative to SL depreciation is accelerated depreciation — i.e., methods that recognize larger amounts of depreciation in the early years of the asset useful life compared to the latter years. The more common accelerated depreciation methods are the double-declining-balance (DDB) and the sum-of-the-year’s-digits. And under DDB:

$$\text{Annual depreciation} = \text{beginning net book value} \times \frac{2}{\text{useful life}}.^2$$

²Because the calculation of annual depreciation under DDB ignores the residual value and would never fully depreciate the asset, this approach incorporates a “switching rule”:

And under the sum-of-the-year's-digit:

$$\text{Annual depreciation} = \frac{\text{remaining life at the beginning of the year}}{1 + 2 + 3 + \cdots + \text{useful life}} \\ \times \text{depreciable cost.}$$

According to *Accounting Trends and Techniques* (2006), almost 90% of the 600 surveyed firms used the SL method of depreciation in their 2005 annual reports, 4% used the unit-of-production method, and 8% used accelerated depreciation methods.³

7.1.3 Expenditures After Acquisition

Expenditures that extend the asset's useful life, or increase the quantity or quality of the asset services beyond original expectations, should be capitalized (i.e., added to the asset's cost) and depreciated over the remaining asset life. *Additions*, *replacements* and *improvements* are examples of such expenditures. *Repairs* and *maintenance* should be expensed as incurred because they merely enable the asset to provide the benefits originally expected of it.

7.1.4 Impairment

SFAS 144 requires that fixed assets be reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset (i.e., its net book value) may not be recoverable. In performing the review for recoverability, the firm should estimate the future net cash flows expected to result from the use of the asset and its eventual disposition. If the undiscounted sum of the expected future cash flows is less than the carrying amount of the asset, an impairment loss should be recognized. Otherwise, an impairment loss should not be

switch to SL if either (1) using SL from the current year on would result in higher depreciation or (2) continuing to use DDB would result in NBV lower than the residual value.
³For tax purposes, companies usually use the Modified Accelerated Cost Recovery System (MACRS). This is essentially the DDB method, except that (1) it assumes zero residual value, (2) it specifies the depreciation period for each asset class, (3) it assumes the asset is purchased and sold at the middle of the fiscal year, and (4) it uses 150% or 100% instead of 200% for assets with a long depreciation period.

recognized. If an impairment loss should be recognized, it is measured as the difference between the asset's fair and book values. Impairment losses are typically classified as unusual items in the income statement, although firms occasionally include impairment charges in COGS or SG&A.

Impairment tests can be highly subjective. According to SFAS 144, firms need to determine the following discretionary elements when performing impairment tests:

Timing of test — “Whenever events or changes in circumstances indicate that [the asset’s] carrying amount may not be recoverable.”

Level of grouping — “Long-lived asset or assets shall be grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities.” When assets are grouped together, losses on impaired assets are offset by gains on other assets, reducing the likelihood and amounts of impairment.

Expected cash flows — The amount and timing of all cash flows associated with the asset or asset group, including disposition cash flows.

Discount rate — The rate should reflect both the time value of money and the riskiness of the cash flows.

7.2 Accounting Quality

7.2.1 Managing Cost Estimates

Measuring the cost of fixed assets involves significant discretion, which may be exploited by management to manipulate financial reporting. For example, in a combined acquisition of different assets, or in business combinations, firms might increase near-future reported income by understating the value of depreciable PP&E (e.g., machinery) and overstating the value of non-depreciable or slow-depreciating assets (e.g., land, goodwill, and buildings). Other examples include manipulating estimates of assets acquired in non-cash transactions or asset retirement obligations.

7.2.2 Excess Capitalization

Firms might increase current income by designating period costs as directly related to the acquisition of an asset or its preparation for use. For example, management may classify general training expenditures as part of the cost of a new machine. Excess capitalization may also occur after the initial acquisition. Firms have substantial discretion in classifying expenditures as improvements, additions or replacements — which improve the asset or extend its life and are therefore considered capital expenditures — vs repairs, maintenance or other operating expenditures — which enable the asset to perform according to original expectations and are therefore considered period costs.

This discretion is important because, unlike period costs, capital expenditures (capex) are capitalized. Moreover, capex are classified in the cash flow statement as investing rather than operating cash flow. Thus, by classifying operating expenses as capex, firms obtain two reporting benefits: they increase reported income in the near term, and they permanently increase reported operating cash flow and EBITDA.

A number of firms have abused this discretion. Examples include Del Global Technologies, which improperly characterized certain ordinary expenses as capex during the period 1997–1999 (AAER No. 2027), and WorldCom, which capitalized certain operating expenses commonly referred to as “line costs” (AAER No. 1966). In some cases, the abuse is related to the amount capitalized rather than the decision to capitalize. For example, firms in certain industries such as cable communication can capitalize (and subsequently amortize) the cost of deploying technicians to install service. According to AAER No. 1599, Adelphia Communications Corp. aggressively capitalized such labor expenses in 2000 and 2001.

7.2.3 Interest Capitalization

Interest capitalization mixes investing and financing activities — as a result, firms constructing identical assets will report these assets at different amounts depending on how the assets are financed. Because the

separation of financing activities from operating and investing activities is at the core of most valuation models, some analysts attempt to “undo” capitalized interest from the book value of PP&E.

7.2.4 Postponing the Classification of Assets as Depreciable

Firms might reduce current depreciation expense by delaying the classification of “construction in progress” as completed — and therefore depreciable — asset. For example, according to AAER No. 1551, Serologicals engaged in this form of earnings management in 1999.

7.2.5 Manipulating Depreciation Methods and Estimates

Depreciation should be allocated over-time consistent with the pattern in which the entity consumes the asset’s benefits. Firms might exploit the discretion offered under GAAP in selecting depreciation methods and estimates to postpone expense recognition. For example, they might use SL depreciation even when the quality or quantity of the asset’s services decline over-time or when maintenance costs increase substantially over-time (in such cases, accelerated depreciation methods would result in better matching). Firms might also overstate the useful life or residual value of assets subject to depreciation. Another reporting benefit of understated depreciation is the impact on “core” or “recurring” income. Insufficient depreciation often results in impairment or disposal losses, which are often deemed by analysts as “one-time” or “unusual.” That is, by understating depreciation firms are able to permanently increase perceived recurring income.

7.2.6 Failing to Recognize Impairment Charges

As discussed above, firms have substantial discretion in implementing impairment tests, which they may exploit to manipulate earnings. For example, according to AAER No. 1894, in 2000–2001 Enron failed to recognize an impairment loss of \$1.4 billion on pipeline assets. As another example, according to AAER No. 2730, Tidewater Inc. failed

to perform proper impairment analysis on its vessels. While the failure to recognize impairment charges, or the understatement of impairment charges are the more likely abuses, in some cases firms might overstate impairment charges to reduce future depreciation (e.g., following the appointment of a new CEO).

7.2.7 Measuring EBITDA for Manufacturing Firms

Most manufacturing firms include current year depreciation not only in SG&A expenses but also in COGS and in the ending balance of work in progress and finished goods inventories. To calculate EBITDA, analysts typically use the depreciation add-back from the cash flow statement. This amount, however, is generally different from the total amount of depreciation expensed — it includes depreciation which has been capitalized into the ending balance of inventory and excludes prior year depreciation which was included in the beginning balance of inventory and expensed in the current year. Consequently, for many manufacturing firms EBITDA estimates contain, possibly significant, errors. The direction of the error is predictable: EBITDA is generally overstated for growing firms (more depreciation is included in ending inventory compared to beginning inventory) and understated for firms with declining inventories.

7.2.8 Limited Disclosures

Financial statements typically provide only coarse information regarding long-term assets. They aggregate assets in a small number of categories (often a single one) and pool together all depreciation and amortization costs.

7.2.9 Measures of Capex

Analysts often measure capex using the amount reported in cash flow statement. This item excludes PP&E acquired in business combinations or in non-cash transactions (including leases, exchange of assets, and non-cash payments).

7.3 Red Flags and Other Analyses

7.3.1 PP&E Turnover

PP&E turnover — the ratio of sales to net PP&E — is typically used to evaluate the efficiency of investments in PP&E, where high or increasing turnover implies efficiency or improvement in efficiency, respectively. This ratio is also useful for evaluating accounting quality — a negative trend in turnover may suggest over-capitalization or understated depreciation and therefore predict impairment charges or disposal losses.

7.3.2 Capex Intensity

Capex intensity — the ratio of capex to sales — is relevant for predicting earnings growth and assessing earnings quality. While high capex intensity generally predicts growth, in some cases it may reflect over-investment or over-capitalization.

7.3.3 Asset Replacement Ratio

Similar to capex intensity, the asset replacement ratio — i.e., the ratio of capex to depreciation — informs on over-/underinvestment and over-/undercapitalization. Unlike capex intensity, the asset replacement ratio is also useful for evaluating the depreciation charge. In particular, high asset replacement ratio may suggest that earnings are overstated because of excess capitalization of operating expenditures or insufficient depreciation.

7.3.4 Free Cash Flow

Free cash flow is a commonly used measure of performance. It is calculated by subtracting net capex from operating cash flow.⁴ Unlike earnings and operating cash flow, free cash flow is unaffected by over-capitalization. Thus, a trend of increasing gap between free cash flow

⁴In practice, analysts apply adjustments to cash from operations and net capex. For example, some analysts include cash paid to acquire businesses as part of capex, and exclude interest payments and receipts from reported cash from operations.

and earnings may suggest that the firm over-capitalizes operating expenditures.

7.3.5 Impairments and Disposal Losses

Large and frequent impairment charges and/or disposal losses suggest that the firm over-capitalizes operating expenditures or overstates the assets' useful lives or residual values.

7.3.6 Useful Life

The ratio of gross depreciable PP&E to annual depreciation is useful for evaluating accounting quality. Specifically, if this ratio is large compared to industry peers, or if it increases over-time, it may indicate that the firm understates depreciation by overstating the assets useful lives or their residual values.

7.3.7 Average Age

The average age of depreciable PP&E, which can be estimated using the ratio of accumulated depreciation to annual depreciation, informs on the potential understatement of PP&E due to inflation.

8

Intangible Assets

8.1 Accounting Principles

Intangible assets are long-lived non-financial assets that lack physical substance, such as goodwill, brand names, patents, trademarks, franchises, customer lists, customer relationships, computer software, copyrights, no-compete covenants, permits, licenses, contracts, and agreements. Similar to PP&E, intangible assets provide operating capacity. The 600 surveyed firms in *Accounting Trends and Techniques* (2006) reported the following intangible assets in their 2005 annual reports: goodwill (87%), trademarks, brand names, and copyrights (45%), customer lists or relationships (41%), and patents (25%).

Accounting theory stipulates that costs incurred to acquire an asset should be capitalized. However, due to the following standards, most expenditures made to develop intangibles are reported as an expense in the income statement and as an operating cash flow in the cash flow statement:

SFAS No. 142: “Costs of internally developing, maintaining, or restoring intangible assets (including goodwill) that are not specifically identifiable, that have indeterminate lives, or that are inherent in a

continuing business and related to an entity as a whole, shall be recognized as an expense when incurred.”¹

SFAS No. 2: Research and development costs should be charged to expense when incurred.

Consequently, few internally-developed intangibles are reported as an asset on the balance sheet, the primary ones being direct-response advertising, software developed for internal use, and software developed for sale to third parties.²

Unlike internally-developed intangibles, acquired intangibles are generally reported as an asset on the balance sheet. Intangibles are rarely acquired on a stand-alone basis, but often constitute a significant portion of the assets acquired in business combinations. Such intangibles are initially recorded at their estimated fair value if they are either grounded in contracts or other legal rights or are separable from the business.³ Examples include marketing-related intangible assets (e.g., trademarks, trade names, internet domain names, and non-competition agreements), customer-related intangible assets (e.g., customer lists, order or production backlog, customer contracts and customer relationships), artistic-related intangible assets (e.g., plays, books, song lyrics, advertising jingles, pictures, photographs, motion pictures, music videos, and television programs), contract-based intangible assets (e.g., rights related to licensing, royalty, advertising, construction, management, servicing, lease, franchise, broadcasting, drilling or employment), and technology-based intangible assets (e.g., patented and unpatented technology, computer software, databases, formulas, processes, and recipes).

¹ This standard was originally prescribed by APB Opinion No. 17, and was restated in SFAS No. 142, *Goodwill and Other Intangible Assets*.

² SFAS No. 86 specifies that costs incurred internally in creating a computer software product should be charged to expense when incurred as research and development until technological feasibility has been established for the product. Thereafter, all software production costs should be capitalized and subsequently reported at the lower of unamortized cost or net realizable value.

³ One exception is in-process R&D. According to FASB Interpretation No. 4, in business combinations, the amounts assigned to tangible and intangible assets to be used in a particular research and development project that have no alternative future use should be charged to expense at the acquisition date. However, SFAS 141R, effective starting in 2009, requires that in-process R&D be reported as an indefinite-lived intangible.

Other acquired intangibles (i.e., those that are neither grounded in contracts nor separable from the business) are included in recognized goodwill, which is measured as the difference between the business acquisition price and the estimated fair value of acquired net identifiable assets. The following are examples of intangible assets that do not meet the criteria for separate recognition and therefore constitute part of reported goodwill: customer base, customer service capability, presence in geographic markets or locations, non-union status or strong labor relations, ongoing training or recruiting programs, outstanding credit ratings, access to capital markets, and favorable government relations.

After the initial recognition, the accounting for recognized intangible assets is based on their useful lives to the reporting entity. Intangible assets with finite lives are amortized over their estimated useful lives. Goodwill and other intangible assets deemed to have indefinite lives are not amortized but instead are tested for impairment annually or more frequently if events or changes in circumstances indicate that the asset might be impaired. An indefinite-life intangible asset (other than goodwill) is considered impaired if its carrying amount exceeds fair value, in which case an impairment loss is recognized in an amount equal to that excess and the intangible asset is written down to its fair value. For goodwill, the impairment test has two steps. First, the fair value of each reporting unit is estimated and compared to the book value of the reporting unit's net assets. If the reporting unit's fair value is smaller than its book value, then the implied fair value of goodwill — i.e., the excess of the unit's fair value over the fair value of the reporting unit's net assets (excluding goodwill) — is calculated. Impairment loss is recognized if the implied fair value of goodwill is smaller than its book value.

Finite-life intangible assets are subject to a weaker form of impairment test. Specifically, these assets are reviewed for impairment whenever events or changes in circumstances indicate that the assets might be impaired. That is, unlike indefinite-life intangible assets, finite-life intangible assets are not necessarily tested for impairment every year. Further, for finite-life intangible assets, an impairment loss is recognized only if the *undiscounted* sum of future cash flows is smaller than

the asset's book value. Similar to indefinite-life intangible assets, however, finite-life assets are written down to their estimated fair value when deemed impaired.

8.2 Accounting Quality

8.2.1 Understatement of Assets and Equity

Due to the immediate expensing of internally generated intangibles, reported assets and equity are understated.

8.2.2 Distorted Earnings

The immediate expensing of internally generated intangibles distorts earnings. The direction and size of the earnings distortion depend primarily on the stage in the firm's life cycle. For growing firms, the understatement of income due to the expensing of current expenditures is only partially offset by the omission of periodic amortization of unrecognized intangibles. In contrast, for firms with a declining trend of expenditures, current year expenditures are smaller than the omitted amortization of unrecognized intangibles, resulting in income overstatement.

8.2.3 Managing Cost Estimates

In business acquisitions, firms have substantial discretion in identifying individual intangibles, measuring their fair values, and classifying them as having either finite life or indefinite life. Firms might use this discretion to manipulate the financial statements. For example, a company may classify an acquired finite-life trademark as having indefinite life, thereby avoiding the periodic amortization expense which reduces reported income. In general, firms might increase near-future reported income by understating the value of finite-life intangibles or overstating the value of in-process R&D, indefinite-life intangibles or slow-amortizing intangibles.⁴

⁴In general, errors in the valuation of individual intangibles are "absorbed" in goodwill. For example, an overstatement of the value of acquired brands implies an understatement of goodwill (assuming the purchase price was not affected by this error).

8.2.4 Poor Matching of Amortization Expense

Recognized finite-life intangibles are generally amortized using the SL method. In most cases, the pattern of benefits generated by the intangibles is anything but flat. Poor matching in the income statement increases the volatility of reported income and decreases its predictive-ability.

8.2.5 Manipulating Amortization

Firms have significant discretion in estimating the useful life of finite-life intangibles, which they may exploit to manipulate the financial statements. For example, a company may overstate the useful life of marketing-related intangibles to reduce the periodic amortization expense and increase reported income in the near-future.

8.2.6 Failing to Recognize Impairment Charges

Impairment tests are highly subjective. Firms have to determine (1) which events or circumstances should trigger impairment test; (2) the level of asset aggregation for the test (high levels reduce the likelihood and amount of impairment because profitable assets offset impaired ones); (3) the expected cash flows; (4) the timing of the cash flows; and (5) the discount rate to apply to the cash flow. Each of these decisions involves substantial discretion, which may be exploited by management to manipulate the recognition of impairment losses.

8.2.7 “Managing” Investments in Intangibles

As discussed above, most costs of internally developing, maintaining, or restoring intangible assets are expensed as incurred. Thus, firms might manage reported income and cash from operations by changing the magnitude or timing of investments in R&D, advertising or other non-recognized intangibles. For example, a myopic manager might cut marketing expenditures to increase reported income at the expense of future income (e.g., Mizik and Jacobson, 2007). Graham et al. (2005) report that decreasing discretionary spending is the most likely earnings

management choice of financial executives when earnings are expected to fall short of the desired earnings target.

8.2.8 Classifying Operating Expenses as R&D

Firms might classify operating expenses as R&D, hoping that investors will view these expenses as economic investments. For example, according to AAER No. 1760, during 2000–2001, L90, an advertising firm that provides internet-based marketing services, misclassified expenses for running and correcting problems with existing computer system and increasing its capacity as research and development expenses.

8.2.9 Conducting R&D Through Off-Balance Sheet Vehicles

Firms might engage in R&D activities through joint ventures and other off-balance sheet vehicles. These activities are generally not reported as part of the R&D expense and the timing of expense recognition is often delayed.

8.3 Red Flags and Other Analyses

8.3.1 Intangibles Turnover

Similar to other turnover ratios, the sales-to-intangibles ratio informs on both operating efficiency and accounting quality — large values imply that the firm uses its intangible assets efficiently, while small values may indicate over-capitalization of intangibles, insufficient amortization or unsuccessful investments. The sales-to-intangibles ratio is particularly sensitive to business acquisitions, because recognized intangibles result primarily from business combinations. Large declines in intangible turnover are typically the result of mergers and acquisitions.

8.3.2 R&D and Advertising Intensity

R&D and advertising expenditures are economic investments which, due to accounting conservatism, are expensed when incurred. Thus,

high R&D-to-revenue or advertising-to-revenue ratios imply that the balance sheet does not reflect important economic assets — the future benefits associated with R&D investments or advertising expenditures.

8.3.3 R&D Capitalization

Several studies demonstrate that for industries and firms with significant R&D activities, capitalization and subsequent amortization of R&D expenditures (as opposed to immediate expensing) improve the information conveyed by earnings and equity book value about intrinsic equity value (e.g., Lev and Sougiannis (1996), Lev et al. (2008)).

8.3.4 Changes in R&D

Firms might increase reported earnings by cutting R&D or other discretionary spending (e.g., Graham et al. (2005)). Earnings increases due to R&D cuts may have negative rather than positive correlation with value. Another issue with R&D changes is that they are often highly transitory, resulting from the expensing of purchased in-process R&D (in the current or previous period).

8.3.5 Effective Tax Rate

When write-downs are not properly disclosed, an examination of the effective tax reconciliation (discussed below) may be useful in evaluating their magnitude. This follows because recognized intangibles often have less than full tax basis, so their impairment increases the effective tax rate.

9

Investments in Debt Securities

9.1 Accounting Principles

Under SFAS 115, investments in debt securities are classified as held-to-maturity if the firm has “the positive intent and ability” to hold the securities until they mature. Other investments in debt securities are classified as either available-for-sale or trading securities. Trading securities are bought and held principally for the purpose of selling them in the near term in order to profit from short-term price movements. Available-for-sale is a residual classification, i.e., securities other than those classified as either held-to-maturity or trading.

Held-to-maturity securities are carried on the balance sheet at historical cost, adjusted for the cumulative amortization of any at-purchase discount or premium. The periodic amortization is equal to the difference between interest income and interest receipts, where interest income is calculated as the product of the at-purchase yield and the securities’ book value at the beginning of the period. It is straightforward to show that this method results in a book value which is equal to the present value of the remaining contractual payments, discounted

using the historical at-purchase yield.¹ In contrast, the securities' fair value is equal to the present value of the remaining contractual payments discounted at the current market yield. Thus, differences between the fair and book values of held-to-maturity securities are due to yield changes. In particular, yield increases result in unrealized losses while yield decreases give rise to gains.²

Trading securities are carried at fair value with realized and unrealized gains and losses reported in the income statement. This classification is uncommon and is used primarily by large financial institutions. Available-for-sale securities are reported on the balance sheet at fair value, with unrealized gains and losses excluded from earnings and reported, net of deferred taxes, as a component of shareholders' equity. Interest income on debt securities classified as trading or available-for-sale is calculated the same way as held-to-maturity — the product of the at-purchase yield and amortized cost at the beginning of the period.

Realized gains and losses on held-to-maturity and available-for-sale securities are reported in income and are calculated as the difference between the selling price and the amortized cost at the time of sale. In addition, other-than-temporary impairments are treated as

¹ Let B_0 denote the book value of the investment immediately after its purchase. Note that B_0 is equal to the purchase price, which in turn is equal to the present value of all promised coupons and principal payments using the at-purchase yield (this is by definition). That is, $B_0 = C \times \rho^{-1} + C \times \rho^{-2} + \dots + C \times \rho^{-n+1} + (F + C) \times \rho^{-n}$ where C is the coupon, ρ is one plus the at-purchase yield, F is the principal amount, and n is the number of interest periods. Under the effective rate method, B_1 — book value at the end of the first interest period — is calculated as follows: $B_1 = B_0 \times \rho - C$. Thus, $B_1 = (C \times \rho^{-1} + C \times \rho^{-2} + \dots + C \times \rho^{-n+1} + (F + C) \times \rho^{-n}) \times \rho - C = C \times \rho^{-1} + C \times \rho^{-2} + \dots + C \times \rho^{-n+2} + (F + C) \times \rho^{-n+1}$. That is, B_1 is equal to the present value of all remaining cash flows, discounted using the at-purchase yield. Similar substitutions can be used to prove this statement for B_2 through B_n .

² Yield changes are caused by changes in risk free rates, prepayment expectations, credit risk or credit premiums (for a given level of credit risk), but they are also due to the passage of time. To see how the passage of time causes yield changes, note that a bond yield is essentially a weighted average of the yields of the different contractual payments. These yields are determined primarily by the term structure of interest rates. When the term structure has a positive slope, the yields of the different cash flows increase with maturity. Thus, as time passes, the yields of the different cash flows, and therefore the overall security's yield, decrease due to the shortening of maturity. An opposite effect occurs when the term structure is inverted. Due to the liquidity premium, the term structure is typically upward-sloping. Thus, security yields usually decrease over-time, resulting in unrealized gains. This feature of the effective rate method is relevant for other financial assets and liabilities, including some receivables and debt.

realized losses. Firms have substantial discretion in measuring other-than-temporary impairment. In general, a sustained decline in market price below book value indicates the potential of impairment. In deciding whether to recognize impairment, firms are required to consider the length of time and the extent to which market value has been less than cost, the investment horizon (longer horizon implies higher likelihood of price recoverability before the sale), the cause of the price decline, and other factors relevant for the determination of whether the price decline is “other-than-temporary.”

In the cash flow statement, interest receipts are included in cash from operations. Cash flows from purchasing, selling and maturity of “available for sale” and “held to maturity” securities are included in cash from investing activities. Cash flows from purchasing and selling “trading securities” are included in cash from operating activities.

9.2 Accounting Quality

9.2.1 Timing Securities Sales and Cherry Picking

Unrealized gains and losses on securities other than those classified as trading are excluded from reported income. Thus, firms might manipulate reported income by selectively realizing gains or losses. For example, to increase reported income in a particular period, a firm may sell securities with unrealized gains and refrain from selling securities with unrealized losses. Relatedly, firms might manage earnings or book value by changing the classification of securities (e.g., from held-to-maturity to available-for-sale). Numerous studies provide evidence that some firms, primarily from the financial sector, engage in these activities to manage earnings, regulatory capital, or tax liabilities (see, e.g., Warfield and Linsmeier, 1992; Collins et al., 1995).

9.2.2 Managing Fair Value Estimates

Most bond trading takes place in over-the-counter markets, through a decentralized network of dealers and brokers. In addition, with the exception of US government securities, trading volume in fixed-income products is relatively low. Thus, fair value estimates for debt securities

are often derived from models that involve substantial discretion, which managers might exploit to manipulate estimates.

9.2.3 Manipulating “Other-Than-Temporary” Impairments

Given the high subjectivity involved in determining whether a decline in fair value is temporary or permanent, firms might manipulate the recognition of impairment losses of investment securities. For example, according to AAER No. 1973, Consec, a financial services holding company, failed to recognize impairment of interest-only securities in 1999.

9.3 Red Flags and Other Analyses

9.3.1 Realized and Unrealized Gains and Losses

Under SFAS 115, firms are required to disclose the amount of realized gains and losses included in income. Since these gains and losses are largely discretionary, they have little implications for value. The more relevant quantity is the total of realized and unrealized gains and losses. But even this measure has relatively small implications for value, since gains and losses from securities transactions are typically transitory.

9.3.2 Composition of Securities Holding and Estimation of Fair Value

Under SFAS 115 and SFAS 107, companies are required to provide detailed information on the composition of investment securities and the methods used to estimate fair values. This information is useful for evaluating the quality of the estimated fair values. For example, the disclosed fair value of United States Treasury securities is likely to be a precise measure of their value. In contrast, the estimated fair value of illiquid high-yield corporate bonds might deviate significantly from their intrinsic value.

10

Debt

10.1 Accounting Principles

Debt instruments include bonds, notes, loans, and capital lease obligations. These instruments are reported on the balance sheet at historical cost, adjusted for the cumulative amortization of issuance cost (when issuance costs are netted against the proceeds) and any issuance discount or premium. Periodic amortization is measured as the difference between interest expense and interest payments, where interest expense is calculated as the product of the instruments' book value at the beginning of the period and the historical effective interest rate. The historical effective rate is the discount rate that equates the issuer's net proceeds and the present value of the coupons and principal at the issuance date. It is straightforward to show that under this method, the book value of debt is equal to the present value of the remaining interest and principal payments, discounted at the historical effective interest rate.

Debt transactions are very common. According to *Accounting Trends and Techniques* (2006), about 47% of 600 survey firms reported short-term debt, and most of firms reported long-term debt in their 2005 annual reports. Among unsecured long-term debt, notes

(72%), capitalized leases (39%), and debentures (25%) are the most prevalent.

10.2 Accounting Quality

10.2.1 Gains and Losses from Early Retirement of Debt

An early retirement of debt occurs whenever a firm pays-off debt instruments prior to their maturity. If the firm's debt is traded in the open market, as is the case with bonds and some notes, the firm can retire it by purchasing the securities back from investors. Because the market price of debt securities fluctuates, there is usually a gain or loss on this type of transactions. Another case of early retirement of debt is when the firm exercises the call provision of callable bonds, purchasing the bonds back from investors at a price (and possibly point in time) specified in the bonds' indenture.

Because early retirement of debt is largely discretionary and results in recognized gains or losses, firms might exploit this flexibility to manipulate reported income. Until 2002, gains and losses from early retirement of debt were classified as extraordinary items and reported net of taxes at the bottom of the income statement. Since 2002 (SFAS 145), gains and losses from early retirement of debt are reported in the income statement similar to other gains and losses, usually in "other income (expense)."

10.2.2 Fair Value Estimates

Under SFAS 107, firms are required to disclose the estimated fair value of most financial instruments, including debt payable. Because estimating the fair value of most debt instruments involves significant discretion, these disclosures are susceptible to manipulation.

10.2.3 Classifying Short-Term Debt as Long-Term

Firms might classify short-term debt as long-term. For example, according to AAER No. 455, in 1989 Star Technologies, a manufacturer of scientific computers, was in violation of debt covenants which made some long-term loans immediately due and payable. Yet Star classified the

loans as a long-term liability. Under GAAP, unless the bank provided a written waiver of Star's covenant violations for a period of at least one year, the loan should have been reclassified as a current liability.

10.2.4 Unreported Debt

Firms might exclude from the balance sheet debt which is owed by the company (e.g., by transferring the debt to another company which is controlled by the same shareholders). For example, according to AAER No. 1599, in 1999–2001 Adelphia excluded over \$2.3 billion in bank debt from the consolidated financial statements by deliberately shifting those liabilities onto the books of Adelphia's off-balance sheet, unconsolidated affiliates.

10.2.5 Cash Flow Classification

Interest payments are classified as operating cash outflow while payments of principal are reported as financing cash outflow. Thus, firms might overstate cash from operations by issuing deep-discount bonds. Due to discount amortization, net income will reflect the true cost of borrowing, but cash from operation will be overstated.

10.3 Red Flags and Other Analyses

10.3.1 Gains and Losses from Early Retirement of Debt

Because gains and losses from early retirement of debt are both discretionary and transitory, they should be excluded from measures of recurring income. Prior to 2002, it was easy to identify and exclude such gains and losses because they were reported as extraordinary items. Currently, these items are often reported combined with recurring non-operating income or interest expense. However, in most cases this information is included in the notes or MD&A.

10.3.2 Fair Value Disclosures

As discussed above, the disclosed fair value of debt might be subject to manipulation. To evaluate the quality of this estimate, one should

consider the difference between the fair value and book value of debt in recent years, and how changes in this difference relate to changes in interest rates and in the company's financial condition. In doing so, items to consider should include debt provisions such as fixed vs floating rate, time to maturity, etc.

10.3.3 Special Purpose Entities and Related Transactions

As discussed above, an important accounting quality issue related to debt is whether all debt liabilities are reported on the balance sheet. Unfortunately, there are no simple indicators or ratios that can be used to identify unreported debt. To evaluate the potential for omitted debt obligations, one has to carefully read those sections of the MD&A and footnotes which discuss related-party transactions and special purpose entities.

11

Leases

11.1 Accounting Principles

A lease is a contract between a lessor and a lessee that conveys the right to use property, generally for a specified period of time. The lessor holds legal title to the asset and the lessee uses the asset.

Accounting for leases is derived from the view that a lease that transfers substantially all of the benefits and risks of ownership should be accounted for as the acquisition of an asset and the incurrence of an obligation by the lessee (“capital lease”) and as a sale or financing by the lessor. Other leases should be accounted for consistent with their legal substance, i.e., as a rental of property (“operating lease”). We focus in this section on accounting by lessees.

A lessee classifies a particular lease as a capital lease if it meets any one of the following classification criteria:

- a. The lease transfers ownership of the property to the lessee by the end of the lease term.
- b. The lease contains an option to purchase the leased property at a bargain price.

- c. The lease term is equal to or greater than 75% of the estimated economic life of the leased property.
- d. The present value of the minimum lease payments equals or exceeds 90% of the fair value of the leased property.

If none of the above criteria is met, the lessee classifies the lease as an operating lease.

Accounting treatment under the capital lease method involves the following steps. At inception, the lessee records the acquisition of an asset and the incurrence of an obligation equal to the lesser of the present value of the minimum lease payments or the fair value of the leased property. Subsequently, the lessee treats the periodic lease payments as payments of the lease obligation and interest. The lessee also depreciates the leased property in a manner consistent with its normal depreciation policy for owned assets. The depreciation period is restricted to the lease term, rather than the life of the asset, unless the lease provides for transfer of title or includes a bargain purchase option.

In contrast, under the operating lease method, no liability is reported on the balance sheet, and an asset is recorded only to the extent that payments already made have not been fully consumed (pre-paid rent). Consumed lease payments are reported as rental expense in the income statement.

Lease transactions are very common. According to *Accounting Trends and Techniques* (2006), about 97% of the 600 surveyed firms reported lessee leases in their 2005 annual reports. More than 99% of these firms used the operating lease method to account for at least some of their leases, and 46% used the capital lease method.

11.2 Accounting Quality

11.2.1 Avoiding the Capital Lease Method

Most lessees prefer the operating lease method, because this method (1) does not recognize a lease liability, thus lowering reported leverage; (2) defers the recognition of expenses, which results in higher equity and lower leverage (as well as higher earnings for growth firms); and

(3) does not recognize a lease asset, thereby increasing return on asset. Lessee firms achieve this desired accounting treatment by setting the terms of lease transactions so that they qualify for the operating lease method, or by manipulating estimates required to test whether the capitalization criteria are met. For example, firms might increase the contingent part of lease payments to reduce the minimum lease payments, or they might overstate the “incremental borrowing rate” used in calculating the present value of minimum lease payments. Consequently, many leases that economically should have been accounted for using the capital lease method are omitted from the balance sheet and reported as rent expense.

11.2.2 Comparability

Under GAAP, similar lease transactions often receive very different treatments, with important consequences for both the balance sheet and performance metrics. For example, EBITDA — a commonly used performance metric — reflects all rent payments but excludes both depreciation and interest expense. Thus, operating leases reduce EBITDA whereas capital leases do not. Also, cash flow from operations is higher under the capital lease method, because operating lease payments are classified as operating cash outflows, while capital lease payments are allocated between interest (operating activities) and repayment of lease obligation (financing activities).

11.2.3 Understatement of Capex

As discussed above, lease transactions are very common. For many firms, leased assets provide the core of operating capacity. Yet all leases, whether accounted for using the capital or operating lease method, are excluded from the cash flow statement measure of capex. Consequently, for many firms, reported capex significantly understates the true investment in operating capacity.¹

¹Dechow et al. (2007) find abnormal increases in leasing activities during the manipulation periods for their sample of firms engaged in alleged fraudulent financial reporting, consistent with managers’ use of the flexibility granted by lease accounting rules to manipulate financial statements.

11.3 Red Flags and Other Analyses

11.3.1 Capitalizing Operating Leases

Some analysts capitalize operating leases, arguing that the capital lease method is more informative and consistent with economic reality. In addition, using the same method to account for all leases improves the comparability of financial information across firms and over-time.

The capitalization of operating leases involves adjusting liabilities, assets, and income. Measuring the capitalized operating lease liability is relatively simple, because firms are required to disclose the future minimum lease payments both in the aggregate and for each of the five succeeding fiscal years. Measuring the lease asset is more difficult. It involves estimating the average age and term of existing leases as well as some complicated calculations. Because the capital lease method is more conservative than the operating lease method, the capitalized operating lease asset must be smaller than the liability.² Given estimates of the capitalized operating lease liability and asset at the beginning and end of the year, the income statement adjustments are straightforward.

²The capital lease method is more conservative than the operating lease method (i.e., it results in lower equity) because (1) total expense over the lease term is equal to the total rent payments independent of the lease method, (2) the periodic rent expense under the operating lease method is constant, (3) interest expense under the capital lease method declines over the lease term commensurate with the decline in the lease liability, and (4) the depreciation expense under the capital lease method is either constant (SL) or declines over the lease term (accelerated depreciation).

12

Income Taxes

12.1 Accounting Principles

Income measurement for financial reporting is governed by GAAP, while income measurement for determining taxable income is governed by tax laws. GAAP and tax laws treat many transactions differently, and accordingly pretax income in the financial statements (hereafter “book income”) and taxable income in the tax return typically differ. There are two types of differences between book income and taxable income: permanent differences and temporary (timing) differences. Permanent differences are due to items that affect the computation of either book income or taxable income but never affect the other. Temporary (timing) differences are due to items that are recognized in different periods for tax and financial reporting purposes.

Permanent differences include revenues that are never reported in taxable income (e.g., interest received on state and municipal bonds), expenses that are never deducted in calculating taxable income (e.g., fines and other expenses that result from a violation of law, in-process R&D, most cases of goodwill impairment), and deductions in calculating taxable income that are never recognized as expense (e.g., deduction

for dividend received from US corporations, percentage depletion of natural resources in excess of their cost).

Temporary differences include revenues that are reported in taxable income before they are recognized in the income statement (e.g., unearned rent revenue, unearned subscriptions revenue), expenses that are deducted in calculating taxable income before they are recognized in the income statement (e.g., prepaid rent and depreciation), revenues that are recognized in the income statement before they are included in taxable income (e.g., installment sales), and expenses that are recognized in the income statement before they are deducted in calculating taxable income (e.g., bad debt expense, warranty expense, impairment expense, restructuring expense, losses from inventory revaluation, vacation expense, and pension expense).

Temporary differences originate in one period and reverse in later periods. That is, the difference between book income and taxable income in the period in which a temporary difference is originated is offset by a difference in the opposite direction in future periods. For example, if next year's rent is paid in the current year, book income will be larger than taxable income in the current year and smaller than taxable income next year.

Because current temporary differences will result in future differences between book and tax incomes, they generate accounting assets or liabilities — the obligation to pay additional income taxes, or the right to pay lower income taxes, when the temporary differences reverse. For example, a temporary difference due to prepaid rent will cause future taxable income to be larger than future book income. As a result, future tax payments will be larger. The obligation to pay those additional taxes in the future is a result of benefits that have already been received — reduced income taxes in the current year — and it should therefore be recognized as an accounting liability. This liability is the termed deferred tax liability. Similarly, negative temporary differences create a deferred tax asset.

Permanent differences, in contrast, affect only the period in which they occur (e.g., interest on state bonds); they do not generate a difference between book income and taxable income in future periods. Thus, permanent differences do not create deferred tax liability/asset.

Deferred tax assets and liabilities are calculated by applying the tax rates enacted for future years to temporary differences between the book and tax bases of assets and liabilities. Thus, when tax rates change, the amount of deferred taxes is adjusted.

Deferred taxes are reported undiscounted, even if reversal is expected in the distant future (e.g., depreciation of long-lived assets). Thus, the book value of deferred taxes might substantially overstate the economic asset or liability.

Future deductible amounts are beneficial only if the firm is expected to have taxable amounts in the future. Under SFAS No. 109, firms are required to recognize a deferred tax asset for all temporary differences that will result in future deductible amounts. However, a valuation allowance should be recognized if it is “more likely than not” that some portion or all of the deferred tax asset will not be realized. The valuation allowance is deducted from the deferred tax asset, reducing its book value to the amount expected to be realized. In contrast, firms are not allowed to reduce deferred tax liabilities to the amount expected to be paid.

Deferred tax assets and liabilities are generally classified as current/non-current on the balance sheet based on the classification of the item to which they relate. For example, a deferred tax liability due to the use of accelerated depreciation for tax purposes is classified as non-current, even if a portion of it is expected to reverse next year. In addition, deferred taxes are reported net by current/non-current status (netting is allowed only within tax jurisdiction). This typically results in a current net deferred tax asset and non-current net deferred tax liability.

The recognition of deferred taxes on the balance sheet requires that equity be adjusted. This is generally done by including a deferred tax component in the income tax expense, which adjusts net income and hence retained earnings (equity). That is, the income tax expense is calculated as the sum of two components: income taxes owed for the current period (current portion), and the change in the net deferred tax liability (deferred portion).¹

¹Not all changes in deferred tax assets and liabilities are recognized in the income statement. Changes in deferred taxes due to revaluations of assets and liabilities that have not

12.2 Accounting Quality

12.2.1 Tax Valuation Allowance

The measurement of the tax valuation allowance is highly discretionary, and firms might exploit this discretion to manipulate earnings. For example, according to AAER No. 1824, in 1999–2001 Composite recorded a deferred tax asset for net losses although it had no revenues, suffered continuing losses from operations, and had no credible evidence to project the future cash flows or net profits from operations needed to support the carrying value of the deferred tax asset.

12.2.2 Earnings of Foreign Subsidiaries

Repatriated earnings are generally subject to US taxation. Accordingly, firms are required to recognize deferred tax liabilities for earnings of foreign subsidiaries to the extent that those earnings are expected to be repatriated and subject to US taxation. Some firms designate earnings of foreign subsidiaries as “permanently reinvested” to avoid the recognition of deferred taxes.

12.2.3 Tax Cushion Reserves

Firms might manage “tax cushion” reserves — i.e., contingent taxes that are accrued in anticipation of IRS claims of tax deficiencies. Tax cushion reserves are typically included in “other liabilities,” with the change in reserve included in the current portion of the income tax expense. FIN 48, which has been effective since 2007, is expected to mitigate this form of earnings management by providing new guidance regarding the measurement and disclosure of tax contingencies.²

been recognized in income (e.g., unrealized gains/losses on available-for-sale securities, cumulative foreign currency translation adjustment, mark ups of assets and liabilities of acquired businesses) are excluded.

²FIN 48 requires companies to recognize the tax benefit of an uncertain tax position only when the position is “more likely than not” to be sustained assuming examination by tax authorities. The amount recognized represents the largest amount of tax benefit that is greater than 50% likely of being realized. A liability should be recognized for any benefit claimed, or expected to be claimed, in a tax return in excess of the benefit recorded in the financial statements, along with any interest and penalty (if applicable) on the excess.

12.2.4 Time Value of Money

Deferred taxes are reported undiscounted. Given that a large portion of deferred taxes is related to items that are slow to reverse, particularly depreciation, this distortion is often quite large.

12.2.5 Overstatement of the Deferred Tax Liability

If future taxable income is negative, the deferred tax liability may never be paid. Unlike the deferred tax asset which is reduced by a valuation allowance to the amount expected to be realized, the deferred tax liability is reported at the full amount ignoring the possibility that it may not be paid in full.

12.2.6 Income Tax Expense in Quarterly Reports

The year-to-date income tax expense is measured as the product of the year-to-date pretax income and the projected annual effective tax rate. Thus, firms might manage the quarterly income tax expense by adjusting the estimated annual effective tax rate. For example, according to AAER No. 1987, in 1999–2001 Gerber overstated the income tax expense in the early quarters of each fiscal year, and reversed the accrued tax liability during the latter quarters by crediting SG&A expenses (instead of income taxes). That is, this alleged manipulation involved inflating operating income in addition to income shifting.

12.3 Red Flags and Other Analyses

12.3.1 Effective Tax Rate

An important ratio which analysts often focus on is the effective tax rate — the ratio of income tax expense to pretax income. Specifically, the following items are informative about the magnitude of the transitory earnings: (1) the difference between the effective and statutory tax rates, (2) the components of this difference (as reported in the effective tax rate reconciliation), and (3) the change in the effective tax rate during the year. These items are informative because abnormal levels of the effective tax rate tend to reverse rather quickly, and components

of the effective tax rates vary in persistence (e.g., the impact of state taxes is persistent, while that of goodwill impairment or changes in the valuation allowance is transitory).

The effective tax rate can be expressed as follows:

$$\text{Effective tax rate} = \frac{\text{Taxable income} \times \text{Federal tax rate} + \text{State taxes} + \text{Impact of differences between foreign and federal tax rates} + \text{Deferred portion of income tax expense}}{\text{Taxable income} + \text{Permanent differences} + \text{Temporary differences}}$$

This expression indicates that differences between effective and statutory (federal) tax rates are due to: state taxes, differences between federal and foreign tax rates, and permanent differences (e.g., interest on state and municipal bonds, goodwill impairment). Temporary differences generally do not impact the effective tax rate because they increase the numerator (deferred portion of income tax expense) by an amount equal to their magnitude times the statutory tax rate. However, changes in the tax valuation allowance or enacted tax rates change the deferred portion of the income tax expense and hence the effective tax rate.

12.3.2 Estimated After-Tax Taxable Income to Net Income

Differences between reported net income and net earnings as measured under the tax code (i.e., taxable income minus current income taxes) are due to the inclusion in reported net income of items that are often used to manage earnings or are relatively transitory, such as pretax estimated accruals (e.g., bad debt and restructuring charges), non-deductible pretax accruals (e.g., most cases of in-process R&D and goodwill impairment), and discretionary tax accruals (e.g., changes in the tax valuation allowance). In addition, due to provisions of the tax code such as the AMT, NOL and progressive tax rates, firms are inclined to smooth taxable income over-time, which makes it a proxy for “permanent income.” Accordingly, the ratio of net earnings as measured under the tax code to reported net income should indicate the

quality or persistence of reported net income. Lev and Nissim (2004) examine this hypothesis and confirm that this ratio consistently predicts earnings changes for up to five years ahead.

12.3.3 Deferred Taxes

Deferred taxes reflect discretionary accruals (e.g., bad debt, warranty, depreciation, restructuring charges, etc.) which, for tax purposes, are recognized in a non-discretionary fashion (e.g., bad debt are deducted when accounts are written-off, warranty costs are deducted when paid, depreciation is calculated using fixed schedules, etc.). Since discretionary accruals are more likely to be managed compared with other earnings items, the relative magnitude of deferred taxes may inform on earnings quality.

12.3.4 Time Value of Money

To evaluate the extent to which deferred taxes are overstated, one may examine the distribution of deferred tax assets and liabilities, as disclosed in the notes. For example, if deferred taxes are due primarily to depreciation of fixed assets with relatively long useful lives, the overstatement is likely to be large because reversal is expected to occur over a relatively long period. This is especially true if the company is growing and fixed assets are on average in their early years.

13

Pension and Other Post-Retirement Benefits

13.1 Accounting Principles

A pension plan is an arrangement whereby an employer provides benefits to employees after they retire for services they had provided during their employment. There are two types of pension plans: defined contribution plan and defined benefits plan.

Defined contribution plan — The employer's contribution is defined while no promise is made in regard to the benefits. Each period the employer contributes cash to the pension plan based on services received during the period, measured primarily based on the employees' salaries. The employer has no further obligation to the employees and has no control on or rights in the plan assets. Therefore, the employer does not recognize any asset or liability on the balance sheet and simply reports the periodic contribution as an expense.

Defined benefit plan — The benefits (payments) the employer will provide to the employees are defined. They are typically based on the number of service years and compensation levels. To be able to make these future payments, the employer contributes cash to a pension

plan.¹ Since the employer is obligated to make the future payments and will use the plan assets for this purpose, it has to recognize a net liability or net asset equal to the difference between the liability and the plan assets. Conceptually, the pension liability should measure the present value of expected future benefit payments for employee services that have already been received; the pension asset should measure the current value of the plan assets (primarily securities); and the pension expense should be calculated as the change in the pension obligation during the year minus the change in the plan's assets and plus contributions made to the plan during the year.

According to SFAS 87, the relevant measure of pension liability is the projected benefit obligation (PBO) — i.e., the present value of both vested and non-vested benefits, measured based on expected future compensation levels. Calculating the PBO requires many actuarial assumptions, such as mortality rates, employee turnover, interest rates, early retirement frequencies, future salaries, etc. With respect to plan assets, SFAS No. 87 determines that the assets should be reported at an amount based on their fair value on the balance sheet date (not exactly fair value). SFAS No. 87 further requires that the pension expense be calculated so as to trend the accrued pension cost (i.e., net pension liability or asset) toward the difference between the PBO and the fair value of plan assets.

The reported pension expense, which is a smoothed version of the economic expense, includes the following components:

Service cost — The increase in the PBO due to the increase in the number of service years which are used to calculate the future payments.

Interest cost — The increase in the PBO due to the passage of time, i.e., due to the fact that the future payments become closer and so their present value increases.

¹ Employers have significant discretion over the amount of pension contributions. While the funded status of the pension plan should be the primary determinant of contributions, other considerations such as government regulation, availability of free cash flows and tax rules also play an important role. The pension plan invests the cash in assets (primarily securities) and pays cash to retired employees.

Expected return on plan assets — The return on the pension plan assets assuming that the assets that existed at the beginning of the year and the net contributions during the year earned the rate of return expected at the beginning of the year. This item is deducted from the other components of the pension expense.

Amortization of unrecognized prior service cost (credit) — Prior service cost is the cost of retroactive benefits granted by plan inceptions or amendments. Prior service credit results from plan amendments that reduce future benefits. This cost/credit is amortized over subsequent periods as a component of the pension expense.

Amortization of unrecognized net gain or loss — Gains and losses result from differences between actual experience and expectation, or from changes in assumptions. Many factors affect the plan assets and PBO (e.g., return on plan assets, employee turnover, discount rates, trend in compensation increase). When these factors change unexpectedly, or when the expected values of these factors change, the value of the plan assets and PBO change, resulting in unrecognized gains or losses. These gains and losses are recognized only to the extent that their net amount exceeds 10% of the greater of the value of plan assets or PBO at the beginning of the year. Even then, the excess amount is not recognized immediately but instead is amortized over the average remaining service period of active plan participants or, for retired participants, the average remaining life expectancy.

Until 2005, the recognized net pension asset or liability reflected the difference between cumulative pension contributions and cumulative pension expense recognized through the balance sheet date. Because the reported pension expense smoothes some changes in the plan assets and PBO, the recognized net pension asset or liability generally deviated from the difference between the plan assets and PBO. Starting in 2006, SFAS 158 requires that the overfunded or underfunded status of defined benefit post-retirement plans (other than a multi-employer plan) be recognized as assets or liabilities, respectively, with changes in funded status reported in other comprehensive

income. The standard does not change the calculation of the pension expense.

Other post-retirement benefits (OPEB) include health care and life insurance as well as other benefits that firms continue to pay post-retirement. The accounting treatment for these obligations (SFAS 106) is similar in concept and implementation to the requirements of SFAS 87 (pensions). In addition, the requirements of SFAS 158 apply to OPEB benefits in addition to pension. The major difference is that few post-retirement benefit plans are funded.

13.2 Accounting Quality

13.2.1 Funding Status

Prior to the implementation of SFAS 158, the recognized pension and OPEB net liabilities/assets were often very different from their economic counterparts.

13.2.2 Assumptions

Measuring the PBO and pension expense involves significant assumptions and estimates. Firms might exploit this discretion to manipulate the reported amounts.

13.2.3 Income Smoothing

As discussed above, the recognized pension and OPEB expenses are smoothed over-time. Some argue that smoothing reduces information content because it obscures economic costs. However, smoothing also increases the auto-correlation in the reported expense, making its current level more informative about future levels. The more significant concern is that firms might fail to properly implement smoothing requirements. For example, according to AAER No. 1127, in 1991 Fruehauf cupped pension benefits and recognized the reduction in the pension liability as a one-time gain instead of amortizing it over future periods.

13.3 Red Flags and Other Analyses

13.3.1 Funding Status

As discussed above, prior to the implementation of SFAS 158, the balance sheet did not properly reflect the funding status of pension and OPEB plans. However, firms provided detailed disclosures that enabled analysts to fully adjust the balance sheet to reflect the net economic liabilities/assets. Since 2006, the funded status of benefit plans is reflected on the balance sheet.

13.3.2 Assumptions

As discussed above, to measure the pension and OPEB obligations and expenses, firms are required to make a number of assumptions. These assumptions involve substantial discretion and in many cases have large effects on the measured liabilities and expenses (assets are generally measured at fair value with relatively little discretion). Firms are required to disclose four of these assumptions: discount rates used in calculating the present value of future payments, the assumed rate of compensation increase used to calculate the PBO, the expected rate of return on pension plan assets used to calculate the pension expense, and health care cost trends used to calculate the accumulated OPEB liability. In addition, firms are required to disclose the plan asset allocation, which is useful for evaluating the reasonableness of the expected rate of return assumption.

One approach to evaluate the pension and OPEB assumptions used by a particular firm is to compare them to the assumptions made by other firms. Indeed, there is significant cross-sectional variation in each of the four disclosed assumptions (see, e.g., *Accounting Trends and Techniques* 2006). While firm-specific factors such as lines of business, employee demographics, and pension plan allocation may partially explain this variation, at least in some cases significant deviations from the cross-sectional average are likely due to accounting manipulation.

14

Contingencies

14.1 Accounting Principles

A contingency is an existing condition, situation, or set of circumstances involving varying degrees of uncertainty that may result in a gain or loss when one or more future events occur or fail to occur. Resolution of the uncertainty may lead to the acquisition of an asset, the reduction of a liability, loss or impairment of an asset, or the incurrence of a liability. Consistent with the realization principle, gain contingencies are not recognized in the financial statements, but are disclosed in the notes if material.

Loss contingencies may arise from pending or threatened litigation, claims or assessments, guarantees of indebtedness of others, obligations of commercial banks under standby letters of credit, uncollectible receivables, obligations related to service warranties and defects, or other factors. For a given loss contingency, the likelihood that a future event or events will confirm the incurrence of a liability or impairment of an asset is either probable (the future event or events are likely to occur), reasonably possible (the chance of the future event or events occurring is more than remote, but less than likely), or remote (the chance of the future event or events occurring is slight).

An estimated loss from a contingency should be accrued by a charge to expense and recognition of liability or reduction in asset if both of the following conditions are met: (1) information available prior to the issuance of the financial statement indicates that it is probable that a liability has been incurred or an asset has been impaired at the date of the financial statements and (2) the amount of the loss can be reasonably estimated. If the entity can only estimate a range for the expected loss with all values in the range equally likely, the lower end of the range should be accrued.¹ Material loss contingencies accrued require footnote disclosure of the nature of the contingency and the amount accrued.

If one or both conditions for accrual of a material loss contingency are not met and the loss contingency is classified as probable or reasonably possible, the nature of the loss contingency and the range of possible loss, if estimable, should be disclosed in the notes. In practice, with the exception of environmental liabilities which are typically recognized in the financial statements, contingencies are often only disclosed in the notes. If the likelihood of incurring a liability is remote, neither accrual nor disclosures is required.

According to *Accounting Trends and Techniques* (2006), more than 86% of the 600 surveyed firms disclosed litigation loss contingencies in their 2005 annual reports, and 42% disclosed environmental loss contingencies. Other common loss contingencies include insurance, tax assessments and government investigations.

14.2 Accounting Quality

14.2.1 Improper Recognition

Given the high discretion involved in estimating loss probabilities and magnitudes, it is relatively easy to manipulate the recognition of most loss contingencies. Firms might not recognize probable and estimable loss contingencies, or they might manage earnings by understating or overstating recognized contingencies.

¹If a certain value in the range is more likely to occur than the other values, that value should be accrued.

14.2.2 Improper Disclosure

Since recognized amounts generally fail to reflect the impact of contingencies on the financial position, disclosures play a key role for these items. Thus, inadequate disclosures of material commitments or contingencies might significantly affect accounting quality. For example, according to AAER No. 2127, Qwest did not disclose that it committed to buy millions of dollars of unneeded equipment, and according to AAER No. 2672, IES failed to disclose material loss contingencies related to accounts receivable.

14.3 Red Flags and Other Analyses

For most loss contingencies, there are no simple indicators of accounting quality. Careful reading of the “commitment and contingencies” note, the relevant discussions in the 10-K, and articles from the financial press or other sources may inform on the likelihood and potential magnitude of loss. Analysis of loss contingencies related to accounts receivables and warranty are discussed in separate sections.

15

Other Liabilities

15.1 Accounting Principles

Previous sections discussed debt, leases, deferred taxes, post-retirement benefits, and loss contingencies. Other liabilities include accounts payable, deferred revenues, and accrued costs (e.g., accrued expenses, warranty liabilities, and restructuring liabilities). The accounting treatment for these items is simple: payables are reported at the undiscounted amount to be paid, accrued liabilities are reported at the estimated cost to discharge, and unearned revenues are reported at the amount of cash the firm has received but is yet to earn.

15.2 Accounting Quality

15.2.1 Accrued Costs

Firms might manipulate accrued cost estimates such as warranty and restructuring. A common abuse is to overstate a reserve in one period and reverse it in a subsequent period. Such manipulation is particularly attractive when the creation of the reserve is classified as unusual or non-core (e.g., restructuring charge) and the reversal is hidden in

recurring income. A related abuse is to include recurring expenses in restructuring charges in order to inflate earnings before one-time charges. SFAS No. 146, which is effective since 2002, has reduced (but not eliminated) firms' ability to manage earnings by overstating restructuring liabilities.

The following are examples of manipulation of accrued cost liabilities. According to AAER No. 2127, between 1999 and 2002 Qwest understated expenses relating to sales commission plans and compensated absences. According to AAER No. 1721, in 1997 "SmarTalk reported a one-time charge, a \$25 million restructuring reserve, purportedly for anticipated 1998 costs, after its purchase of several other prepaid telephone card businesses ... the entire restructuring reserve did not conform to Generally Accepted Accounting Principles ("GAAP") because the anticipated costs were not proper restructuring costs ... Also, ... SmarTalk improperly understated current period operating expenses by charging 1997 operating expenses and 1998 operating expenses against the restructuring reserve. This enabled SmarTalk to falsely inflate earnings (or earnings before one-time charges) at year-end 1997 and the first two quarters of 1998."

15.2.2 Unearned Revenue

Firms might manage earnings by manipulating unearned revenue. For example, they might overstate unearned revenue to create reserves for the next period, or they might recognize unearned revenue in earnings to inflate reported income.

15.3 Red Flags and Other Analyses

15.3.1 Restructuring Liabilities

Large changes in restructuring liabilities due to revisions of estimates, or large differences between past accrued costs and actual experience may suggest earnings management. Indicators of shifting of expenses from recurring income to one-time items include repeated recognition of restructuring charges, and recognition of restructuring liabilities accompanied by a decrease in recurring expenses.

15.3.2 Accrued Costs

To evaluate the reasonableness of recognized accrued expenses such as warranties, one could compare actual expenditures with accrued amounts, or accrued expenses with measures of activity such as sales or COGS. These analyses are generally similar to the analysis of uncollectible receivables, discussed in the accounts receivable Section 5.

15.3.3 Unearned Revenue

Large, unexplained changes in unearned revenue may indicate revenue manipulation. This is especially true when the percentage change in unearned revenue is significantly different from the percentage change in revenue or order backlog.

16

Derivatives

16.1 Accounting Principles

Under SFAS No. 133, all derivatives are recognized as either assets or liabilities on the balance sheet and are measured at fair value. The accounting treatment for changes in derivatives' fair value (i.e., holding gains and losses) depends on whether the derivatives have been designated and qualify as part of a hedging relationship, and further, on the type of hedging relationship.¹ For derivatives that are not designated as hedging instruments, the gain or loss is recognized in earnings in the period of change.

A derivative designated and qualified as a hedging instrument must be categorized as a fair value hedge, a cash flow hedge, or a hedge of a net investment in foreign operations. A fair value hedge is used to hedge changes in the fair value of existing assets, liabilities or firm

¹To qualify for hedge accounting, the hedge has to be effective; i.e., changes in the derivative's fair value should offset changes in the fair value of the hedged item. If the relationship between the change in the fair value of the derivative and the hedged item falls within a specified range, the hedge is considered effective and qualifies for hedge accounting. The hedge is deemed ineffective if the offsetting difference between the fair values falls outside the acceptable range.

commitments. Gain or loss on these derivatives, as well as the related gain or loss on the hedged item underlying the hedged risk, is recognized in earnings during the period in which the fair value changes. Thus, if a fair value hedge is perfectly effective, the change in the fair value of the hedged item will be offset, resulting in no net effect on earnings.

A cash flow hedge is used to hedge the variability of future cash flows. The effective portion of a gain or loss on any cash flow hedge is reported as a component of accumulated other comprehensive income and reclassified into earnings in the same period or periods that the hedged transaction affects earnings. Any ineffective portion of the derivative gain or loss is recognized in earnings.

Gains or losses on derivatives designated as hedging the foreign currency exposure of a net investment in a foreign operation are reported in other comprehensive income as part of the cumulative translation adjustment.

16.2 Accounting Quality

16.2.1 Off-Balance Sheet Risk

Similar to securities and other financial instruments, the risk associated with derivatives depends on their notional amounts. However, unlike other financial instruments where book value is close to the notional amount (e.g., debt securities and loans), the book value of derivatives — which is equal to their fair value — is significantly smaller than their notional amount. Thus, the balance sheet fails to reflect the risk associated with derivative transactions.

16.2.2 Precision of Fair Value Estimates

Due to the unavailability of market prices for most derivatives, as well as their leverage and option characteristics, the potential for large valuation errors is higher for derivatives compared to other financial instruments. This is especially true for non-standardized derivatives. For instance, according to AAER No. 2729, Freddie Mac deliberately understated the value of its swaption portfolio to report “steady and predictable earnings growth.”

16.2.3 Hedged Items Reported at Amounts Other than Fair Value

When both the hedged item and the hedging derivative are marked-to-market, the balance sheet and income statement appropriately reflect net value and change in value, respectively. However, when the hedged item is reported at an amount other than fair value, book value and earnings are distorted, and the information content of financial information is reduced (Gigler et al., 2007). For example, in a cash flows hedge — i.e., when a derivative is used to offset the variability in future cash flows from a forecasted transaction — the derivative is marked-to-market but the anticipated transaction is not recognized. Other situations result primarily from the stringent requirements to qualify for hedge accounting, which often prevent firms from recognizing offsetting changes in the value of hedged items.²

16.2.4 Classification

The same derivative position can often be classified as either a fair value or cash flow hedge. For example, a bank that has fixed rate loans and variable rate debt can classify an interest rate swap in which it receives variable interest and pays fixed interest as either a fair value hedge of the loan portfolio or cash flow hedge of the debt. These two alternatives differ in terms of the impact on equity book value. The cash flow hedge classification results in higher book value volatility, because changes in the derivative fair value are included in other comprehensive income.

²The following is an example of such distortion. “The credit derivatives used by JPMorgan Chase for portfolio management activities do not qualify for hedge accounting under SFAS 133, and therefore, effectiveness testing under SFAS 133 is not performed. These derivatives are reported at fair value, with gains and losses recognized as trading revenue. The marked-to-market value incorporates both the cost of credit derivative premiums and changes in value due to movement in spreads and credit events; in contrast, the loans and lending-related commitments being risk-managed are accounted for on an accrual basis. Loan interest and fees are generally recognized in Net interest income, and impairment is recognized in the Provision for credit losses. This asymmetry in accounting treatment, between loans and lending-related commitments and the credit derivatives utilized in portfolio management activities, causes earnings volatility that is not representative, in the Firm’s view, of the true changes in value of the Firm’s overall credit exposure.” (J.P. Morgan Chase 2005 Annual Report)

In contrast, the fair value classification recognizes the offsetting change in the fair value of the hedged item.

16.3 Red Flags and Other Analyses

Due to limited disclosures, it is relatively difficult to evaluate the quality of accounting for derivatives. Examination of the magnitude and composition of derivatives may inform on the potential for earnings quality issues.

16.3.1 Magnitude of Derivatives

As discussed above, unlike other financial instruments where book value is close to the notional amount, the book value of derivatives — which is equal to their fair value — is significantly smaller than their notional amount. Thus, when evaluating derivatives-related exposures, it is important to consider notional amounts in addition to fair values.

16.3.2 Composition of Derivatives

Derivatives consist primarily of futures, forwards, options, and swaps. Evaluating the composition of derivative positions is important for the following reasons:

- With the exception of options, derivative instruments typically involve no cash payment at the time of origination and present off-balance sheet risk. In contrast, purchased options are paid for at the time of purchase and present no off-balance sheet risk (the risk is limited to the book value of the investment).
- Futures and some option contracts are traded on exchanges and so have available market prices and trivial credit risk (the exchange acts as the counterparty to each contract). Other derivatives often have non-trivial credit

risk and their estimated fair values involve significant discretion.³

- The risks associated with a given amount of notional exposure vary significantly across derivatives. In particular, the fair value volatility of swaps is significantly larger than that of forward contracts (a swap is essentially a portfolio of forward contracts with the same notional amount).

³For some OTC derivatives, quotes are available from brokers/dealers or other market participants and can be used to estimate fair value. However, most derivatives do not have market prices or quotes, so their fair values have to be estimated. A commonly used approach for estimating derivative fair values is to calculate the present value of expected future cash flows. Another approach is to base the fair value estimates on prices of recent transactions with similarly rated counterparties or on current quotes for similar instruments. Other valuation models price derivatives relative to the underlying assets (e.g., option pricing models). These models involve potential error from two sources: (1) error due to inaccurate model assumptions (e.g., the assumption that changes in the price of the underlying asset are continuous) and (2) error in parameters (e.g., estimated volatility of the underlying).

17

Investment in Equity Securities and Variable Interest Entities

17.1 Accounting Principles

The accounting treatment for investments in equity securities depends on whether the firm intends to sell the investment within the next year (short-term investments) or not (long-term investments).

17.1.1 Short-Term Investments

Short-term investments in equity securities are classified as “trading” if the securities were purchased with the purpose of generating profits from short-term price movements. Otherwise, they are classified as “available-for-sale.” In both cases, the investment is initially recorded at acquisition cost and is adjusted to reflect the securities’ market value on each balance sheet date. Also, dividends are recognized as revenue when declared and are included in cash from operations. The primary difference between the two classifications is that unrealized holding gains and losses from the marking-to-market are reported in earnings for trading securities and in other comprehensive income for available-for-sale securities. In addition, all cash flows from purchasing and selling trading securities are classified as operating activities, while cash flows

from purchasing and selling available-for-sale securities are classified as investing activities.

17.1.2 Long-Term Investments

The accounting treatment for long-term investments in equity securities depends mainly on the percentage of ownership acquired. In discussion below, we refer to the investing company as “P” and to the company whose shares have been acquired as “S.”

If company P owns less than 20% of company S’s outstanding common stock, the presumption is that P has a passive interest in S. If market prices for S are available, P should account for the investment using the available-for-sale method described above. Otherwise, P should use the cost method, which is similar to the available-for-sale method except that the marking-to-market step is omitted.

If P owns (directly or indirectly) between 20% and 50% of S’s outstanding common stock, the presumption is that P has significant influence on the operating and financing policies of S and thus should use the equity method to account for the investment.¹ Under the equity method, the investment is originally recorded at acquisition cost and is subsequently adjusted for changes in P’s share in S’s equity. Each period the investment account is increased (decreased) by P’s proportionate share in S’s earnings (losses) and other comprehensive income, and it reduced by dividends received from S. P reports that its share in S’s earnings (other comprehensive income) in the income statement (other comprehensive income).

Additional adjustments are required for the difference between the acquisition cost and proportionate book value acquired. This excess is due to differences between the market and book values of S’s identifiable net assets (including identifiable intangibles) as well as acquired goodwill. The excess due to goodwill and other intangible assets with indefinite lives is not amortized. The excess due to assets with finite

¹P may have significant influence over S and so should use the equity method even if it owns less than 20% of the voting stock of S, but in such cases significant influence has to be demonstrated. For example, representation on the entity’s board indicates significant influence.

lives is amortized over the assets' useful lives. For example, excess due to the market value of inventory exceeding its book value is typically amortized in one year. Periodic amortization of the excess is included in the income statement as an adjustment to the proportionate share in S's earnings.

In the equity method, goodwill is not tested for impairment. Instead, the investment account is written-down to fair value if it suffers other-than-temporary impairment. That is, it is possible for the fair value of the equity method investment to be below its carrying amount, as long as that decline is deemed temporary.

P's net income includes its share in S's earnings independent of whether S distributed or retained those earnings. In contrast, P's cash from operations includes only dividends received. Thus, when calculating cash from operations using the indirect approach, P deducts from net income its share in S's undistributed earnings. If dividends received from S are larger than the share in S's earnings, the difference between dividends received from S and the share in S's earnings is added to income.

The equity method is not allowed for tax purposes. The IRS uses the cost method in computing taxable income. This difference is generally considered temporary, and so it creates deferred tax liability or asset (depending on whether the cumulative difference between share in earnings and dividends received is positive or negative, respectively).

Under SFAS 159, instead of the equity method, P can elect to adopt the fair value option and present its investment in S at fair value on each balance sheet date, with changes in fair value being reflected in the income statement. SFAS 159 became effective in 2008.

If P controls directly or indirectly more than 50% of S's outstanding common stock, the presumption is that P controls S and thus should consolidate S's assets, liabilities, revenues, expenses, and cash flows in its financial statements. Since 2004 (FIN 46R), firms are also required to consolidate "variable interest entities" in which they are subject to a majority of the risk of loss from the entity's activities or entitled to receive a majority of the entity's residual returns or both.

Until 2001, two consolidation methods were used for business combinations: the purchase method, and the pooling of interests method.

Since 2001, firms are no longer allowed to use the pooling method for new business combinations (SFAS 141), but they continue to use this method when consolidating entities that were acquired prior to 2001 in transactions that had been accounted for using pooling.

The choice of consolidation method prior to 2001 was not discretionary. A number of specific conditions had to be met for a transaction to be recorded as pooling of interests (Accounting Principles Board (APB) 16). Two important requirements were: P must issue voting common shares in exchange for at least 90% of the voting common stock of S, and the acquisition must occur in a single transaction. Transactions that did not meet one or more of those criteria were accounted for using the purchase method.

Under both methods — pooling and purchase — the consolidation procedure involves combining the accounts of P and S: revenues, expenses, gains and losses in the income statement; cash flows in the cash flow statement; and assets and liabilities on the balance sheet. The primary difference between the methods is in the measurement basis.

Under the purchase method, S's assets and liabilities are valued on the consolidated balance sheet based on their estimated fair value at the acquisition date. If the amount that P paid for S's common shares is more than the fair value of S's net identifiable assets (i.e., identifiable assets minus identifiable liabilities), the excess is reported on the consolidated balance sheet as goodwill. In the year of purchase, S's transactions are included in the consolidated income and cash flow statements only from the day of purchase. In the consolidated income statement, revenues, expenses, gains and losses of S are adjusted for the effects of differences between the fair and book values of the assets and liabilities at the time of purchase; for example, depreciation is increased if PP&E was written-up, cost of goods sold is increased if inventory was marked up, etc.

Under pooling, the *book* values of S's assets and liabilities are added to P's assets and liabilities; there is no write-up of assets or recognition of goodwill. The presumption is that the two firms have combined their operations but are otherwise operating as before. The stockholders of the combining firms become stockholders in the combined entity; their

interests are basically unchanged. In the consolidated income and cash flow statements, all the items of S are added to those of P for all reported years independent of the timing of the merger.

As the assets and liabilities of S and P are added together, inter-company receivables/payables inflate the balance sheet. Similarly, transactions between the two entities inflate the consolidated income and cash flow statements. To avoid this double counting, inter-company receivables/payables and inter-company transactions are eliminated in the consolidation. These adjustments are applied under both pooling and purchase.

Because P reports on its balance sheet 100% of S's assets and liabilities even when it owns less than 100% of S's stock, an account called minority interest is recognized. This account measures outside shareholders' interest in S's assets and liabilities and is reported as either a liability or a mezzanine account between liabilities and owners' equity. Similarly, since P reports in its income statement 100% of S's revenues and expenses, it must deduct the minority share in income to get net income for the period. In the cash flow statement, P reports 100% of S's cash flows and so adds the minority interest in S's earnings back to net income when computing cash from operations.

Minority interests are reported on the consolidated balance sheet based on the book value of S' assets and liabilities. That is, assets and liabilities of S are marked-to-market on the balance sheet in proportion to P's percentage of ownership. Starting in 2009 (SFAS 141R), acquired assets and liabilities, including goodwill, will be fully marked-to-market and minority interest (referred to as non-controlling interests under the new standard) will be reported based on the fair value of the entity at the acquisition date.

Other important changes related to non-controlling interests are mandated by SFAS 160. Starting in 2009, non-controlling interest will be reported as equity claims on the balance sheet, and non-controlling interests in income will be reported as an attribution of consolidated net income rather than as a deduction in determining net income. In addition, changes in P's ownership interest that do not result in a loss of control will be accounted for as equity transactions (similar to treasury stock transactions).

For tax purposes, most mergers and acquisitions of public firms do not change the tax bases of S's assets and liabilities. Under SFAS 109, P is required to recognize deferred tax liabilities or assets for differences between the assigned values and the tax bases of the assets and liabilities recognized in a purchase business combination, except the portion of goodwill for which amortization is not deductible for tax purposes and a few less common items.

Consolidated tax returns may be filed for subsidiaries owned 80% or more. The advantages of consolidated tax return include the exclusion of inter-company dividends and gains, and the ability to offset losses of one affiliate against the income of another affiliate. The disadvantages include the requirement to adopt generally uniform methods of accounting (e.g., LIFO) for all affiliates, the inability to deduct losses from inter-company transactions, and the requirement that an election to file a consolidated return applies to all future years unless qualifying conditions are met. In most cases, the benefits outweigh the costs, so firms typically file consolidated tax returns for eligible domestic subsidiaries.

17.2 Accounting Quality

17.2.1 Timing Securities Sales and Cherry Picking

See discussion for investment in debt securities (Section 9).

17.2.2 Manipulating “Other-than-Temporary” Impairments

See discussion for investment in debt securities (Section 9).

17.2.3 Avoiding the Equity Method or Consolidation

The equity method requires periodic recognition of share in earnings or loss of affiliated firms. Similarly, consolidated financial statements reflect the earnings or loss of subsidiaries. Thus, firms that invest in start ups or other entities which are expected to report losses in the near term might have an incentive to avoid consolidation and the equity method. Firms might also be reluctant to consolidate profitable entities, especially variable interest entities, if those entities have substantial

debt or problematic assets or liabilities. For example, according to AAER No. 1597, in 2001, PNC failed to consolidate special purpose entities which were created by PNC to transfer problem commercial loans and venture capital assets.

17.2.4 Improper Consolidation Start Date

When preparing consolidated financial statements, firms are required to consolidate revenue and earnings of acquired subsidiaries from the date of effective control. Firms might manage the start date of consolidation. For example, according to AAER No. 1774, in 1999, Teltran International Group, a telecommunications company, consolidated the financial statements of a subsidiary before acquiring effective control.

17.2.5 Inter-Company Transactions

Inter-company transactions inflate the total of assets, equity, revenue, and income of the consolidated entity. Therefore, consolidation requires the elimination or reversal of all inter-company transactions. Some firms fail to do so. For example, according to AAER No. 1234, in 1997, Inamed Corporation, a breast implant manufacturer, failed to properly account for its inter-company transfers of inventory and the concomitant elimination of inter-company profit, resulting in approximately a \$1.2 million overstatement of inventories and gross profit.

17.2.6 Reserves in Business Combination

Acquiring firms might create reserves as part of the purchase price allocation. In general, the recognition of acquisition reserves results in an increase in goodwill rather than a charge to earnings. In a number of cases, these reserves have been subsequently reversed into earnings or used to absorb future operating expenses rather than merger-related costs. Acquisition reserves are often related to restructuring and asset disposal, but may take on various forms. For example, according to AAER No. 1127, in 1990, Fruehauf recorded an additional \$10 million pension liability as a purchase accounting adjustment, arguing that the company decided to reverse an earlier decision by pre-acquisition

management to cap pension benefits. However, in 1991, Fruehauf reversed its decision to lift the cap and released the \$10 million into income.

Firms' ability to create or overstate business combination reserves will significantly decline in 2009 with the adoption of SFAS 141R. This standard allows an acquirer to recognize restructuring reserves only for restructuring plans that the acquiree has committed to prior to the acquisition.

17.2.7 Managing Fair Value Estimates of Net Assets Acquired

In business acquisitions, firms might increase near-future reported income by overstating the fair values of purchased in-process R&D, land, indefinite-life intangibles, or slow-depreciating assets, while understating the fair values of net assets expected to be expensed in the not-too-far future.

17.3 Red Flags and Other Analyses

17.3.1 Realized and Unrealized Gains and Losses

See discussion for investment in debt securities (Section 9).

17.3.2 Appropriateness of Accounting Method

As discussed above, in some cases firms have incentives to avoid using the equity method or consolidation. When cost or equity investments are significant, the appropriateness of the accounting method can be evaluated by considering the nature of operations and the relations between the two firms, as disclosed in SEC filings and other sources.

17.3.3 Business Combination Reserves

The primary earnings quality concern regarding business acquisition reserves is the overstatement of income in subsequent years through the reversal of the reserves. Therefore, the analysis of business reserves involves examining the magnitude of estimated liabilities before and after material business acquisitions.

18

Shareholders' Equity

18.1 Accounting Principles

Shareholders' equity is composed of common stock, preferred stock (if issued), treasury stock, retained earnings, and accumulated other comprehensive income. We next discuss the accounting treatment for each of these items.

18.1.1 Common and Preferred Stock

Firms must issue common stock and have the option of issuing preferred stock. On the balance sheet, common and preferred stock appear separately at the par or stated value of issued shares (i.e., the number of issued shares multiplied by the par value per share).

18.1.2 Additional Paid-In Capital

The amount paid by shareholders is usually larger than the par or stated value of issued shares. Firms credit this difference to a shareholders' equity account called additional paid-in capital (APIC) or capital surplus. As discussed below, APIC is also affected by treasury stock and option transactions.

18.1.3 Treasury Stock

When a company purchases its own shares, it reduces cash and equity by the amount paid. Equity is typically reduced by increasing a contra-equity account called treasury stock. When treasury stock shares are reissued, the firm increases net assets and equity by the fair value of the net assets received or shares issued, whichever is more readily determinable. Specifically, treasury stock is reduced by the acquisition cost of the reissued shares, and the difference between the proceeds and the acquisition cost (i.e., the gain or loss from the reissuance) generally increases or reduces APIC. That is, no gain or loss is recognized in the income statement. As a general rule, issuance, repurchase or retirement of shares or options does not give rise to accounting gains or losses — under GAAP, firms cannot recognize income from transactions in their own equity.

18.1.4 Retained Earnings

Retained earnings represent the excess of cumulative net income over cumulative dividends since the formation of the company. That is, retained earnings measure the increase in net assets (assets minus liabilities) due to earnings activities since the formation of the company, minus assets which have been paid out as dividends.

There are three types of dividend distributions to shareholders: cash dividends, property dividends, and stock dividends. *Cash dividends* are distribution of cash. *Property dividends* or *dividends in kind* are distributions of assets other than cash, such as investments in stocks of other firms. Property dividends are measured at the market value of the property, with the difference between the market and book values of the property recognized as a gain or loss in the income statement. *Stock dividends* are distribution of additional shares of stock. There is essentially no economic substance to stock dividends. The accounting treatment involves reducing retained earnings and increasing common stock and APIC (for small-percentage stock dividends). For a small-percentage stock dividend (up to 20–25%), the reduction in retained earnings is equal to the market value of the new shares, and the difference between the market and par value of the shares is credited

to APIC. For a large-percentage stock dividend, retained earnings is reduced by the par value of the new shares. A related transaction is *stock split in the form of stock dividend*, which is accounted for the same as large-percentage stock dividend, except that APIC rather than retained earnings is reduced.¹

18.1.5 Stock Options and Other Share-Based Payments

Stock options, restricted stock, and stock appreciation rights (cash-settled grants) are often granted to employees as part of a compensation package. In addition, some firms issue stock, options, or other stock-based payments for goods or services acquired, issue warrants, take positions in call or put options on their stock, or make stock-based payments for goods or services acquired.

When options or other share-based payments are issued to parties other than employees, the asset acquired or services received are measured at the estimated fair value of the assets/services received or options issued, whichever is more readily determinable. Assets are recognized when they are obtained, and services are recognized over the period that they are received. The balancing credit is to additional paid in capital.

Options issued to employees are accounted for using the “fair value method” (SFAS 123R). Under this method, at the time of grant the company estimates the value of the options that are ultimately expected to vest and recognizes that amount as an expense over the service period, which is typically the vesting period (generally between three and five years). Changes in the fair value of the options are ignored, and adjustments are made only with respect to unexpected forfeitures.

When options expire, no accounting record is made. When options are exercised, cash and equity are increased by the exercise price. If the firm issues treasury stock shares, treasury stock (a contra-equity account) is reduced by the acquisition cost of the reissued shares, and the difference between the exercise price and the acquisition cost is

¹In contrast, a regular stock split is the act of increasing the number of outstanding shares and proportionally reducing the par value per share. No accounting adjustment is necessary for a regular stock split.

generally credited or debited to APIC. If new shares are issued, common stock is increased by the par value of the shares and the difference between the exercise price and par value is credited to APIC.

18.1.6 Accumulated Other Comprehensive Income

Some revaluations of assets, liabilities, and derivatives do not pass through the income statement and thus do not affect retained earnings. Instead, other equity accounts — referred to as accumulated other comprehensive income accounts — are adjusted. Their balances reflect the cumulative effect of the related revaluations, net of deferred taxes. The primary accounts are:

Unrealized holding gains/losses on available for sale securities — Investment in securities classified as available for sale are marked-to-market on each balance sheet date, but the unrealized gain/loss is not included in income.

Cumulative foreign currency translation adjustment — Assets and liabilities of most foreign subsidiaries are reported on consolidated balance sheets based on current exchange rates. That is, fluctuations in exchange rates effectively cause revaluation of assets and liabilities, which bypass the income statement.

Unrealized gains/losses on some derivative positions — Under SFAS 133, firms are required to report all derivatives at estimated fair value on each balance sheet date. Unrealized gains/losses on derivatives that hedge exposures to variable cash flows (e.g., interest rate swaps used to hedge the interest rate exposure of floating rate bonds payable) or foreign currency gains/losses from translation of net investment in a foreign operation are included in accumulated other comprehensive income. These gains/losses are subsequently reclassified into earnings when the hedged item affects earnings.

Funding status of pension and OPEB plans — Under SFAS 158, firms are required to recognize the overfunded or underfunded status of defined benefit pension and OPEB plans as assets or liabilities on the balance sheet, with corresponding adjustments to accumulated other comprehensive income.

Similar to other revaluations, firms are required to recognize deferred income tax liabilities or assets for future tax consequences of comprehensive income revaluations. Like the revaluations, these deferred taxes do not pass through the income statement; instead, they are netted against the related accumulated other comprehensive income accounts.

18.1.7 Earnings per Share

Earnings per share (EPS) is the amount of earnings attributed to each share of common stock outstanding. Conceptually, it is merely net income divided by the number of shares outstanding:

$$\text{Conceptual EPS} = \frac{\text{Net income}}{\text{Common stock outstanding}}.$$

This calculation assumes that all shares were outstanding throughout the year and that there are no other claims on net income besides those of outstanding common shares. These assumptions often do not hold. Due to treasury stock transactions and new shares issuance, outstanding shares often vary during the year. Because income is earned during the year, and outstanding shares may generate earnings only from their issue date, net income should be divided by the time-weighted average number of shares outstanding during the year. In addition, many firms have outstanding preferred shares, which have claims on net income. Accordingly, preferred dividends should be subtracted from net income in the numerator. The resulting ratio is termed “basic EPS”:

$$\text{Basic EPS} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Weighted average number of common stocks outstanding}}.$$

Basic EPS fails to recognize the dilution of EPS that may result from exercise or conversion of existing securities that allow their holders to exchange or convert these securities to common stock. Examples include stock options, stock rights, stock warrants, convertible bonds, and convertible preferred stock. When the potential dilution is material, firms are required to report diluted EPS in addition to basic EPS. Diluted EPS is a conservative measure of EPS reflecting the maximum

potential dilution that would have resulted from conversions, exercises, and other contingent issuance of dilutive securities. Calculating diluted EPS involves the following adjustments:

- For dilutive convertible securities (convertibles preferred stock, convertible bonds), the number of shares is increased by the additional shares that would have resulted from conversion, and income is increased by the related preferred dividends or after-tax interest.
- For equity contracts (options, rights, warrants), the number of shares is increased by the additional shares that would have resulted from exercise, and reduced by the number of shares that could have been purchased using the proceeds from the exercise.

18.1.8 Book Value of Common Equity

The book value of common equity is equal to total shareholders' equity minus the book value of preferred stock. Book value per share is the ratio of the book value of common equity to the number of shares outstanding. The book value of preferred stock equals the par value of issued preferred stock (i.e., the balance of the account "preferred stock"), minus preferred treasury stock, plus additional paid in capital from preferred stock transactions, and minus preferred dividends in arrears. Since firms report only the total of additional paid in capital, and preferred shares are usually issued close to par, analysts typically assume that all APIC is from common stock transactions.

18.1.9 Market-Based Ratios

The following are two commonly used market valuation ratios:

Price to book ratio — The ratio of market value of outstanding common shares to the book value of common equity, which is also equals to the ratio of price per share to book value per share.

Price to earnings ratio — The ratio of price per share to EPS.

18.2 Accounting Quality

18.2.1 Dilution from Contingent Claims

Diluted EPS only accounts for the intrinsic value of dilutive instruments — i.e., the extent to which those instruments are in-the-money — and so it does not fully reflect dilution. For example, at-the-money options do not affect diluted EPS at all, although in most cases these options eventually dilute existing shareholders. Basic EPS and book value per share do not reflect the potential dilution from existing contingent claims at all.

18.2.2 Impact of Treasury Stock Transactions on EPS

Anecdotal and empirical evidence suggests that firms often engage in treasury stock transactions to manage EPS. To the extent that the expected earnings-price ratio is larger than the after-tax return on cash holdings or the after-tax cost of borrowing, firms might increase reported EPS by purchasing treasury stock during the period. Conversely, if the expected earnings-price ratio is lower than the after-tax return on cash holdings, the firm might increase reported earnings by reissuing treasury shares and either paying back debt or investing in interest-bearing instruments.

18.2.3 Manipulation of the ESO Expense — Option Parameters

The measurement of the ESO expense involves several assumptions and estimates, including stock price volatility, expected option lives, expected dividend yield, the risk free interest rate, and the proportion of options expected to vest. Firms have significant discretion in estimating these quantities, particularly stock price volatility and expected option lives. Since these inputs have a large impact on the options' estimated fair value, management's ability to manipulate the ESO expense is substantial. For example, Bartov et al. (2007) show that firms understate the ESO expense by opportunistically shifting weights between implied and historical volatilities when estimating the stock price volatility parameter. Importantly, unlike other forms of earnings management

where total expense must ultimately equal cash flow, there is no such truing-up mechanism for options, so any manipulation is permanent (except the forfeiture rate, which is trued-up).

18.2.4 Manipulation of the ESO Expense — Grant Date Stock Price

Under SFAS 123, firms were required to recognize compensation expense when granting in-the-money options — that is, options whose exercise price is smaller than the grant date stock price. By falsely documenting that the options were granted on an earlier date, some firms were able to grant in-the-money options and still avoid having to report an expense (Heron and Lie, 2007). For example, according to AAER No. 2661, Integrated Silicon Solution Inc. concealed stock option compensation expense associated with in-the-money options granted to executives and employees by backdating the grants to dates when stock price was at or below the related exercise price.

Under SFAS 123R, firms are required to recognize ESO expense for all option grants, whether in-, at-, or out-of-the-money at the time of grant. However, because the estimated value of options increases with the grant date stock price, firms' incentives to backdate options have not been eliminated by this standard.

Another way to understate the reported option expense is to manage earnings downward or disclose other bad news immediately prior to the granting of options (e.g., Aboody and Kasznik, 2000; McAnally et al., 2008).² To the extent that such disclosures temporarily reduce the grant date stock price, the options' estimated value and hence the reported ESO expense will be understated. Perhaps a less problematic practice is to simply grant options at times when stock price appears to be temporarily depressed (Yermack, 1997).

18.2.5 Unreported Gains and Losses from Equity Transactions

As discussed above, options and treasury stock transactions generally do not result in recognized gains/losses, although these transactions

²Relatedly, Cheng and Lo (2006) find that firms increase bad news forecasts before executive share purchases.

often generate significant economic gains/losses for existing shareholders. For example, if management times treasury stock transactions so that it buys shares when price is below intrinsic value and sells when price is above intrinsic value, these transactions generate gains for existing shareholders which are credited to APIC and bypass the income statement.

18.3 Red Flags and Other Analyses

18.3.1 Changes in Accumulated Other Comprehensive Income

Accumulated other comprehensive income reflects revaluations of assets and liabilities (e.g., unrealized gains on available for sale securities) which are yet to be recognized in the income statement. Therefore, a decline in accumulated other comprehensive income is due to at least one of the following possibilities:

- The period's earnings include large realized gains. Since gains and losses are less persistent than revenues and expenses, the implication is that earnings contain a positive transitory component.
- The firm had unrealized losses during the period which bypassed the income statement. These losses are likely to be recognized in future income statements.

18.3.2 Impact of Treasury Stock Transactions on EPS

The following analyses are useful for evaluating whether the firm used treasury stock transactions to inflate EPS:

- Comparison of the percentage changes in net income and EPS. If the increase in EPS is larger, it may be due to treasury stock transactions.
- Comparison of the earnings-price to the after-tax cost of borrowing and the return on cash holdings. High earnings-price ratios imply the potential for inflating EPS by repurchasing shares.

- Examination of the magnitude of treasury stock transactions during the year.

18.3.3 ESO Expense Assumptions

Since firms are required to disclose the primary inputs used to calculate the ESO expense, the quality of this expense can be evaluated by comparing the inputs with relevant benchmarks. For example, an analyst may compare the volatility parameter with historical or implied volatility, or compare the expected life parameter with those used by similar firms.

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Concluding Comments

In this paper, we discuss the issue of earnings quality and the related concept of earnings management, focusing on the key line-items of the financial statements. For each component of the financial statements, we summarized the specific issues applicable to that line-item, discuss implications for earnings quality, evaluated the susceptibility of the item to management manipulation, and discuss potential red flags. The red flags and the specific issues discuss for the individual line-items should provide a useful framework for further fundamental and contextual analysis for both academic researchers and practitioners.

As evident from our discussion and analysis, different line-items can be manipulated to varying degrees, and consequently involve different levels of “implied quality.” Conducting analysis involving financial aggregates (e.g., focusing on earnings or net cash flow) is bound to contaminate and distort the information contained in the underlying accounting data. It behooves those conducting capital markets and accounting research to pay close attention to the accounting issues applicable to individual line items. Doing so will undoubtedly improve the quality of the research.

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