Fair value accounting, earnings management, and the case of bargain purchase gain

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Abstract

Purpose – The purpose of this paper is to investigate the association between bargain purchase gains (BPGs) booked by the acquirer and smoothing of acquirers' earning performance across time.
Design/methodology/approach – The authors use a sample of 122 bargain purchase acquisitions in non-financial industries from 2009 to 2012 and a pair-match control group of 122 goodwill acquisitions.
Findings – The authors find that BPGs, and in particular, the Level-3 fair value estimates of intangible assets acquired, have consistently been used to smooth earnings but that such smoothing activities are not associated with long-term market returns.
Originality/value – This study is the first one to investigate bargain purchase acquisitions in a broad range of non-financial industries and suggests that managers are using the valuation of intangibles to avoid unfavorable earnings even though these valuations are not credible to investors.

Keywords Earnings management, ASC 805, ASC 820, Bargain purchase gain, Fair value measurement
Paper type Research paper

Nomenclature

DBPG	a dummy variable equal to 1 if the acquirer records a BPG, and 0 otherwise	*LOSS*	a dummy variable equal to 1 if the acquirer's net income before the effect of BPG is lower than 0, and 0 otherwise
DBPG_EXCLUDE	a dummy variable equal to 1 if the acquirer is able to recognize a BPG without intangible assets acquired, and 0 otherwise	*ACQUIRER_SIZE*	the log of the acquirer's total assets at the beginning of the period
		ACQUIRER_ROA	net income divided by total assets for the acquirer at the beginning of the period
DECLINE	a dummy variable equal to 1 if the acquirer's net income before the effect of BPG is less than net income in prior year, and 0 otherwise	*ACQUIRER_LEV*	book value of total assets divided by book value of equity for the acquirer at the beginning of the period

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ACQUIRER_MB	the market value of equity over the book value of equity for the acquirer at the beginning of the period	*ACQ_BPG*	the amount of bargain purchase gains recorded by the acquirer, deflated by total net assets acquired
MULTI	a dummy variable equal to 1 if the firm completes more than one acquisitions in the current year	*ACQ_INTAN*	the fair value estimates of intangible assets acquired, deflated by total net assets acquired
Q4	a dummy variable equal to 1 if the acquisition is completed in the fourth quarter of the current year	*ACQ_PPE*	the fair value estimates of property, plant and equipment acquired, deflated by total net assets acquired
INTERSTATE	a dummy variable equal to 1 if the acquirer and the target are in the same state, and 0 otherwise	*ACQ_INVT*	the fair value estimates of inventory acquired, deflated by total net assets acquired
TAR_SIZE	the log of the target's total assets acquired	*ACQ_AO*	the fair value estimates of other assets acquired, deflated by total net assets acquired
TARPUB	a dummy variable equal to 1 if the target is public	*RELATIVE*	the total acquisition cost over the acquirer's total assets at the beginning of the period
TAR_ROA	net income divided by total assets for the target at the beginning of the period	*PCT_STOCK*	the ratio of stock consideration to the total acquisition cost
CAR	cumulative market-adjusted stock returns around the acquisition announcement date	*ΔCOMPENSATION*	the percentage change in cash compensation including salary and bonus

1. Introduction

Under previous accounting guidance, in business acquisitions where the fair value of net assets acquired exceeded the purchase consideration paid, the excess was classified initially as negative goodwill. Subsequently, negative goodwill was assigned to non-monetary assets that were hard to value, such as property, plant and equipment, or intangibles. If some negative goodwill remained after reducing the fair value of those hard-to-value assets to 0, it was recognized in the acquirer's income statement as an extraordinary gain[1]. In December 2007, the FASB issued Accounting Standards Codification™ (ASC) 805, Business Combinations (formerly FASB Statement 141, Business Combinations). Under the new accounting standard, the entire amount of negative goodwill is reported as a bargain purchase gain (BPG), which is a component of income from continuing operations. ASC 805 became effective for acquisitions completed during annual reporting periods that begin on or after December 15, 2008.

This paper focuses on acquisitions by non-financial firms where BPGs were recorded. Unlike financial firms where loans are the primary asset whose fair values may differ from market values, many different classes of tangible and intangible assets could contribute to fair value adjustments for non-financial firms. In particular, ASC 805 requires that the price paid for the acquisition be allocated to specific assets that can be amortized on a systematic basis rather than to goodwill which is allocated at an entity level and difficult to test for impairment. Therefore, the allocation to specific assets and subsequent depreciation results in much better matching with the revenues generated by the acquisition. The possibility that such allocations would generate BPGs that is result in acquisitions where the fair value exceeded the consideration paid was considered unlikely as long as the market was moderately efficient.

Fair value estimates for non-traded assets (often intangibles) at the date of acquisition require the acquiring management to estimate future cash flows and construct model-based valuations. Consider now a setting where the acquirer's valuation exceeds the consideration paid. These valuations could be subject to the "winners curse" where the acquirer entered the transaction because of overoptimistic valuations of the acquired assets. An alternative is that management makes optimistic valuations to increase their own compensation and that the fair values are deliberately overestimated (Lilien *et al.*, 2013). A third possibility, arising from the theory of earnings smoothing (Ronen and Sadan, 1981), is that fair value estimates communicate managers' private information about synergies in the acquisition and provide useful information to the market (this is the fundamental reasoning behind using managerial estimates in financial reports). The first two explanations will typically result in BPGs that have little or no actual economic value. The third possibility will lead to BPGs that are at least partially reflected in market valuations.

Prior studies have documented many instances of smoothing earnings through accounting choices. Hand (1989) suggests that firms use the accounting-based reported gains from debt-equity swaps to offset an unexpected and transitory decrease in earnings. Haw *et al.* (1991) shows that firms use pension gains from curtailment of defined pension plans to similarly smooth a decline in reported earnings. The curtailments are accounting transactions without cash consequences. More recent studies look at how the flexibility in fair value accounting allows for earning management. For example, the use of fair value gains to avoid earnings decreases or negative earnings is examined with regard to available-for-sale assets (Barth *et al.*, 2012) and with regard to gains from asset securitization (Dechow *et al.*, 2010). The implicit rationale for why managers choose these strategies is the effect on their own compensation. A more explicit linking of fair value estimates to compensation is provided in the study of Manchiraju *et al.* (2016). Many of these studies further assume that managers' acting to maximize compensation has negative consequences for investors[2].

The role of goodwill (consideration paid exceeding net value of assets acquired) has been analyzed in the study of Shalev *et al.* (2013). Shalev *et al.* (2013) suggest that earnings management in goodwill acquisitions is achieved through discretionary fair value estimate assigned to goodwill rather than intangible assets. Since goodwill is unamortized and the likelihood of goodwill impairment is remote, acquiring management engage in such transactions to benefit from higher future income and increased compensation. It was precisely this consideration that motivated the FASB to detail a large number of intangible assets that ought to be recognized as the value drivers of the acquisition rather than be classified amorphously as goodwill. However, a consequence, perhaps unintended, has been that the recognition of these assets has led to a much larger number of BPG transactions than was estimated.

This paper investigates the role of intangibles in BPG acquisitions by non-financial firms and contrasts it with similar acquisitions where goodwill was recorded. We find that goodwill acquisitions generate positive returns in the market whereas BPG acquisitions do not generate such returns. Additionally, we show that in the long-term, goodwill acquisitions do better than

BPG acquisitions. These findings suggest that the earnings management identified by Shalev *et al.* (2013) in goodwill firms is viewed more favorably by investors than that leading to the recognition of BPGs. We also analyze the effect of BPG's on managerial compensation and whether BPG firms generate more future cash flows relative to goodwill firms as would be implied by higher model-based fair values for the acquired assets[3].

We use EDGAR Online I-Metrix to identify Form 10-K filings containing business acquisitions with BPGs. We read each Form 10-K over the period 2009–2012 to obtain fair value of assets acquired, liabilities assumed and other necessary financial data. Acquisitions in the financial industry account for 48.78 percent of bargain purchase acquisitions[4]. Since most acquisitions of banks were directed by Federal Deposit Insurance Corporation (FDIC) during the financial crisis and involved features that are absent in normal market transactions such as FDIC indemnification agreements, the 51.22 percent of bargain purchase acquisitions that we analyze are qualitatively different[5]. The final sample consists of 122 non-bank bargain purchase acquisitions with available financial data. For a comparison with firms that recognize goodwill in acquisitions, we employ a pair-match control group of 122 non-bank goodwill acquisitions.

Acquiring managers are motivated to report BPGs when the expected benefits are higher. Following Dechow *et al.* (2010), we assume that acquiring managers' incentives to record BPGs are relatively strong when the earnings before BPGs are below prior year's level. The first set of empirical results show that acquiring firms are more likely to record BPGs when experiencing an earnings decline without BPGs, suggesting that BPGs are used to stop earnings from falling below that of the previous year. This is consistent with the theory that managers use the flexibility inherent to fair value measures to boost reported income and prevent negative consequences that may arise due to a drop in reported income (Marra, 2016). However, this finding does not rule out the main alternative that the acquisition increases economic value and managers are communicating this by recording BPGs, and in particular, intangibles.

To test whether bargain purchase acquisitions communicate credible information to investors, we compute abnormal stock return differences across BPG firms and the matched goodwill firms both around acquisition announcement, and over the following six-month period. Despite the claims of a bargain purchase acquisition (payment less than net assets acquired), the market responds more positively to the matched goodwill acquisition (payment greater than net assets acquired). This finding suggests that investors are not convinced by any real value associated with BPGs which is highly dependent on model-based Level-3 estimates (see also Shalev *et al.*, 2013). We also conduct an additional test to show that, when decomposing BPGs to a value relevant component and an unvalued component, the unvalued component is positively associated with the Level-3 fair value estimates of intangibles. This is consistent with our hypothesis that intangibles provide the maximum level of flexibility for managers in trying to record BPGs to restore earnings to the same or higher level than the prior year.

Our study contributes to two streams of literature. First, it adds to the literature on earnings management (Hand, 1989; Dechow *et al.*, 2010; Barth *et al.*, 2012; Shalev *et al.*, 2013). We use a unique setting, where revised accounting standards allows for recognition of a day one gain, to suggest that acquiring firms are using BPGs to influence earnings. Second, this study adds to literature on fair value accounting (Martin *et al.*, 2006; Ronen, 2008; Kolev, 2008) by focusing on Level-3 fair value of intangible assets. Finally, our sample covers a broad range of non-financial industries where the possibility of BPGs is unlikely from an economic perspective (BPGs reflecting economic value arose in the financial services industry during the 2008 crisis; see footnote 5). In addition, this study focuses on the valuation of intangibles where management has the most flexibility and valuation involves high levels of uncertainty. We find that market prices do not reflect these valuations whereas they prevent earnings from falling below that of the previous year. Taken together, the two findings suggest that managers are using the

valuation of intangibles to avoid unfavorable earnings even though these valuations are not credible to investors.

This paper calls for the users of financial statements to pay attention to firms involved with bargain purchase acquisitions, and, in particular, of the valuation of intangibles, because the valuations of these assets is intrinsically more uncertain and may be used as a tool to increase and smooth earnings trends. Also, while regulators consider that the changes in ASC 805 improve the informativeness and faithfulness of financial statements, this paper questions the quality of fair value assigned to net assets acquired and the amount of BPGs.

The remainder of this paper is as follows. Next section provides a background for bargain purchase acquisitions. Section 3 reviews the previous literature and develops testable hypotheses. Section 4 describes research design, and Section 5 shows the sample selection and data description. We show the empirical results in Section 6 and additional analyses in Section 7. Section 8 discusses the conclusions and implications of our findings.

2. Background

In a typical bargain purchase acquisition, the purchase price is allocated to assets and liabilities based on their estimated fair values on the acquisition date. The acquiring management could determine fair values with assistance from outside consultants and use fair value methodologies in accordance with generally accepted accounting principles. The excess of fair value of the net assets acquired over the purchase price was recorded as a BPG and is shown as a separate component of earnings in the acquiring firm's income statement.

The FASB issued SFAS No. 157 Fair Value Measurements in September 2006, which "defines fair value, establishes a framework for measuring fair value, and expands disclosures about fair value measurements" (SFAS 157, p. 8, paragraph 1). The framework uses Level-3 fair value hierarchy to reflect the level of judgment involved in estimating fair values. This standard gives the highest priority to Level-1 fair value and the lowest priority to Level-3 but does not provide implementation guidance on how to incorporate management judgments in arriving at fair values. Given this, acquiring firms have subjectivity in fair value accounting and the recognition of BPGs[6].

To better understand bargain purchase acquisitions, and how they arise in practice, Table AI presents an example of business combination disclosure (Note 4: Business combination to Consolidated Financial Statements) in the Form 10-K of Plures Technologies Incorporated (PTI) on December 31, 2011. On May 23, 2011, PTI, a business development company, acquired Advanced MicroSensors Corporation. PTI discloses that "the company's management determined fair value with assistance from its outside consultants and used fair value methodologies in accordance with generally accepted accounting principles. Specifically, the valuation of the intangible assets was based on methodologies that relied upon forward looking forecasts that considered all known information at that time, the most significant assumption being the revenue growth of the company, primarily in the magnetic sensor business" (10-K, p. F-12, paragraph 6). PTI reports $4,785,977 in assets acquired at fair value, including $1,881,000 in intangible assets, and $1,041,128 in liabilities assumed at fair value, resulting in total net assets acquired of $3,744,849. The consideration paid was the write-off a loan $1,707,326 and stock worth $385,000, leading to a total consideration of $2,092,326 and a BPG of $1,652,523, which is included in the Consolidated Statement of Operations for the year ended December 31, 2011.

There are several interesting points about this accounting that eventually resulted in a BPG. First, it appears that AMS was unable to pay back the advance from PTI and if the acquisition had not taken place, PTI would have been forced to write-off the loan resulting in a loss of $1,707,326. Instead, they were able to book a gain of $1,652,323 based on the valuation of intangibles. Indeed, if the intangibles were not recognized, this transaction would have resulted in goodwill of $229,477 rather than a BPG of $1,652,523. To summarize,

bargain purchase transactions typically involve some special considerations (in this case, a failing investment) and the amount of BPGs depends heavily on the fair value of assets that have no determinable market value such as intangibles (in this case, intangibles are valued at 110 percent of the BPG).

3. Literature review and hypothesis development

This study follows two streams of literature: literature on earnings management; and literature on fair value accounting.

3.1 Earnings management

The literature on reporting strategies of management is based on two fundamental economic issues. The first is that managers are given discretion in reporting so they can convey private information to investors (Ronen and Sadan, 1981; Demski *et al.*, 1984). The second is that managers will choose reporting strategies that maximize their own compensation, that is, managers act as utility maximizers, and their contract has to be designed in such a way that their incentives are aligned with the interests of shareholders (Holmstrom, 1982; Grossman and Hart, 1982). A number of empirical papers have built upon these theories. For example, Burgstahler and Dichev (1997) and Ahmed *et al.* (1999) document that earnings management is used as a method for firms to signal the good quality of their business to financial statements users. The effect of reporting choices on compensation has also been the focus of many studies, such as Healy (1985) and Healy and Wahlen (1999), and more recently, the relationship between compensation and fair value estimates (Manchiraju *et al.*, 2016). Other indirect incentives for managers to smooth earnings include costs associated with risk aversion, breach of debt covenants and tax payments (Moyer, 1990; Scholes *et al.*, 1990; Collins *et al.*, 1995; Beatty *et al.*, 1995; Dechow *et al.*, 2010). Strategies for influencing reported earnings include loan loss provisions (Beaver *et al.*, 1989), levels of bad debt expense (Teoh *et al.*, 1998) and claim loss reserves (Beatty *et al.*, 2002).

Prior studies have also provided evidence of real-activities earnings management, that is, the choice of projects and investments that affect reported earnings (Roychowdhury, 2006; Graham *et al.*, 2005). In this paper, we focus on fair value estimates and reported income using the accounting discretion permitted under ASC 805 to acquiring management in business combinations to intentionally dampen the fluctuations of firms' earnings. A related study concerning the use of BPGs in the banking industry over the crisis period is Dunn *et al.* (2016). The issue there is the fair value of expected losses in acquired loans for acquisitions during the financial crisis. As noted earlier, their sample is a very special class directed by the FDIC and involves unique features that are not representative of BPG acquisitions in our sample. In particular, while the BPG acquisitions in their sample resulted in a positive market reaction suggesting that the market recognized underlying value in the reported BPGs, such was not the case of the acquisitions in our sample.

The manipulation of BPGs is not costless: managers need to overestimate fair value of net assets acquired to recognize BPGs, thus increase the probability of recording future impairment. There, we expect that managers will time the recognition of BPGs to periods in which the benefits are larger. Previous research documents systematic evidence of incentives to avoid reporting negative earnings and earnings decreases (Burgstahler and Dichev, 1997; Dechow *et al.*, 2010). Following Barth *et al.* (1999) and Dunn *et al.* (2016), we expect that managers have strong incentives to avoid current earnings decreases. As such, they are likely to time the recognition of BPG to periods in which earnings before BPG are lower than prior year's earnings level. We present the first hypothesis as follows:

H1. Acquiring firms are more likely to recognize a BPG when missing prior year earnings.

3.2 Fair value accounting

FASB ASC 805 requires all assets and liabilities, tangibles and intangibles, acquired in a business combination to be recognized at their fair values. Any excess of the purchase price over amounts allocated to acquire net assets is recorded as goodwill. When the fair value of net assets acquired is greater than the purchase price, a BPG is recognized. This accounting guidance for business combination has put intangible assets firmly in the spotlight because of the growing significance of intangible assets as a portion of the assets acquired. The valuation of intangible assets can have a significant impact on earnings through the record of BPGs and the impairment over their remaining useful lives. Acquirers must go through a robust process of identifying and valuing intangible assets. The key steps include identification of intangible assets, estimation of discount rate, selection of valuation methodology, valuation analysis and reconciliation of results[7]. This process is largely based on management's significant judgments and best estimates for projected cash flows, discount rates, royalty rates and remaining useful life, which are considered Level-3 unobservable inputs and can differ materially from actual results. We therefore hypothesize that the valuation of intangibles will be the most important discretionary component in reported BPGs (Lilien *et al.*, 2013). When observing a decline in earnings compared to last year net income, acquiring managers may use their flexibility in fair value accounting to overvalue intangible assets acquired, resulting in the recognition of BPG. In this paper, we assume that the entire amount of intangible assets is discretionary[8]. If we exclude the fair value estimates of intangible assets from the calculation of BPG, the remainder should be the real gains resulted in such acquisitions and the recognition of real gains is not associated with a decline in earnings. We summarize our prediction in the next hypothesis:

H2. The association between BPG recognition and earnings decline is linked more strongly to estimates of intangible assets than other components of BPG.

Prior studies view the use of managerial subjectivity in preparing financial statements as a vehicle to communicate managers' private information regarding future earnings to investors (Kirschenheiter and Melumad, 2002; Ronen and Sadan, 1981; Sankar and Subramanyam, 2001; Demski, 1998; Beaver and Venkatachalam, 2003; Beatty and Harris, 1999). Other literature argues that agency conflicts could impair the informativeness of managerial judgments in financial reporting (Demski, 1998; Tucker and Zarowin, 2006). Management could overstate firm's performance to meet their bonus target or to protect their job (Healy, 1985; Fudenberg and Tirole, 1995; Arya *et al.*, 1998). If an acquisition is motivated by acquirer management's self-interest (Berkovitch and Narayanan, 1993), they have an incentive to overvalue the future benefits associated with it. In these circumstances, managerial judgment makes the financial reporting less informative about a firm's future economic performance.

The expanding use of fair value estimates has brought attention to the relevance and reliability of those metrics. Barth *et al.* (1996) and Carroll *et al.* (2003) have documented empirically that fair value estimates are generally value relevant over and above historical cost figures. Findings also imply that the reliability of fair value disclosure is questionable, as managers have incentives and opportunity to bias the reported values (Barth, 1994; Barth *et al.*, 1996; Danbolt and Rees, 2008). When the reliance on managerial judgment and estimates in the determination of fair value opens a door to intentional bias, mark-to-model (Levels 2 and 3) fair value are considered less reliable than mark-to-market (Level 1) fair value (Martin *et al.*, 2006; Ronen, 2008; Kolev, 2008). Song *et al.* (2010) focus on value relevance of fair value hierarchy information and document that the value relevance of Level-3 fair values is lower than that of Level-1 and Level-2 fair values, because Level-3 fair values are less observable and lead to greater information asymmetry between investors and managers. Riedle and Serafeim (2011) also find that Level-3 fair values are associated with a higher information risk. In business combinations, researchers have raised specific

concerns that the Level-3 fair values allocated to intangible assets is likely to favor earnings management behaviors. Shalev *et al.* (2013) find that firms could allocate value to intangible assets in order to control the reported earnings through the use of control over amortization and impairment decisions. For these reasons, we hypothesize that BPGs arising from high Level-3 fair value estimates are unlikely to convey information to investors:

H3. Stock price reactions at the time of acquisition are less positive for BPG firms than for the matched goodwill sample at the time of the acquisition (more investor skepticism). The stock price reaction in the long-run is also less favorable as the income signaled by BPGs is not realized.

4. Research design

In this section, we discuss research methodology and variable construction. The first hypothesis predicts that acquiring managers have stronger incentives to boost current earnings through the recognition of BPGs when pre-managed earnings are below prior year earnings. To test *H1*, we employ the following probit model:

$$Prob(DBPG) = \beta_0 + \beta_1 DECLINE + Controls + Industry\ Fixed\ Effect + Year\ Fixed\ Effect + \varepsilon. \quad (1)$$

The dependent variable, *DBPG*, is a dummy variable equal to 1 if the acquirer record BPGs in the current year, and 0 otherwise. Following Beatty *et al.* (2002) and Burgstahler and Dichev (1997), we measure acquiring managers' incentives to boost earnings in the current period as *DECLINE*, a dummy variable equal to 1 if the acquirer's net income before the effect of BPGs is less than their prior year net income, and 0 otherwise. Previous literature documents that managers use last year earnings as a benchmark for current year earnings and have strong incentives to avoid an earnings decline in the current year (Beatty *et al.*, 2002; Burgstahler and Dichev, 1997; Dechow *et al.*, 2010). We expect that, when acquiring managers notice a potential decline in current earnings before the year-end, they tend to manipulate fair value estimates in acquisitions in the same year and are more likely recognize BPGs to boost current earnings. We compare acquiring firms' earnings before the effect of BPGs in the acquisition year with earnings in the last year to capture managers' incentives to avoid a decline in the current year. We expect a positive and significant coefficient on *DECLINE*, implying that acquiring firms are more likely to report BPGs to boost current earnings.

We mainly follow two recent studies of Shalev *et al.* (2013) and Dunn *et al.* (2016) to include control variables. We control for the log of the acquiring firm's prior year total assets (*ACQUIRER_SIZE*), because Beatty *et al.* (2002) document that larger firms are subject to more scrutiny and thus may have fewer opportunities to intentionally report BPG. We further control for other acquiring firms' characteristics in the year before acquisitions, such as return on assets (*ACQUIRER_ROA*), leverage (*ACQUIRER_LEV*) and market-to-book ratio (*ACQUIRER_MB*). Following previous literature (Hayward and Hambrick, 1997; Shalev *et al.*, 2013; Dunn *et al.*, 2016), all the control variables for acquiring firms' characteristics are one year lagged to the current acquisition year.

Following Dunn *et al.* (2016), we also control for a set of acquisition characteristics that may determine the occurrence of BPG acquisitions. The likelihood of BPG recognition may be higher if there are multiple acquisitions occurred during the fiscal year, so we include *MULTI*, a dummy variable equal to 1 if the acquiring firms complete more than one acquisitions in the current year, and 0 otherwise. We also control for *Q4*, a dummy variable equal to 1 if the acquisition occurs in the last quarter of the fiscal year, because acquiring firms may have relatively strong incentives to boost earnings in the last quarter (Dhaliwal *et al.*, 2004). We include *INTERSTATE*, an indicator variable equal to 1 if the acquirer and the target are

in the same state and 0 otherwise. Following Dunn *et al.* (2016), we expect that an acquisition is more likely to be strategic if it is interstate, leading to a higher likelihood of BPG recognition.

Finally, we control for the log of the target's total assets acquired in the acquisition (*TAR_SIZE*) and a dummy variable equal to 1 if the target is a public firm and 0 otherwise (*TAR_PUB*). If the recognition of BPGs is manipulated, a larger target would be less desirable than others because it is more difficult for an acquirer to absorb, resulting in a lower likelihood of BPG recognition. We also expect that fair value discretion is greater with regard to a private target where the targets pre-acquisition book values may not be publicly available making it harder for investors to evaluate the BPGs[9]. In addition, we control for year and industry fixed effects (based on two-digit SIC codes). Standard errors are clustered at the firm level to control for potentially correlated error terms.

To test if the association between the likelihood of BPG recognition and earnings decline is linked more strongly to estimates of intangible assets than other components of BPGs, we estimate the following probit regression model for *H2*:

$$Prob(DBPG\_EXCLUDE) = \beta_0 + \beta_1 DECLINE + Controls + Industry\ Fixed\ Effect + Year\ Fixed\ Effect + \varepsilon, \quad (2)$$

where *DBPG_EXCLUDE* is an indicator variable equal to 1 if the acquirer is still able to record BPG after excluding the fair value of intangible assets acquired, and 0 otherwise. In *H2*, we assume that managers are intentionally overvaluing intangible assets to avoid earnings decreases through the recognition of BPG. Therefore, if we exclude fair value of intangible assets from BPGs, the remainder of BPGs should reflect real gains from acquisition and is not associated with managers' incentives to boost earnings. We expect the coefficient on *DECLINE* in Model (2) turns to be insignificant.

In *H3*, we hypothesize that BPGs are achieved from high fair value estimates and thus they are unlikely to convey information to investors. As a result, stock price reactions to bargain purchase acquisitions tend to be less positive than that to goodwill acquisitions. To test our prediction, we estimate equal-weighted abnormal announcement returns over various event windows for acquirers in bargain purchase acquisitions and goodwill acquisitions and compare the difference between them.

5. Data description

The revised FASB ASC 805 became effective for acquisitions completed during annual reporting periods that begin on or after December 15, 2008 and requires detailed disclosures. The sample consists of acquisitions made by firms excluding financial institutions (two-digit SIC codes 60–69 were excluded) and completed between December 15, 2008 and December 31, 2012. We use a keyword search for the words "bargain purchase" or "gain from acquisition" to identify bargain purchase acquisitions through I-Metrix by Edgar Online. We read each Form 10-k and hand-collect acquisition data, such as the announcement date of acquisition completion, amount of BPGs, fair value estimates of net assets acquired and purchase consideration transferred. Additional financial data of acquiring firms and targets are obtained from COMPUSTAT or PrivCo[10]. The final sample consists of 122 bargain purchase acquisitions with necessary data for our main tests.

To construct a control group, we identify goodwill acquisitions from Thomson's SDC Platinum database. For each bargain purchase acquisition, we identify a goodwill acquisition matched by acquirer's two-digit SIC industry, acquiring firm size and acquisition year. If the matched acquiring firm engages in multiple goodwill acquisitions during the year, we choose the acquisition with target that have the closest size. Then we hand collect acquisition characteristics for matched goodwill acquisitions from 10-k filings and yield a control sample of 122 observations. The BPG of goodwill acquisitions is denoted as 0.

Table I presents the sample selection in Panel A, the distribution of bargain purchase acquisitions by fiscal year in Panel B and the distribution of bargain purchase acquisitions by industry in Panel C. As the revised accounting guidance became effective for acquisitions completed during annual reporting periods that begin on or after December 15, 2008, the occurrence of bargain purchase acquisitions is spreading over the sample period after 2008. Panel B indicates that the frequency of bargain purchase acquisitions is distributing evenly

Panel A: sample selection

	Number of observations
Bargain purchase acquisitions completed between 2009 and 2012	412
Drop bargain purchase acquisitions in the financial industry	201
Drop observations with missing data on required variable for the main test	89
Final sample	122

Panel B: sample distribution by fiscal year

Fiscal year	Number of observation
2009	37
2010	32
2011	32
2012	21
Total	122

Panel C: sample distribution by industry frequency

Industry (based on 2-digit SIC)	Number of observations
Electronic and other electric equipment	17
Business services	10
Industrial machinery and equipment	9
Transportation equipment	8
Chemical and allied products	7
Oil and gas extraction	7
Health services	7
Rubber and plastic products	7
Primary metal industries	6
Fabricated metal products	6
Electric, gas and sanitary services	5
Instruments and related products	5
Wholesale – nondurable goods	4
Food and kindred products	3
Eating and drinking places	2
Wholesale – durable goods	2
Apparel and other textile products	2
Lumber and wood products	2
Amusement and recreation services	2
Engineering and management services	1
Metal mining	1
Communications	1
General building contractors	1
Paper and allied products	1
Petroleum and coal products	1
Local and interurban passenger transit	1
Transportation by air	1
Food stores	1
Apparel and accessory stores	1
Social services	1
Total	122

Table I.
Sample selection and sample distribution

Notes: This table displays sample selection procedures in Panel A, sample distribution by fiscal year in Panel B and sample distribution by industry in Panel C. The sample spreads from 2009 to 2012

from 2009 to 2012 with a slight decline over years. Panel C describes the industry composition and shows that, among all non-financial industries, bargain purchase acquisitions are primarily concentrated in the electronic and other electric equipment, business services, industrial machinery and transportation equipment industries (36.06 percent of the sample of bargain purchase acquisitions).

Table II reports the descriptive statistic of variables used in subsequent tests for bargain purchase acquisitions and goodwill acquisitions. All continuous variables are winsorized at the top and bottom 1 percent. The two samples exhibit generally similar characteristics, but still have a few notable differences between bargain purchase acquisitions and goodwill acquisitions. For example, acquirers in bargain purchase acquisitions are comparable to those in goodwill acquisitions in firm size (*ACQUIRER_SIZE*) and leverage (*ACQUIRER_LEV*). However, on average, around 61 percent of acquirers in bargain purchase acquisitions would have a decline in earnings if subtract BPGs from net income in the current period (*DECLINE*), while only 47 percent of acquirers in goodwill acquisitions

Variable	*n*	Mean	25%	Median	75%	SD
Panel A: bargain purchase acquisitions (DBPG = 1)						
DECLINE	122	0.61**	0.00	1.00	1.00	0.49
ACQUIRER_SIZE	122	6.11	4.74	6.07	7.29	2.05
ACQUIRER_ROA	122	0.09**	0.00	0.04	0.11	0.53
ACQUIRER_LEV	122	2.31	1.38	1.75	2.76	2.78
ACQUIRER_MB	122	1.80**	0.80	1.42	2.44	2.09
MULTI	122	0.34	0.00	0.00	1.00	0.48
Q4	122	0.29	0.00	0.00	1.00	0.45
INTERSTATE	122	0.19	0.00	0.00	0.00	0.40
TAR_SIZE	122	3.34	2.01	2.98	4.67	2.04
TAR_PUB	122	0.55**	0.00	1.00	1.00	0.50
ACQ_BPG	122	0.36***	0.09	0.23	0.46	0.59
ACQ_INTAN	122	0.35***	0.00	0.10	0.39	0.73
ACQ_PPE	122	0.62***	0.16	0.42	0.90	0.62
ACQ_INVT	122	0.26***	0.00	0.09	0.41	0.39
ACQ_OA	122	0.06	0.00	0.00	0.03	0.16
Panel B: goodwill acquisitions (DBPG = 0)						
DECLINE	122	0.47	0.00	0.00	1.00	0.50
ACQUIRER_SIZE	122	6.17	4.92	6.07	7.46	2.00
ACQUIRER_ROA	122	−0.04	−0.01	0.04	0.09	0.30
ACQUIRER_LEV	122	2.48	1.24	1.76	2.38	3.04
ACQUIRER_MB	122	3.22	1.03	1.72	3.01	6.51
MULTI	122	0.40	0.00	0.00	1.00	0.49
Q4	122	0.31	0.00	0.00	1.00	0.46
INTERSTATE	122	0.26	0.00	0.00	0.00	1.00
TAR_SIZE	122	3.38	2.23	3.06	4.32	2.09
TAR_PUB	122	0.81	1.00	1.00	1.00	0.40
ACQ_BPG	122	0.00	0.00	0.00	0.00	0.00
ACQ_INTAN	122	0.65	0.23	0.70	0.96	0.45
ACQ_PPE	122	0.31	0.00	0.08	0.53	0.46
ACQ_INVT	122	0.09	0.00	0.00	0.12	0.18
ACQ_OA	122	0.04	0.00	0.00	0.02	0.14

Notes: This table reports summary statistics of main variables for the full sample. The full sample for main test contains 122 bargain purchase acquisitions and 122 goodwill acquisitions from 2009 to 2012. To minimize the effects of outliers, all continuous variables are winsorized at the 1 and 99 percent levels. Variable definitions are presented in Nomenclature. *,**,***Denote the difference in average between bargain purchase acquisitions and goodwill acquisitions is significant at 10, 5 and 1 percent levels, respectively

Table II.
Summary statistics

would experience an earnings decline. We also find that acquiring firms in bargain purchase acquisitions are generally more profitable (*ACQUIRER_ROA*) and have higher market-to-book ratio (*ACQUIRER_MB*) than their peers in goodwill acquisitions.

Table II also reports the fair value estimates of four main categories of assets acquired and each variable is deflated by fair value of total net assets acquired. For both bargain purchase acquisitions and goodwill acquisitions, the fair value estimates of intangible assets (*ACQ_INTAN*) and PP&E (*ACQ_PPE*) represents the largest proportion of total net assets acquired. Because the valuation of intangible assets is primarily based on managers' personal judgment, the significance of intangible assets provides acquiring managers a potential tool to inflate BPGs in bargain purchase acquisitions.

Table III presents the Pearson and Spearman correlations among variables used in our main analysis. We find a significant positive correlation between *DBPG* and *DECLINE*, which is consistent with our expectation. Most significant correlations are less than 0.4, far less than the 0.8 threshold of possible multicollinearity (Gujarati, 2003). Pearson and Spearman correlations are similar in magnitudes, indicating that there are no obvious outliers.

6. Empirical results

6.1 The earnings trend of acquiring firms

Following Hand (1989), in order to investigate why a bargain purchase transaction is undertaken in a particular year, we plot the time series of earnings vs earnings excluding the effect of BPGs over a seven-year period centered on the transaction year, denoted "0." Figure 1 shows the time series of average ROA vs ROA before the effect of BPGs, meanwhile Figure 2 plots the time series of 25th, 50th and 75th percentiles of ROA vs pre-acquisition ROA. ROA is denoted by solid line, whereas ROA before the effect of BPGs is joined by dotted line.

We expect that the recognition of BPGs as ordinary income provides an opportunity for acquiring managers to avoid earnings decreases. Figures 1 and 2 present supporting evidence that acquiring managers are using the recognition of BPGs to smooth an unexpected and transitory decrease in their year-to-year earnings. For the average and all three percentiles reported, the time series of firms' ROA exhibits a transitory decrease in the transaction year when BPGs are excluded. ROA in the transaction year is much closer to earnings one year prior and one year behind if BPGs are included than if BPGs are excluded. Moreover, the yearly average pre-acquisition ROA in the transaction year is the lowest over the entire seven-year period. This is consistent with the proposition that time series of yearly earnings would have transitorily decreased in the transaction year if BPGs had not been included.

6.2 The probability of BPG recognition

Table IV, Panel A reports the results from the estimation of Model (1) that investigates the probability of BPG recognition. The variable of our interest, *DECLINE*, captures acquiring managers' incentive to boost earnings in the current period. In agreement with our prediction in *H1*, the coefficient on *DECLINE* is positive and significant (coefficient = 0.5507, z-statistic = 2.54), indicating that acquiring managers are more likely to record BPGs when earnings before the effect of BPGs are lower than prior year net income. Regarding our control variables, we find that *TAR_PUB* is negatively associated with the probability of BPG recognition (coefficient = −0.9569, z-statistic = −4.31). This result shows that acquiring managers are more likely to engage in bargain purchase acquisitions when their targets are private and difficult for investors to see through.

After finding a positive association between the likelihood of BPG recognition and earnings decreases, we expect that the association is linked more strongly to fair value estimates of intangible assets acquired. In other words, the association is no longer significant if fair value estimates of intangible assets are excluded from recognition of BPGs. In Table IV, Panel B, we

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) *DBPG*		*0.15*	−0.00	0.02	0.07	*−0.19*	−0.09	0.00	−0.06	0.04	*−0.27*	*0.94*	*−0.41*	*0.31*	*0.23*	−0.00
(2) *DECLINE*	*0.14*		−0.04	*0.19*	−0.01	−0.03	−0.05	−0.01	0.05	0.10	0.02	*0.14*	−0.02	0.08	0.01	0.07
(3) *ACQUIRER_SIZE*	−0.02	−0.02		*0.16*	*0.33*	*0.11*	0.10	0.08	−0.07	*0.63*	0.01	−0.01	−0.13	0.01	−0.03	*0.21*
(4) *ACQUIRER_ROA*	*0.14*	0.03	0.11		*−0.13*	*0.28*	*0.18*	0.01	−0.11	0.12	−0.11	0.03	0.00	0.02	0.15	0.09
(5) *ACQUIRER_LEV*	−0.03	0.01	0.12	0.01		*0.27*	*0.15*	0.00	*−0.15*	*0.20*	0.01	0.07	*−0.14*	0.11	−0.11	0.10
(6) *ACQUIRER_MB*	*−0.14*	−0.09	0.00	−0.03	*0.71*		0.11	−0.07	−0.05	0.08	−0.00	*−0.23*	*0.22*	*0.22*	*−0.15*	0.02
(7) *MULTI*	−0.06	−0.05	0.09	*0.22*	0.08	0.06		*−0.15*	0.05	−0.07	0.08	−0.08	0.02	−0.13	−0.02	0.05
(8) *Q4*	−0.02	−0.03	0.12	−0.06	0.02	−0.03	*−0.16*		−0.07	0.03	0.02	0.04	−0.06	0.10	−0.03	−0.02
(9) *INTERSTATE*	−0.08	0.02	−0.08	0.03	−0.02	0.04	−0.00	−0.07		*−0.14*	0.10	−0.04	0.06	−0.08	−0.11	−0.12
(10) *TAR_SIZE*	−0.01	0.07	*0.61*	0.02	0.05	−0.02	*−0.13*	0.10	−0.05		−0.03	−0.01	*−0.19*	*0.17*	0.08	*0.34*
(11) *TAR_PUB*	*−0.29*	0.02	0.03	*−0.16*	0.07	0.09	0.04	0.05	0.10	0.01		*−0.30*	*0.18*	−0.12	−0.09	−0.01
(12) *ACQ_BPG*	*0.41*	−0.03	−0.12	*0.42*	−0.04	−0.10	0.10	0.01	0.05	*−0.19*	*−0.15*		*−0.37*	*0.30*	*0.24*	0.00
(13) *ACQ_INTAN*	*−0.24*	0.02	−0.05	−0.08	−0.00	0.09	0.04	−0.04	0.06	*−0.16*	*0.18*	*0.18*		*−0.54*	−0.13	−0.10
(14) *ACQ_PPE*	*0.27*	0.10	0.01	*0.19*	0.01	−0.08	−0.05	0.07	−0.07	*0.16*	−0.07	*0.34*	*−0.25*		*0.20*	0.06
(15) *ACQ_INVT*	*0.29*	−0.02	−0.02	0.06	−0.07	−0.09	0.01	−0.08	−0.11	−0.04	−0.00	*0.49*	0.05	*0.18*		*0.19*
(16) *ACQ_OA*	0.05	−0.02	0.06	*0.17*	0.08	0.11	0.05	−0.01	−0.08	*0.16*	−0.01	0.06	−0.02	*0.25*	*0.22*	

Notes: This table reports Person (lower left) and Spearman (upper right) correlations among variables used in the main test. The sample period covers from 2009 to 2012. Variable definitions are presented in Nomenclature. Italic figures indicate significant levels of less than 1 percent

Table III.
Pearson and Spearman correlations between variables

estimate Model (2) and find that the coefficient on *DECLINE* remains positive but becomes insignificant (coefficient = 0.1396, *z*-statistic = 0.61). This finding implies that, if fair value of intangible assets acquired is excluded from the calculation of BPGs, the remaining amount of BPGs reflects real gains in acquisitions and is not associated with managers' incentives to avoid an earnings decline. Among all control variables, we continue to find a negative and significant coefficient on *TAR_PUB* (coefficient = −0.5616, *z*-statistic = −2.48).

Collectively, our results in Table IV are consistent with *H1* by showing a positive association between acquiring firms' probability of BPG recognition and a decline in earnings. In agreement with *H2*, we also find that the positive association documented in *H1* is mainly driven by fair value of intangible assets acquired.

6.3 *Acquisition announcement returns*

The analysis in the previous sections supports our hypothesis that acquirers are using BPGs to manage earnings. In this section, we investigate how the market reacts to announcement of a firm's acquisition and whether this reaction differs depending on the type of acquisitions. For each group, we measure the acquirers' cumulative abnormal returns (CAR) using a market-adjusted model over different windows centered on the announcement date and from the month of the announcement to six months after the announcement.

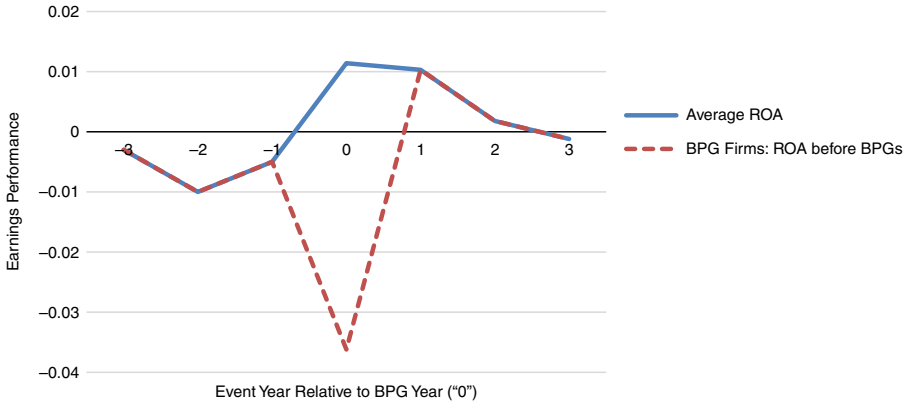

Figure 1.
Time series comparison in event time of the average ROA vs ROA before BPGs for acquiring firms in bargain purchase acquisitions

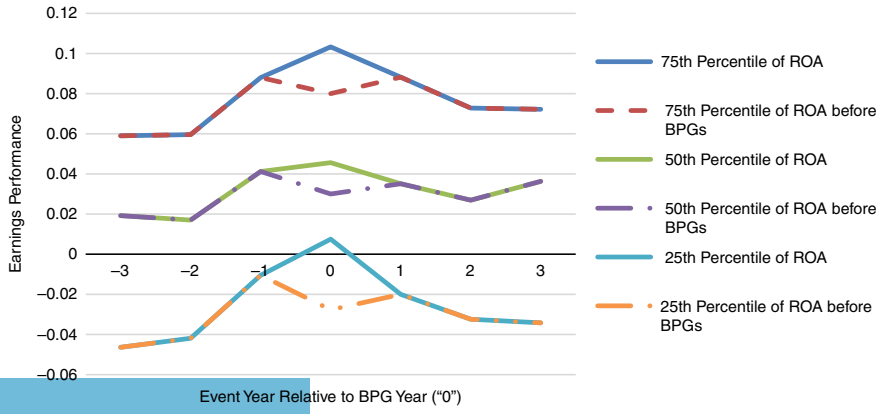

Figure 2.
Time series comparison in event time of the 25th, 50th and 75th percentiles of ROA vs ROA before BPGs for acquiring firms in bargain purchase acquisitions

	Dependent variable = Prob(*DBPG*) Coefficient (*z*-statistic)
Panel A: The probability of recognizing bargain purchase gains with intangible assets acquired	
DECLINE	0.5507** (2.54)
ACQUIRER_SIZE	0.0266 (0.34)
ACQUIRER_ROA	0.2463 (0.87)
ACQUIRER_LEV	0.0120 (0.24)
ACQUIRER_MB	−0.0689 (−0.99)
MULTI	−0.2921 (−1.20)
Q4	0.2419 (1.12)
INTERSTATE	−0.3516 (−1.41)
TAR_SIZE	0.0363 (0.52)
TAR_PUB	−0.9569*** (−4.31)
Intercept	−1.8601* (−1.83)
Industry Fixed Effect	Yes
Year Fixed Effect	Yes
Total *n*	244
Pseudo R^2	0.2296
Panel B: the probability of recognizing bargain purchase gains without intangible assets acquired	
DECLINE	0.1396 (0.61)
ACQUIRER_SIZE	−0.0079 (−0.10)
ACQUIRER_ROA	0.0086 (0.03)
ACQUIRER_LEV	−0.0268 (−0.46)
ACQUIRER_MB	−0.0839 (−0.86)
MULTI	−0.0843 (−0.33)
Q4	0.2822 (1.20)
INTERSTATE	0.0951 (0.34)
TAR_SIZE	0.0141 (0.19)
TAR_PUB	−0.5616** (−2.48)
Intercept	−5.9448*** (−7.97)
Industry Fixed Effect	Yes
Year Fixed Effect	Yes
Total *n*	244
Pseudo R^2	0.1802

Notes: This table reports coefficient estimating a probit model to predict the probability of recognizing BPG in Panel A, and reports coefficient estimating a probit model to predict the probability of recognizing BPG without intangible assets acquired in Panel B. Variable definitions are presented in Nomenclature. The sample period spans 2009–2012. Industry and year fixed effects are included. *Z*-statistics in parentheses are derived based standard errors that are clustered by firm. *,**,***Denote significance based on two-tailed *z*-tests at or below the 10, 5 and 1 percent level, respectively

Table IV.
Factors explaining the probability of recognizing bargain purchase gains

Table V shows that the mean abnormal return over the three-day window (−1, +1) is insignificant for bargain purchase acquisitions ($CAR = 0.08$ percent, t-statistic = 0.44) and significantly positive for goodwill acquisitions ($CAR = 1.95$ percent, t-statistic = 2.71). The difference between two types of acquisitions is also significant at 10 percent level (t-statistic = 1.86). We find similar results one month after the announcement data that stock price reaction over (+0, +30) is insignificant for bargain purchase acquisitions ($CAR = 2.42$ percent, t-statistic = 1.54), but continues to be significantly positive at 1 percent level for goodwill acquisitions ($CAR = 1.91$ percent, t-statistic = 3.10). In a long horizon (+1 m, +6 m), we find both bargain purchase acquisitions and goodwill acquisitions have an insignificant positive stock market reaction. However, the cumulative reaction from the date of acquisition to the end of the six-month period is greater for the matched goodwill firms.

		Bargain purchase acquisitions	Goodwill acquisitions	Difference
(−1, +1)	CAR	0.08%	1.95%***	1.87%*
	(*t*-statistic)	(0.44)	(2.71)	(1.86)
	n	108	110	
(−2, +2)	CAR	0.85%	1.67%**	0.82%
	(*t*-statistic)	(1.31)	(2.34)	(0.80)
	n	108	110	
(−3, +3)	CAR	1.40%	1.77%**	0.37%
	(*t*-statistic)	(1.64)	(2.14)	(0.29)
	n	108	110	
(−2, +1)	CAR	0.33%	2.09%***	1.76%*
	(*t*-statistic)	(0.57)	(2.75)	(1.67)
	n	108	110	
(−3, +1)	CAR	0.75%	2.12%**	1.37%
	(*t*-statistic)	(1.07)	(2.55)	(1.17)
	n	108	110	
(+0, +30)	CAR	2.42%	4.34%***	1.91%
	(*t*-statistic)	(1.54)	(3.10)	(0.89)
	n	108	110	
(+1 m, +6 m)	CAR	0.07%	−0.78%	−0.84%
	(*t*-statistic)	(0.02)	(−0.35)	(0.23)
	n	108	110	

Notes: This table reports cumulative abnormal return test based on acquisition announcement dates. We were able to identify 108 bargain purchase acquisitions and 110 goodwill acquisitions with available information from the 10-k filings or Thomson's SDC platinum database. Returns are adjusted to a market model using a CRSP equal weighted benchmark portfolio. *,**,***Denote significance based on two-tailed *t*-tests at or below the 10, 5 and 1 percent levels, respectively

Table V.
Market reaction around acquisition completion

Taken together, our results in Table V suggest that investors are concerned about fair value estimates in bargain purchase acquisitions, leading to less positive stock price reactions to bargain purchase acquisitions compared to matched goodwill acquisitions.

7. Additional tests

7.1 The size of BPG and fair value estimates of intangible assets acquired

As an additional test for *H2*, we further examine if acquiring banks use the Level-3 fair value estimates of intangible assets acquired to inflate the size of BPGs. Therefore, we focus on bargain purchase acquisitions and investigate the association between the magnitude of BPG recognized and fair value estimates of intangible assets. We estimate the following OLS model for BPG acquisitions:

$$\begin{aligned} ACQ\_BPG = {} & \beta_0 + \beta_1 ACQ\_INTAN + \beta_2 ACQ\_PPE + \beta_3 ACQ\_INVT \\ & + \beta_4 ACQ\_OA + \beta_5 ACQUIRER\_SIZE + \beta_6 TAR\_SIZE \\ & + \beta_7 RELATIVE + \beta_8 PCT\_STOCK + Industry\ Fixed\ Effect \\ & + Year\ Fixed\ Effect + \varepsilon_{i,t}, \end{aligned} \tag{3}$$

where *ACQ_BPG* is the amount of BPG recognized in the acquisition, deflated by total net assets acquired. We include four categories of assets acquired as potential sources of BPG inflation: intangible assets (*ACQ_INTAN*), property, plant and equipment (*ACQ_PPE*), inventory (*ACQ_INVT*) and other assets (*ACQ_OA*). All the four variables are calculated as their fair value estimates in the acquisition deflated by total net assets acquired[11]. If the optimistic estimation of intangible assets acquired are used to inflate BPGs, we expect a positive and significant coefficient on *ACQ_INTAN*.

We use a set of control variables for the magnitude of BPGs based on prior literature. As discussed earlier, we include the acquirer's firm size (*ACQUIRIER_SIZE*) and the target's firm size (*TAR_SIZE*). Following Shalev *et al.* (2013), we also control for *RELATIVE* and *PCT_STOCK*[12]. *RELATIVE* is calculated as the total acquisition cost divided by the acquirer's total assets in the year preceding the transaction. We expect that acquiring firms are less likely to manipulate fair value estimates of relatively large targets because such an acquisition is a more important decision and have more significant firm outcomes. *PCT_STOCK* is measured as the proportion of stock transferred over the total purchase price paid. Because Myers and Majluf (1984) document that an acquirer tend to issue stock to finance when its stock price is overvalued, a payment of stock may be overvalued in acquisitions and have an impact on the size of BPGs. Finally, we control for year and industry fixed effects (based on two-digit SIC codes). Standard errors are clustered at the firm level to control for potentially correlated error terms.

Table VI shows the results of Model (3). In Column (1), we include only the fair value estimates of four main categories of assets acquired. We find that both the coefficient on *ACQ_INTAN* (coefficient = 0.2127, *t*-statistic = 1.85) and the coefficient on *ACQ_INVT* (coefficient = 0.5103, *t*-statistic = 1.82) are marginally significant and positive, suggesting that intangible assets and inventory acquired may explain the magnitude of BPGs. Column (2) reports the results from the estimation of Model (3) with more controls included. After adding additional controls, we find that the coefficient on *ACQ_INVT* turns to be insignificant (coefficient = 0.4604, *t*-statistic = 1.57), whereas the coefficient on *ACQ_INTAN* continues to be positive and significant (coefficient = 0.2219, *t*-statistic = 1.73). Our findings suggest that, among the four main categories of assets, the fair value estimates of intangible assets are likely to be manipulated to influence the magnitude of BPGs.

7.2 The discretionary component of BPGs

In this analysis, we try to separate BPGs into a value relevant component and an unvalued (discretionary) component. We expect that the unvalued component to be more strongly

	Dependent variable = *ACQ_BPG*	
	(1) Coefficient (*t*-statistic)	(2) Coefficient (*t*-statistic)
ACQ_INTAN	0.2127* (1.85)	0.2219* (1.73)
ACQ_PPE	0.1096 (1.23)	0.1301 (1.19)
ACQ_INVT	0.5103* (1.82)	0.4604 (1.57)
ACQ_OA	−0.1830 (−0.61)	−0.0898 (−0.26)
ACQUIRER_SIZE		−0.0196 (−0.56)
TAR_SIZE		−0.0176 (−0.58)
RELATIVE		−0.0196 (−0.51)
PCT_STOCK		−0.0008 (−0.30)
Intercept	0.2727* (1.67)	0.6133** (2.30)
Industry Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
Total *n*	122	122
Pseudo R^2	0.5021	0.5427

Notes: This table reports the results of estimating the association between the size of BPG and the fair value estimates of intangible assets. Industry and year fixed effects are included in each model. *t*-Statistics are based on robust standard errors clustered at the firm level. All variables are winsorized at the 1 and 99 percent levels. Variable definitions are presented in Nomenclature. *,**,***Denote significance based on two-tailed *t*-tests at or below the 10, 5 and 1 percent levels, respectively

Table VI. Relation between the size of bargain purchase gains and fair value estimates of intangible assets

associated with the fair value estimates of intangible assets acquired. To identify the value relevant component of reported BPGs, we regress BPGs on the abnormal return (Beaver *et al.*, 1980) and variables that may determine the real value of BPGs in Model (4). Then we calculate residuals from Model (4) as the discretionary component and use residuals as the dependent variable in Model (5). For both stages, we control for industry and year fixed effects, and cluster standard errors at firm level.

Stage 1:

$$ACQ\_BPG = \beta_0 + \beta_1 TAR\_SIZE + \beta_2 TAR\_ROA + \beta_3 PCT\_STOCK + Industry\ Fixed\ Effect + Year\ Fixed\ Effect + \varepsilon_{i,t}. \quad (4)$$

Stage 2:

$$RESIDUAL = \beta_0 + \beta_1 ACQ\_INTAN + \beta_2 ACQ\_PPE + \beta_3 ACQ\_INVT + \beta_4 ACQ\_OA + Industry\ Fixed\ Effect + Year\ Fixed\ Effect + \varepsilon_{i,t}. \quad (5)$$

We predict that the coefficients on *ACQ_INTAN* in the second stage continue to be positive and significant, indicating that the unvalued component is primarily driven by the overvaluation of intangible assets.

The results of regression Models (4) and (5) are reported in Table VIII. Consistent with our expectation, after separating the nondiscretionary component and discretionary component of BPGs, we find a positive association between the discretionary component and the fair value estimates of intangible assets (coefficient = 0.1531, *t*-statistic = 2.27), while the coefficients on other three variables remain insignificant in the second stage regression. The coefficient on *ACQ_INTAN* is stronger than our findings in Table VI in terms of statistical significance, indicating that the fair value estimates is more likely to drive the discretionary component of BPGs recognized rather than the value relevant component (Table VII).

7.3 The size of BPG and CEO compensation

As a robustness test, we use the magnitude of BPGs instead of a dummy variable for BPG recognition in Model (1) and predict that the coefficient on *DECLINE* continues to be positive and significant, indicating that firms will report a larger amount of BPGs when their current earnings fall below earnings in the last year. We deflate the amount of BPGs recognized by the total net assets acquired. In addition, previous literature finds that managers are motived by cash compensation to manipulate earnings through their discretionary accounting choices (Baber *et al.*, 1996; Balsam, 1998). Following Dunn *et al.* (2016), we obtain CEO compensation data from Execomp and investigate if the percentage change in cash compensation is positively associated with the magnitude of BPGs[13].

Table VIII presents the results of estimating the association between the magnitude of BPGs and acquiring firms' earnings performance before the effect of BPGs and changes in cash compensation. Column (1) shows the results of an OLS regression. Consistent with our main test, we continue to find a positive and significant coefficient on *DECLINE* (coefficient = 0.1547, *t*-statistic = 2.09). Column (2) reports the results if we use a Tobit model, because the dependent variable, ACQ_BPG, is left-censoring. The coefficient on *DECLINE* remains positive and significant (coefficient = 0.3314, *t*-statistic = 13.45), suggesting that acquiring firms report a larger amount of BPGs when they miss last year earnings as a benchmark. At the same time, we find a positive and significant coefficient on *ΔCOMPENSATION*, indicating that acquiring firms are motivated by management compensation contracts to manipulate the size of BPGs recognized.

Panel A: regression of the size of bargain purchase gain

	Dependent variable = *ACQ_BPG* Coefficient (*t*-statistic)
CAR	1.0501 (0.99)
TAR_SIZE	−0.0099 (−0.17)
TAR_ROA	0.0076*** (3.04)
PCT_STOCK	−0.0207*** (−4.67)
Intercept	0.5483* (1.77)
Industry Fixed Effect	Yes
Year Fixed Effect	Yes
Number of observations	54
LR χ^2	0.7199

Panel B: regression of the residuals of BPG on fair value estimates

	Dependent variable = *Residuals* Coefficient (*t*-statistic)
ACQ_INTAN	0.1531** (2.27)
ACQ_PPE	−0.1572 (−1.59)
ACQ_INVT	−0.4597 (−0.52)
ACQ_OA	−0.2292 (−0.89)
Intercept	0.1335 (1.15)
Industry Fixed Effect	Yes
Year Fixed Effect	Yes
Number of observations	54
R^2	0.4056

Notes: This table reports the estimating results from the two-stage least squares regression. Panel A reports the results from an OLS model of regressing the size of BPG on determinants of BPG in the first stage. Panel B reports the second stage results on the relation between the residuals from stage 1 and the fair value estimates of intangible assets acquired. Variable definitions are presented in Nomenclature. Industry and year fixed effects are included. *t*-Statistics are based on robust standard errors clustered at the firm level. *,**,***Denote significance based on two-tailed *t*-tests at or below the 10, 5 and 1 percent levels, respectively

Table VII. Empirical results of two-stage least squares regression in BPG acquisitions

7.4 Future performance

In this section, we conduct a test regarding the effect of BPGs on future operating performance and future cash flows. If BPGs are recognized to boost current earnings through managers' discretionary fair value estimates of intangible assets, BPG firms will generate poorer future performance than goodwill firms because BPG firms will write-off more intangibles in the future. Additionally, since real BPGs accrue future cash flows reflected in the fair value computation into the income statement in the period of acquisition, the real value of BPGs should be reflected in future cash from operations but not future income (as it is already booked on the current income statement). We test the future cash flows from operating activities to ascertain if expected future cash flows that underling the fair value computations are actually realized.

Table IX reports the future performance for BPG firms and goodwill firms over five years after the acquisition year. Panel A shows that BPG firms' return on equity in Year +4 and Year +5 become lower than matched goodwill firms. Specifically, the difference in return on equity between two groups is significant at 5 percent level in the fifth year after acquisition year, indicating that BPG firms on average report weaker performance than goodwill firms. Panel B compares return on assets between two groups. Similarly, we find that goodwill firms begin to outperform over BPG firms in Year +5, even though the difference between two groups is insignificant. Finally, Panel C reports the changes in future cash flows from operating activities for BPG firms and goodwill firms. We do not observe

	Dependent vairable = *ACQ_BPG*	
	(1) OLS Coefficient (*t*-statistic)	(2) Tobit Coefficient (*t*-statistic)
DECLINE	*0.1547*** (*2.09*)	*0.3314**** (*13.45*)
ΔCOMPENSATION	*0.0013** (*1.78*)	*0.0025**** (*21.77*)
ACQUIRER_SIZE	0.0396 (1.12)	0.0484*** (11.83)
ACQUIRER_ROA	−0.3113 (−1.19)	−0.7026*** (−12.40)
ACQUIRER_LEV	−0.0264 (−1.57)	−0.0382*** (−6.81)
ACQUIRER_MB	0.0125 (1.42)	0.0149*** (4.34)
MULTI	−0.0227 (−0.34)	−0.1332888 (−5.41)
Q4	0.0445 (0.63)	0.0569** (2.59)
INTERSTATE	−0.0379 (−0.43)	−0.0634** (−2.21)
TAR_SIZE	−0.0404 (−1.56)	−0.0569*** (−9.33)
TAR_PUB	−0.1503* (−1.97)	−0.3001*** (−10.71)
Intercept	−0.0643 (−0.30)	−2.1393*** (−71.65)
Industry Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
Total *n*	113	113
Pseudo R^2	0.3851	(0.4084)

Table VIII.
Relation between the size of bargain purchase gains and changes in CEO compensation

Notes: This table reports the results of estimating the association between the size of BPG and changes in CEO compensation. Industry and year fixed effects are included in each model. *t*-Statistics are based on robust standard errors clustered at the firm level. All variables are winsorized at the 1 and 99 percent levels. Variable definitions are presented in Nomenclature. *,**,***Denote significance based on two-tailed *t*-tests at or below the 10, 5 and 1 percent levels, respectively

significantly higher changes in cash flows for BPG firms than matched goodwill firms, suggesting that BPGs recognized by BPG firms are not associated with future cash flow and do not reflect real value.

8. Conclusions

Revised FASB ASC 805, Business Combinations allows the excess of fair value estimates of net identifiable assets over the purchase price to be recorded as a day one gain in income statement. We hypothesize that the flexibility built into the fair-valuation of intangible assets creates incentives for managers to be overoptimistic about these values in order to boost reported earnings. Using a sample of 122 bargain purchase acquisitions over the period 2009–2012 and a control group of 122 goodwill acquisitions matched on industry, acquiring firm size and acquisition year, we show that the likelihood of BPG recognition is higher when net income before BPGs are below prior year's level. This finding suggests that the revised accounting standard is exploited by acquirers to report bargain purchase through optimistic fair value estimates thereby breaking the downward trend in earnings in pre-BPG income. Especially, we provide empirical evidence that Level-3 fair value estimates of acquired intangible assets are the primary tool for earnings management at the time of acquisition.

In subsequent tests, we examine whether the fair value estimates that lead to BPGs also provide information to the market. Our results suggest that BPGs in non-financial firms, especially those associated with high valuations of intangible assets, are discounted by the market both in a short window and a long window. While these estimates help to reverse a dip in the pre-BPG earnings, the BPGs themselves do not lead to higher returns either at the time of the acquisition or in the future. To confirm this, we also show that the positive future cash flows that would typically justify a BPG fail to materialize; however, managerial compensation seems to benefit from the recognition of BPG's.

	Year +1	Year +2	Year +3	Year+4	Year +5
Panel A: future ROE					
BPG firms					
Mean	0.1322	0.1318	0.1410	0.0893	0.0934
Median	0.1522	0.1371	0.1311	0.1373	0.1252
n	131	124	118	114	110
GDWL firms					
Mean	0.1114	0.0807	0.1010	0.1404	0.1933**
Median	0.1263	0.1474	0.1469	0.1596	0.1760**
n	148	141	131	122	114
Panel B: future ROA					
BPG firms					
Mean	0.0525	0.0425	0.0403	0.0445	0.0417
Median	0.0669	0.0617	0.0560	0.0593	0.0581
n	131	124	118	114	110
GDWL firms					
Mean	0.0314	0.0133	0.0236	0.0353	0.0493
Median	0.0563	0.0569	0.0671	0.0590	0.0652
n	148	141	131	122	114
Panel C: changes in future cash flow from operating activities					
BPG firms					
Mean	0.1267	−0.2505	−0.0489	0.1123	−0.0804
Median	0.0508	−0.0478	−0.0018	0.0618	0.0476
n	126	120	115	111	106
GDWL firms					
Mean	0.0502	−0.0654*	−0.1423	−0.0895	0.1559
Median	0.0321	0.0478*	−0.0485	0.0375	0.0408
n	147	140	130	122	114

Notes: This table reports future performance for BPG firms and GDWL firms. All variables are winsorized at the 1 and 99 percent levels. Variable definitions are presented in Nomenclature. *,**,***Denote difference between BPG firms and GDWL firms is significant at or below the 10, 5 and 1 percent levels for the *t*-test of means and the Wilcoxon tests of medians, respectively

Table IX.
Future performance for BPG firms and goodwill firms

With changes introduced by FASB ASC 805, the financial statement effects and the reasons for such bargain purchase transactions are not particularly clear. This research provides new insights into the revised accounting standards for bargain purchase acquisitions and raises questions about the appropriateness of judgments used in determining Level-3 fair value estimation. This study suggests that investors, analysts or auditors should pay attention to firms performed bargain purchase transactions, as those firms are likely to intentionally bias fair value assessments and engage in earnings management practices.

Notes

1. Source: SFAS No.141 (R), page vi.
2. In theory, a proper compensation scheme maximizes firm value when managers act in their own self-interest and any loss to investors must arise from the use of suboptimal incentive mechanisms.
3. We note that in our context, it is harder to link fair value estimates leading to BPGs with compensation. Absent BPGs, managerial bonuses would typically have been reduced and this reduction cannot be empirically observed (as it did not happen due to the earnings inflation).

4. Initially we identify 412 bargain purchase acquisitions and 48.78 percent of them are in the financial industry. Specifically, bank acquisitions form the largest proportion of full sample of bargain purchase acquisitions (43.63 percent).
5. Dunn *et al.* (2016) examined the earnings management in 2009 FDIC-assisted bank acquisitions. In 2009, due to the collapse of the financial bubble, many financial assets traded far below their hold-to-maturity values and the FDIC was actively trying to shore up the banking Industry, BPGs often reflected real economic gains (Lilien *et al.*, 2018).
6. "Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date […] Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly […] Level 3 inputs are unobservable inputs for the asset or liability […] unobservable inputs shall reflect the reporting entity's own assumptions about the assumptions that market participants would use in pricing the asset or liability (including assumptions about risk)" (SFAS 157, p. 12, paragraphs 3, 7; p.15, paragraph 2).
7. This is discussed in Deloitte's notes: "Intangible assets: recognizing their values".
8. A better research design is to separate the discretionary component from the real value of intangible assets acquired. However, around 45 percent of targets in bargain purchase acquisitions are private firms. Due to data limitation, we are unable to obtain necessary data to estimate the discretionary value of intangible assets. In this paper, we assume that the entire amount is discretionary.
9. It is also reasonable to include the target's return on assets (*TAR_ROA*) as a determinant of BPG recognition, because the target's performance may affect the purchase price paid and fair value estimates. However, controlling for *TAR_ROA* leads to a substantial reduction in our sample size with only 60 observations left. In a robustness test (findings untabulated), we include *TAR_ROA* and find qualitatively similar results.
10. In our sample, around 45 percent of targets in bargain purchase acquisitions and 19 percent of targets in goodwill acquisitions are private firms. Their data are obtained from PrivCO, a premier source for business and financial data on non-publicly traded corporations. However, we still have a large proportion of missing data if we include targets' return on assets in our subsequent analyses.
11. A better design is to use acquiring firms' fair value adjustments for these assets to proxy for managers' discretionary estimation. However, most firms in our sample only disclose the final fair value instead of fair value adjustment. We can only use the final fair value to investigate the potential source for BPG recognition due to data limitation.
12. Shalev *et al.* (2013) investigated the determinants of amount allocated to goodwill. In addition to *RELATIVE* and *PCT_STOCK*, they also controls for the target's R&D expenditures, advertising expense, book-to-market ratio and industry. Because around 45 percent of targets in our sample of bargain purchase acquisitions are private, including all these controls will lead to a substantial reduction in our sample size. Therefore, we only control for the target's size and profitability in our paper.
13. Our sample for this test is reduced from 244 to 113 observations due to missing data on executive compensation.

References

Ahmed, A.S., Takeda, C. and Thomas, S. (1999), "Bank loan loss provisions: a reexamination of capital management, earnings management and signaling effects", *Journal of Accounting and Economics*, Vol. 28 No. 1, pp. 1-25.

Arya, A., Glover, J. and Sunder, S. (1998), "Earnings management and the revelation principle", *Review of Accounting Studies*, Vol. 3 No. 1, pp. 7-34.

Baber, W.R., Janakiraman, S.U. and Kang, S. (1996), "Investment opportunities and the structure of executive compensation", *Journal of Accounting & Economics*, Vol. 21 No. 3, pp. 197-318.

Balsam, S. (1998), "Discretionary accounting choices and CEO compensation", *Contemporary Accounting Research*, Vol. 15 No. 3, pp. 229-252.

Barth, M.E. (1994), "Fair value accounting: evidence from investment securities and the market valuation of banks", *The Accounting Review*, Vol. 69 No. 1, pp. 1-25.

Barth, M.E., Beaver, W.H. and Landsman, W.R. (1996), "Value-relevance of banks' fair value disclosures under SFAS No. 107", *The Accounting Review*, Vol. 71 No. 4, pp. 513-537.

Barth, M.E., Elliot, J.A. and Finn, M.W. (1999), "Market rewards associated with patterns of increasing earnings", *Journal of Accounting Research*, Vol. 37 No. 2, pp. 387-414.

Barth, M.E., Gomez-Biscarri, J., Kasznik, R. and Lopez-Espinosa, G. (2012), "Fair value accounting, earnings management and the use of available-for-sale instruments by bank managers", working paper, Stanford University, Stanford, CA.

Beatty, A., Chamberlain, S.L. and Magliolo, J. (1995), "Managing financial reports of commercial banks: the influence of taxes, regulatory capital, and earnings", *Journal of Accounting Research*, Vol. 33 No. 2, pp. 231-261.

Beatty, A.L. and Harris, D.G. (1999), "The effects of taxes, agency costs and information asymmetry on earnings management: a comparison of public and private firms", *Review of Accounting Studies*, Vol. 4 Nos 3-4, pp. 299-326.

Beatty, A.L., Ke, B. and Petroni, K.R. (2002), "Earnings management to avoid earnings declines across publicly and privately held banks", *The Accounting Review*, Vol. 77 No. 3, pp. 547-570.

Beaver, W. and Venkatachalam, M. (2003), "Differential pricing of components of bank loan fair values", *Journal of Accounting, Auditing & Finance*, Vol. 18 No. 1, pp. 41-67.

Beaver, W.H., Lambert, R. and Morse, D. (1980), "The information content of security prices", *Journal of Accounting and Economics*, Vol. 2 No. 1, pp. 3-28.

Beaver, W.H., Eger, C., Ryan, S. and Wolfson, M. (1989), "Financial reporting, supplemental disclosures, and bank share prices", *Journal of Accounting Research*, Vol. 27 No. 2, pp. 157-178.

Berkovitch, E. and Narayanan, M.P. (1993), "Timing of investment and financing decisions in imperfectly", *The Journal of Business*, Vol. 66 No. 2, pp. 219-248.

Burgstahler, D. and Dichev, I. (1997), "Earnings management to avoid earnings decreases and losses", *Journal of Accounting and Economics*, Vol. 24 No. 1, pp. 99-126.

Carroll, T.J., Linsmeier, T.J. and Petroni, K.R. (2003), "The reliability of fair value versus historical cost information: evidence from closed-end mutual funds", *Journal of Accounting, Auditing & Finance*, Vol. 18 No. 1, pp. 1-24.

Collins, J.H., Shackelford, D.A. and Wahlen, J.M. (1995), "Bank differences in the coordination of regulatory capital, earnings, and taxes", *Journal of Accounting Research*, Vol. 33 No. 2, pp. 263-291.

Danbolt, J. and Rees, W. (2008), "An experiment in fair value accounting: UK investment vehicles", *European Accounting Review*, Vol. 17 No. 2, pp. 271-303.

Dechow, P.M., Myers, L.A. and Shakespeare, C. (2010), "Fair value accounting and gains from asset securitizations: a convenient earnings management tool with compensation side-benefits", *Journal of Accounting and Economics*, Vol. 49 Nos 1-2, pp. 2-25.

Demski, J.S. (1998), "Performance measure manipulation", *Contemporary Accounting Research*, Vol. 15 No. 3, pp. 261-285.

Demski, J.S., Patell, J.M. and Wolfson, M.A. (1984), "Decentralized choice of monitoring systems", *Accounting Review*, Vol. 59 No. 1, pp. 16-34.

Dhaliwal, D.S., Gleason, C.A. and Mills, L.F. (2004), "Last-chance earnings management: using the tax expense to meet analysts' forecasts", *Contemporary Accounting Research*, Vol. 21 No. 2, pp. 431-459.

Dunn, K., Kohlbeck, M. and Smith, T. (2016), "Bargain purchase gains in the acquisitions of failed banks", *Journal of Accounting, Auditing & Finance*, Vol. 31 No. 3, pp. 388-412.

Fudenberg, D. and Tirole, J. (1995), "A theory of income and dividend smoothing based on incumbency rents", *Journal of Political Economy*, Vol. 103 No. 1, pp. 75-93.

Graham, J.R., Harvey, C.R. and Rajagopal, S. (2005), "The economic implications of corporate financial reporting", *Journal of Accounting and Economics*, Vol. 40 Nos 1-3, pp. 3-73.

Grossman, S.J. and Hart, O.D. (1982), "Corporate financial structure and managerial incentives", in McCall, J. (Ed.), *The Economics of Information and Uncertainty*, University of Chicago Press, Chicago, IL, pp. 107-140.

Gujarati, D.N. (2003), *Basic Econometrics*, McGraw-Hill, New York, NY.

Hand, J.R.M. (1989), "Did firms undertake debt-equity swaps for an accounting paper profit or true financial gain?", *The Accounting Review*, Vol. 64 No. 4, pp. 587-623.

Haw, I.G., Jung, K. and Lilien, S.B. (1991), "Overfunded defined benefit pension plan settlements without asset reversions", *Journal of Accounting and Economics*, Vol. 14 No. 3, pp. 295-320.

Hayward, M.L.A. and Hambrick, D.C. (1997), "Explaining the premiums paid for large acquisitions: evidence of CEO hubris", *Administrative Science Quarterly*, Vol. 42, No. 1, pp. 103-127.

Healy, P.M. (1985), "The effect of bonus schemes on accounting decisions", *Journal of Accounting and Economics*, Vol. 7 Nos 1-3, pp. 85-107.

Healy, P.M. and Wahlen, J.M. (1999), "A review of the earnings management literature and its implications for standard setting", *Accounting Horizons*, Vol. 13 No. 4, pp. 365-383.

Holmstrom, B. (1982), "Moral hazard in teams", *The Bell Journal of Economics*, Vol. 13 No. 2, pp. 324-340.

Kirschenheiter, M. and Melumad, N.D. (2002), "Can 'big bath' and earnings smoothing co-exist as equilibrium financial reporting strategies", *Journal of Accounting Research*, Vol. 40 No. 3, pp. 761-796.

Kolev, K. (2008), "Do investors perceive marking-to-model as marking-to-myth? Early evidence from FAS 157 disclosure", working paper, Yale School of Management, New Haven, CT.

Lilien, S.B., Sarath, B. and Schrader, R. (2013), "Normal turbulence or perfect storm? Disparity in fair value estimates", *Journal of Accounting, Auditing & Finance*, Vol. 28 No. 2, pp. 192-211.

Lilien, S.B., Sarath, B. and Yan, Y. (2018), "Intended or unintended consequences of business acquisitions: the case of financial services institutions", working paper, Baruch College, Rutgers University and Fairleigh Dickinson University, New York, NY.

Manchiraju, H., Hamlen, S. and Kross, W. (2016), "Fair value gains and losses in derivatives and CEO compensation", *Journal of Accounting, Auditing & Finance*, Vol. 31 No. 3, pp. 311-338.

Marra, A. (2016), "The pros and cons of fair value accounting in a globalized economy: a never ending debate", *Journal of Accounting, Auditing & Finance*, Vol. 31 No. 4, pp. 582-591.

Martin, R.D., Rich, J.S. and Wilks, T.J. (2006), "Auditing fair value measurement: a synthesis of relevant research", *Accounting Horizons*, Vol. 20 No. 3, pp. 287-303.

Moyer, S.E. (1990), "Capital adequacy ratio regulations and accounting choices in commercial banks", *Journal of Accounting and Economics*, Vol. 13 No. 2, pp. 123-154.

Myers, S.C. and Majluf, N.S. (1984), "Corporate financing and investment decisions when firms have information that investors do not have", *Journal of Financial Economics*, Vol. 13 No. 2, pp. 187-221.

Riedle, W.H. and Serafeim, G. (2011), "Information risk and fair value: an examination of equity betas", *Journal of Accounting Research*, Vol. 49 No. 4, pp. 1083-1122.

Ronen, J. (2008), "To fair value or not to fair value: a broader perspective", *Abacus*, Vol. 44 No. 2, pp. 181-208.

Ronen, J. and Sadan, S. (1981), "Smoothing income numbers: objectives, means and implications", Addison-Wesley Paperback Series in Accounting, Addison-Wesley Publishing Company, Boston, MA.

Roychowdhury, S. (2006), "Earnings management through real activities manipulation", *Journal of Accounting and Economics*, Vol. 42 No. 3, pp. 335-370.

Sankar, M. and Subramanyam, K.R. (2001), "Reporting discretion and private information communication through earnings", *Journal of Accounting Research*, Vol. 39 No. 2, pp. 365-386.

Scholes, M., Wilson, G.P. and Wolfson, M.A. (1990), "Tax planning, regulatory capital planning and financial reporting strategy for commercial banks", *The Review of Financial Studies*, Vol. 3 No. 4, pp. 625-650.

Shalev, R., Zhang, I.X. and Zhang, Y. (2013), "CEO compensation and fair value accounting: evidence from purchase price allocation", *Journal of Accounting Research*, Vol. 51 No. 4, pp. 819-854.

Song, C.J., Thomas, W.B. and Yi, H. (2010), "Value relevance of FAS No. 157 fair value hierarchy information and the impact of corporate governance mechanisms", *The Accounting Review*, Vol. 85 No. 4, pp. 1375-1410.

Teoh, S.H., Wong, T.J. and Rao, G.R. (1998), "Are accruals during initial public offering opportunistic?", *Review of Accounting Studies*, Vol. 3 Nos 1-2, pp. 175-208.

Tucker, J.W. and Zarowin, P.A. (2006), "Does income smoothing improve earnings informativeness", *The Accounting Review*, Vol. 81 No. 1, pp. 252-270.

Appendix

Fair value of shares of common stock issued to AMS	$	385,000
Advances to AMS including interest (obligation to repay released at closing of merger)		1,707,326
Total consideration	$	2,092,326
Estimated allocation of purchase price		
Cash and cash equivalents	$	180,436
Accounts receivable		332,568
Inventories		414,038
Prepaid expenses and other		54,285
Equipment		1,923,650
Intangible assets		1,881,000
Accounts payable		(538,628)
Accrued expenses		(100,433)
Deferred rent and other		(402,067)
Gain on bargain purchase		(1,652,523)
	$	2,092,326

Notes: The allocation of the purchase price and the purchase price accounting is based on the fair value of the acquired assets and liabilities measured as of May 23, 2011 in accordance with ASC Topic 805, Business Combinations. The gain related to the acquisition of AMS Inc. assets and liabilities in the amount $1,652,523 was recorded in other income in the statement of operations for the year ended December 31, 2011

Table AI. The business combination disclosure in the 10-K of Plures Technologies Incorporated on December 31, 2011

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