Knowledge Spillover and Accounting Firms' Competitive Strength in the M&A Advisory Market

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Abstract. Accounting firms participating in M&A advisory teams can leverage their knowledge accumulated through assurance services to give the teams a competitive advantage in advising on transactions with hard-to-value targets. Consistently, we document that bidders are more likely to select accounting firms to advise on transactions involving such targets. Knowledge spillover aids in estimating the target's value, which translates into higher service quality offered by accounting firms as captured by higher acquirer announcement-period stock returns and lower likelihood of overpaying for the target. The effects we document are concentrated in cases when the accounting firm is the audit-specialist in the target's industry or target's auditor and the target has low reporting quality. Our results help explain why Thomson Reuters ranks accounting firms among top global advisors, particularly in the mid- and low-end M&A advisory market. (*JEL* G34, M41, M49)

Keywords: accounting firms, non-audit services, knowledge spillover, industry expertise, financial advisors, mergers and acquisitions

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1. Introduction

Accounting firms, besides audit, provide a variety of non-audit services including advisory services on mergers and acquisitions (M&As). Despite a rich literature focusing on various aspects of audit, no study to date examined advisory quality and the competitive strength of accounting firms in the M&A market. Two reasons merit this investigation. First, M&A advisory is one of the fastest and most lucrative business segments of accounting firms. Indap (2015) reports that "[a]s new opportunities in traditional audit and tax work have reached a plateau, the Big Four have turned to management consulting and mergers and acquisitions for growth.". Restrictions on audit provision and forced rotations mean limited growth potential in the audit, but not in the advisory market. Noonan (2016) highlights high margins for M&A advisory services making this segment particularly attractive for accounting firms.

Second, prior studies document that bidders frequently overpay for targets, particularly of low accounting quality, and that even hiring reputable investment banks does not mitigate the overpayment risk.[1] It is thus interesting to know whether accounting firms can reduce this risk given that overpayment for targets is among the main reasons for the frequent failure of M&A transactions to generate benefits to acquirers' shareholders.[2] We propose that accounting expertise and skills acquired through assurance work can spill over to enhance the quality of accounting firms' M&A advisory services, such as valuation fairness.[3] Accounting knowledge spillover will be particularly important in reducing valuation uncertainty associated with low-accounting-quality targets. Knowledge spillover from audit engagements is a competitive strength of accounting firms that can

[1] For bidders' overpayment for targets, see Gu and Lev (2011), Mauboussin (2010), Raman, Shivakumar, and Tamayo (2013), and Marquardt and Zur (2015). For reputable investment banks' inability to mitigate the overpayment risk, see Servaes and Zenner (1996), Rau (2000), Porrini (2006), McLaughlin (1992), Hunter and Jagtiani (2003), and Ismail (2010).

[2] See Mauboussin (2010), Fuller, Netter, and Stegemoller (2002), Moeller, Schlingemann, and Stulz (2003), and McNamara, Haleblain, and Dykes (2008).

[3] We do not preclude knowledge spillover from non-audit functions to M&A advisory services. However, given the size, market penetration and importance of the audit function, we expect audit to generate a significant proportion of accounting knowledge that could be helpful in M&A.

help them compete for M&A advisory roles.

We focus on target's accounting quality—the precision with which financial reports convey information about the firm's economic position and performance (Callen, Khan, and Lu 2013)—since target's valuation is ultimately based on accounting measures (Mukherjee, Kiymaz, and Baker 2004). Prior research documents that bidders pay higher premiums for targets with low accounting quality (Raman, Shivakumar, and Tamayo 2013; Marquardt and Zur 2015) and that the acquisitions of these targets generate lower acquirer announcement returns (McNichols and Stubben 2015). Accounting firms' specialty in financial reporting and their expert understanding of private and public firms' financials gleaned from audit and other engagements should facilitate translating low-quality accounting numbers into fair valuations. To support the knowledge spillover hypothesis, we focus on cases where accounting firms are also audit specialists of low-accounting-quality industries (*industry*-expertise spillover) as audit-generated accounting knowledge is most relevant to the valuation task in these cases. To corroborate the evidence on the industry-expertise knowledge spillover, we also examine instances where the accounting firm is the target's auditor, which facilitates firm-specific information spillover (*target*-expertise spillover).

Our sample includes global M&A transactions between 1990–2014 with listed acquirers domiciled in fifteen Europe countries. We focus on Europe as three of the Big Four divested their advisory and consulting practices in the US after the SOX was enacted (Harris 2014). In contrast, no regulation prohibits accounting firms from offering advisory services to audit and non-audit clients in Europe during our sample period.[4] Over this period, accounting firms competed with 164 top and boutique investment banks with their market share, measured by deal count, increasing from less than 1% in early 1990's to almost 27% in 2013 (see Figure 1). For comparison, J.P. Morgan

[4] According to the FAQ document on the EU Audit Legislation produced by the European Contact Group (ECG), which is an informal regulatory and policy working group of six large audit networks in the EU (BDO, Deloitte, EY, Grant Thornton, KPMG and PwC), valuations and accounting consultations and audits in connection with acquisitions, which are corporate finance services traditionally performed by the auditors, are considered permissible even after the EU Audit Reform in 2016 (see p. 64 of the February 2018 edition of the ECG FAQs).

advised on 2.8% and Goldman Sachs on 2.7% of transactions. Accounting firms are more active in the mid- and low-end market of M&A advisory (targets valued at less than $500 million), which tend to include more hard-to-value targets (Francis et al. 2005; Doyle, Ge, and McVay 2007).

We begin our analysis by estimating an acquirer advisor choice model to test if bidders select accounting firms based on their competitive strength in valuation. Accounting firm advisors are preferred by acquirers interested in hard-to-value targets, such as firms from an industry characterized by low accounting quality, smaller targets, when the target is a private firm, located outside the US, and from a high R&D industry. The economic importance of valuation difficulty in predicting the advisor choice is high. To illustrate, the odds an accounting firm will advise on a transaction are 105.9% higher when the target is in a low-accounting-quality industry. These findings suggest that when acquirers select advisors, the usefulness of accounting expertise in resolving valuation uncertainty is an important consideration.

Our main analysis focuses on the acquirer's announcement-period stock return, which captures the expected benefit an acquisition will bring to the acquirer's shareholders (Cai, Kim, Park, and White 2015; Halpern 1983; Jensen and Ruback 1983; Jarrell, Brickley, and Netter 1988; Betton, Eckbo, and Thorburn 2008). Consistent with past evidence (Gu and Lev 2011, Mauboussin 2010; Raman, Shivakumar, and Tamayo 2013; Marquardt and Zur 2015), bidders experience negative price reactions when they attempt to acquire hard-to-value targets; the average bidder's value reduces by around $50 million for targets with low accounting quality. Price reactions to deals advised by accounting firms are 0.4% higher compared to deals advised by investment banks, which translates into a $32 million shareholder value gain for a mean-sized bidder. Importantly, price reactions are higher when the target has low accounting quality and the accounting firm is an audit specialist of the target's industry. This result is consistent with investors assessing that accounting firms lever on the *industry* knowledge accumulated through audit work to enhance M&A service quality. Further, investors react more positively to M&As advised by accounting firms that were

auditors of the *targets*. Such a dual role can reduce acquisition uncertainty as the advisor has access to *firm*-specific knowledge about the target accumulated through the audit process and informal discussions with the management.

To further support the knowledge spillover explanation, we report that investors react more positively when the bidder is advised by one of the Big Four as opposed to a non-Big Four accounting advisor. Larger breadth of Big Four assurance work gives them an advantage over non-Big Four firms in accumulating accounting knowledge, which can aid the M&A advisory team. Price reactions are also higher when the accounting firm advises on deals where the target's auditor expresses a concern whether the financial statements are presented fairly, and when the accounting firm is additionally responsible for target's due diligence. These results suggest that investors perceive accounting firms as being better able to unravel complexities involved in low-reliability target's financials and during the due-diligence process. Consistent with geographic proximity facilitating knowledge transfer (Audretsch and Feldman 1996; Audretsch and Stephan 1996), price reactions are higher when target's headquarters are in the capital city because the advisory and audit offices of accounting firms are also likely to be in capital cities. Valuation fairness should reduce the risk of wealth transfer from the bidder to the target. Consistently, we find lower target announcement returns when the bidder is advised by an accounting firm. Finally, we show that even top investment banks or advisory teams involving them are unable to replicate accounting firms' competitive advantage in valuing low accounting quality targets. However, pairing them with an accounting firm generates synergies that associate with more positive price reactions.

Our argument on knowledge spillover centers on the competitive advantage accounting firms have in target valuation. Consistently, we find that bidders are less likely to overpay for the target when they hire an accounting firm. Importantly, the lower likelihood of overpayment is linked to the valuation expertise of accounting firms, such as for targets in a low-accounting-quality industry and when the accounting firm is an audit specialist of this industry. Further, transactions advised by

accounting firms have a lower likelihood of post-deal impairment of goodwill recognized from M&A transactions. Gu and Lev (2011) report that the bulk of goodwill write-offs is due to bidders overpaying for targets. Accounting firm advised transactions also have higher completion rates. Accounting firms may be better at collecting and analyzing target information available prior to the announcement, which reduces the likelihood a deal will be terminated because new information becomes available to the bidder after the deal announcement regarding the true value of the target (Marquardt and Zur 2015).

We address the endogeneity concern in four ways. First, besides the full-sample analysis, we also perform analysis using the sample of deals advised by accounting firms and investment banks matched based on the propensity score predicted from the advisor choice analysis. Second, we use instrumental variables regression to mitigate potential distortion arising from the endogenous advisor choice. Third, we exploit a quasi-natural experiment arising from the introduction of the IFRS to do a difference-in-differences test. IFRS standardized reporting across European markets facilitating comparison and valuation. If both the target and acquirer report under IFRS, the benefits from appointing accounting firm advisors should be lower, a result we confirm. Fourth, a placebo test shows that substituting bidder's for target's reporting quality eliminates the evidence of higher price reactions for deals advised by accounting firms. This result is consistent with investors valuing advisor's accounting knowledge about the *target*, not the acquirer, as helpful in valuing low-accounting-quality targets (McNichols and Stubben 2015). In sum, all tests that address endogeneity support our main conclusions.

Our work advances the literature on several fronts. We are first to provide evidence consistent with knowledge spillover of audit-related accounting expertise to non-audit services in terms of M&A service quality. The nature of this effect is different from the reverse knowledge spillover from non-audit services to audit services documented in the literature (e.g., Knechel and Sharma 2012; Knechel, Sharma, and Sharma 2012; Koh, Rajgopal, and Srinivasan 2013). We are also first

to document the growing visibility of accounting firms in the global M&A advisory market. The emergence of accounting firms as deal advisors and their consistent placement in top Thomson Reuters and NASDAQ OMX/Mergermarket rankings has evaded the accounting and finance literature (see Appendix A).

Importantly, our study identifies significant gains to bidders when hiring accounting firms as advisors. Previous evidence suggests that on average acquiring firm shareholders do not benefit from acquisitions (Fuller, Netter, and Stegemoller 2002; Moeller, Schlingemann, and Stulz 2003; McNamara, Haleblain, and Dykes 2008), a result explained by frequent overpayment for targets (Mauboussin 2010; Gu and Lev 2011). This observation often captures newspaper headlines, for example, Businessweek's "Mergers: Why Most Bid Deals Don't Pay Off" (Henry and Jespersen 2002). We show that accounting firm advisors are more preferred by acquirers for targets with higher valuation uncertainties where bidders are more likely to overpay.

2. Institutional background, related literature, and hypotheses

2.1 Mechanisms for knowledge spillover within accounting firms

We expect accounting knowledge generated through audit engagements to spill over to M&A transactions for four reasons. First, accounting firms encourage mutual support between units in their networks, e.g. between the audit and M&A functions. To illustrate, PwC highlights that "[M]ember firms of PwCIL [PricewaterhouseCoopers International Limited] can … draw on the resources and methodologies of the PwC network. In addition, member firms may draw upon the resources of other member firms and/or secure the provision of professional services by other member firms" (Davies n.d.). In our industry interviews with practitioners, Helen Roxburgh, KPMG Corporate Finance Director, stresses that "the real differentiator [between accounting firms and investment banks] is that we [the accounting firms] have access to a much broader range of relationships that can help with the [M&A] transaction" and that "for a particular sector with complex accounting, we may reach to audit to understand the challenges in that sector or what the

underlying performance of the business is". Sriram Prakash, Deloitte' Global Lead of M&A Insight emphasizes that "the core skillset that Big Four bring and that you can transfer is accounting knowledge. Big Four are very good to attract accountants and this skill is crucial for tasks such as valuation. That is not replicable by investment banks.". Moreover, even legal obstacles to direct information flows within an accounting firm are removable. For example, Burgess (2010) highlights that often, "[accounting] firms are able to receive a waiver for directors in private companies which they audit".

Second, audit personnel are often called to work on non-audit engagement teams. [5] In our industry interviews with practitioners, Andy Brogan, EY Transaction Advisory Services partner, highlights that "often valuation people working on M&As also work on assurance" and that M&A teams "bring in specialist knowledge [from other service lines] for transactions", particularly from assurance for "anything that relates to accounting".[6]

Third, because of career and job satisfaction considerations, audit personnel have strong incentives to assist or participate in advisory services or even switch to the advisory units permanently. Agnew (2015) highlights that "[I]n the UK, none of the senior partners of the Big Four firms comes from a pure audit background. Instead they have come up through the ranks of advisory (PwC's Mr Powell and EY's Steve Varley), corporate finance (KPMG's Mr Collins) and tax (Deloitte's David Sproul).". *The Economist* (2010) highlights that "Deloitte's audit directors referred

[5] KPMG highlights that "when needed, we can quickly tap into industry-experienced professionals from other disciplines, including audit" (KPMG 2010). Deloitte advisory website states that "Deloitte capitalises on its vast valuation experience gained from assurance work" (Deloitte n.d.). A financial advisory consultant at Deloitte with a focus on valuation and business modelling told us that he "heard some cases where staffing requirements due to bigger projects required 'borrowing' audit employees to meet deadlines. [He] can remember another case where an employee of the financial services audit department moved over to financial advisory (M&A) after the audit mandate was terminated and his industry expertise could be used in loan portfolio sales." On the other hand, a valuations senior associate at PwC indicates on his LinkedIn profile that he "completed two rotations in the London Mid Tier [Technology, Media and Telecommunications (TMT)] Assurance business." He has been involved in key valuation assignments, including "tax valuation of foreign exchange intermediary" and "impairment review of specialist publisher" – both require advanced accounting knowledge.

[6] Members of the M&A advisory team are not publicly known, which limits us from testing related predictions. However, web profiles of senior auditors often mention their engagements with M&A teams. Our search on LinkedIn revealed 3,893 auditors with experience in M&A engagements.

to their cross-selling work when discussing promotions" and "PWC stressed 'business growth' when handing out bonuses for auditors". Because audit and tax-advice revenue have stagnated, auditors see M&A teams as an alternative career path. Online career blogs suggest audit experience is often a requirement for M&A posts, e.g. the *Life of An Auditor* blog mentions that "[T]o get into M&A diligence [at Big Four], you'd need to put in 3-4 years in audit, because they usually like people with audit experiences and CPA certifications" ("Valuation, M&A Diligence" 2012). A survey study by the Association of Chartered Certified Accountants found that only 38% of the audit staff in the poll were satisfied with their jobs (ACCA 2012). A press article reporting the study mentions the comment by a senior associate at PwC, who said that "the chance to do a one-year secondment in the advisory unit has given her great exposure and reckoned that such opportunities have contributed to her job satisfaction." (Kwok 2012). In short, career and job satisfaction concerns encourage audit personnel to become involved in advisory services.

Fourth, information gained through the audit process can enhance the quality of proprietary M&A analytics platforms. For example, KPMG highlights that "[e]stablishing industry benchmarks is essential to any acquisition or transaction" and that its analytics platform "leverages robust, proprietary database which gleans information from our engagements with 1,000+ private companies" (Buckley n.d.). Information spillover can also occur via channels like formal advice, informal consultation, or internal training by in-house accounting and audit specialists (Trotman, Bauer, and Humphreys 2015; Salterio and Denham 1997; Dittman, Juris, and Revsine 1980; Chen, Chang, and Lee 2008).

2.2 Prior evidence on knowledge spillover within accounting firms

Because of the public's and regulators' concerns, prior studies on non-audit services and knowledge spillover have focused on how the provision of such services affects auditor independence and audit quality. Contrary to the concerns about negative effects, the majority of the literature finds either no evidence of harmful links or evidence limited to particular circumstances

(DeFond, Raghunandan, and Subramanyam 2002; Kinney, Palmrose, and Scholz 2004; Causholli, Chambers, and Payne 2014). Rather, there are indications that knowledge spillover from non-audit services can improve audit quality (Robinson 2008; Svanstrom 2013) and audit efficiency, measured in terms of the audit report lag (Knechel and Sharma 2012; Knechel, Sharma, and Sharma 2012).

By contrast, the literature on the knowledge spillover from audit services to non-audit services is sparse. Simunic (1984) examines this type of knowledge spillover, focusing on service cost rather than service quality. His use of audit fees and management advisory service (MAS) fees to proxy for service costs requires the critical assumption of competitive pricing. In addition, a positive association between audit fees and MAS fees may arise from correlated demands for the two types of services, instead of knowledge spillover (Palmrose 1986). Maydew and Shackelford (2005) discuss how the financial reporting expertise of accounting firms helps winning tax advisory mandates from audit clients. However, they do not provide any analysis to show that the audit expertise raises tax service quality. McGuire, Omer, and Wang (2012) find that an external audit firm's greater overall expertise, defined based on the firm's annual market share of both audit and tax consulting fees, is associated with greater tax avoidance by their clients. They quote Deloitte and Touche's documents highlighting that "tax practice states that it combines with other divisions within the firm to assist clients". Because their study has not separated audit expertise from tax expertise to examine the former's standalone impact, it is not clear whether the finding should be viewed a knowledge spillover from audit to non-audit services.

2.3 Hypotheses

Our study is the first to provide evidence consistent with the knowledge spillover of audit-related accounting expertise to M&A advisory services. Accounting firms can offer distinct advantages compared to investment banks—they can lever their audit expertise to produce fairer target valuation reducing the risk the bidder overpays for the target. Though target's valuation is presumed to be based on future cash flows (Mukherjee, Kiymaz, and Baker 2004), accounting

information helps predict these cash flows (Dechow 1994; Barth, Cram, and Nelson 2001; McNichols and Stubben 2015). Importantly, Golubov, Petmezas, and Travlos (2012, p. 286) highlight that "the acquisition technique and the valuations are generally determined by the advisor", thus competitive valuation advantage will bear directly on deal pricing. PwC highlights that "[U]nderstanding a potential target's accounting policies is essential to assessing its historical and projected earnings profile, as well as evaluating its market valuation comparables. […] While enterprise value, in theory, should not be affected by accounting policies, valuation techniques like EBITDA multiples can be impacted due to earnings variations resulting from accounting policy differences." (PwC 2013). Accounting expertise should be particularly valuable for targets in low-accounting-quality industries as these transactions are associated with less favorable outcomes. McNichols and Stubben (2015, p. 111) argue that "when the target firm has higher-quality accounting information, the acquirer can value the target firm with greater precision, bid more effectively, and ultimately pay less for the acquisition." These predictions lead to two hypotheses:

Hypothesis 1: Accounting firms are more likely to advise on transactions where the target has high valuation uncertainty.

Hypothesis 2: Accounting expertise facilitates fair assessment of target's value, reducing the likelihood of overpaying for the target.

3. Data and sample

The sample of acquisitions is from the SDC Platinum M&A database with the announcement date falling in the years between 1990 and 2014 inclusive. We place no restriction on the public status or nationality of the target, nor on the industry of the acquirer or the target, to minimize the risk of sample bias (Netter, Stegemoller, and Wintoki 2011). As is standard in previous studies (e.g. Golubov et al. 2012; Faccio, McConnell, and Stolin 2006), we require deals with explicit change of control, i.e., the acquirer must own initially less than 50% of the target's stock and seek to own more than 50% after the acquisition. We also require the availability of data on the announcement date,

bidder SEDOL code, acquirer advisor name and acquirer advisor parent's name, Standard Industrial Classification (SIC) code, country of incorporation of the acquirer and the target, and deal value.

The criteria above give rise to an initial sample of 9,655 transactions in 15 European countries. By definition, these transactions exclude in-house acquisitions where the acquirers do not employ a financial advisor (Golubov et al. 2012). SDC's "Acquirer Financial Advisors" identifies the acquirer advisors and "Parent of Acquirer Advisors" the advisor's parent company. We use the latter to identify accounting firms as advisors do not share the same name across markets. Appendix B1 illustrate the match between the advisor and the parent for PwC. We manually identify the list of accounting firms based on the list of auditors on Compustat Global and searches on advisors' websites. The list of SDC parent advisor codes and names we use to identify accounting firms is included in appendix B2. From the list, we retain deals where accounting firms' assignment was "advisory".[7] We collect accounting and market information from Compustat Global Fundamentals and Compustat Global Security Daily files.

4. The choice of accounting firms as M&A advisors

Our first test looks at the likelihood of an accounting firm, as opposed to an investment bank, being selected as an advisor to the acquirer in an M&A transaction. We expect that the accounting expertise gained from engagements with audit clients gives accounting firms' an advantage in handling deals with greater valuation uncertainty, raising their chance of being selected as an acquirer advisor for such transactions.

Our first proxy for valuation uncertainty is a measure of target's accounting quality, which we proxy by accruals quality. Accruals is a standard measure of accounting quality (e.g. Aboody, Hughes, and Liu 2005; Francis et al. 2004, 2005; Lee and Masulis 2009) and its use is consistent

[7] Only in 3% of transactions accounting firms' role is preparing fairness opinion. We do not focus on the quality of fairness opinion for accounting firms vs. investment banks as Derrien and Dessaint (2012, p. 27) report that "[a]ll fairness opinions reported in SDC conclude that the price is fair, because transactions in which the FO [fairness opinion] provider reaches the opposite conclusion do not reach the announcement stage.".

with the survey evidence in Dichev et al. (2013), who report that CFOs consider high-quality earnings to be backed by cash flows. Penman and Sougiannis (1998) document that accuracy of free cash flow valuation, the main valuation technique used in M&As (Mukherjee, Kiymaz, and Baker 2004), reduces in the magnitude and volatility of accruals. Raman, Shivakumar, and Tamayo (2013) and Marquardt and Zur (2015) use accruals to capture accounting quality and document that bidders are more likely to overpay for targets with low accounting quality. Accounting firms should have a distinct advantage in understanding accruals through their audit work (Becker et al. 1998; Francis and Yu 2009) and mitigate the negative effect low accrual quality has on valuation (Sloan 1996; Fairfield, Whisenant, and Yohn 2003).

We define firms as of low accounting quality if they belong to an industry characterized by low accruals quality. We focus on the industry because (1) the measure is not affected by target's deliberate manipulations of financial information in anticipation of a takeover, (2) this allows us to retain private targets in the sample, and (3) McNichols and Stubben (2015) find that acquisitions of targets from high accounting quality industries associate with more positive price reactions for the bidder. We measure accruals quality each year for each 2-digit SIC industry using the standard deviation of asset-scaled total accruals measured over the previous four years and then rank industries in ascending order. We construct an indicator variable, *Target in low AQ industry*, which equals 1 if the target belongs to the top two industries with the highest values of the equal-weighted average of the total accruals volatility of all the firms in the industry and 0 otherwise.[8]

To ensure our conclusion is not driven by the choice of measure for target's valuation uncertainty, we supplement the analysis with other proxies. We argue that private targets, *Private target*, are harder to value given the limited information available, low financial reporting quality,

[8] We pool industries across target markets in calculating *Target in low AQ industry* because targets come from 116 markets, which prevents reliable estimate at the country level for most markets. However, we show robustness of our conclusions for a sample of EU targets when *Target in low AQ industry* is estimated at the country level. We do not use discretionary accruals to capture accrual quality as they capture within-industry deviations from the expected amount of accruals, thus are not suitable for cross-industry comparisons.

and high information search costs. Compared to public companies, information about private entities is not as easily available owing to the lack of listing requirements by stock exchange or the lack of incentives for voluntary disclosure (Singhvi and Desai 1971). Hope, Thomas, and Vyas (2013) document that private firms have on average lower accrual quality and are less conservative as they face lower demand for financial information.

We expect a target located outside the US to associate with higher valuation uncertainties. Prior research has documented higher financial reporting quality under US generally accepted accounting principles (GAAP) than other national GAAPs (Lang, Smith Raedy, and Wilson 2006). Significant differences remain despite enhanced financial reporting comparability with US firms after adopting IFRS (Barth et al. 2012). To capture this effect, we include a dummy variable, *Non-US target*, for whether the target is located outside the US.

Larger deals associate with more investor and media scrutiny and negative consequences related to failed transactions may entice managers and boards to place more emphasis on fair valuation. Consistently, Raman et al. (2013) and Alexandridis et al. (2013) find that bidders are less likely to overpay for larger targets and Golubov et al. (2012) report more positive price reactions to acquisitions of relatively larger bidders. Thus, our final proxy for valuation uncertainty is the size of the bidder, which we proxy by deal size, *Deal Value*.[9]

4.1 Control variables

Controls are selected based on past literature and include *Financing required* to capture the external financing need for an M&A deal and *Number of considerations offered* to capture deal structure. Investment and commercial banks are known for their strength in organizing deal financing and should be preferred for more complex transactions where the payment involves a mix of cash, equity or hybrid financing (Burgess 2010). Cash offerings, *Cash offering*, are riskier to the

[9] *Deal Value* also controls for higher activity of accounting firms in the mid- and low-market segment.

bidder, since any cost related to offer mispricing is born by the acquirer after the transaction. Bidders may favor accounting firms for these deals. We control for whether the deal is a hostile takeover, *Hostile deals*, and whether it includes more than one bidder, *Competed deals*, as acquirers may rely on investment banks for these transactions. Acquiring a target located outside the bidder's home country is more challenging as the information may be prepared in a different language and with different accounting practices (Jeanjean et al. 2015). Thus, the demand for accounting firms' expertise should be lower for domestic, *Domestic,* deals.

Prior experience with an advisor builds trust and allows the advisor to study the bidder's business model and needs motivating acquisitions (Sibilkov and McConnell 2014). To capture this effect, we control for the past relation between the bidder and advisor, *Returning acquirer advisor*. *Percentage of shares sought* captures the percentage of target shares the bidder seeks to acquire. Acquiring a larger stake in the target is more costly as potential misvaluation has a larger effect on bidder shareholders; bidders may opt to hire accounting firms for these transactions. We control for the number of advisors, *Number of acquirer advisors,* on a deal because bidders may be skeptical about the ability of accounting firms to advise on a transaction and may want to pair them with investment banks. Substantial family ownership of the target, *Family owned target*, may increase negotiation difficulties and chances of deal collapse (Bena and Li 2014). To reduce this risk, bidders may opt for investment bank advisers.

We control for *Acquirer size*, as larger firms may prefer to use reputable investment banks rather than accounting firms (Indap 2015). We include the acquirer's leverage ratio, *Acquirer leverage*, as acquirers with high leverage might favor investment bank advisors because of their strength in arranging financing. The acquirer's book-to-market ratio, *Acquirer B/M*, and stock return momentum, *Acquirer stock momentum*, capture the overpricing of the bidder's stock. Stock overvaluation increases the chances of opportunistic acquisitions (Akbulut 2013) and we expect that bidders prefer an investment bank advisor to add credibility to such transactions. Similarly, we

expect firms with a higher diversity of opinion about the firm's prospects, measured by *Acquirer stock volatility*, to choose investment banks to certify the benefits of the transaction Kim and Skinner (2012) associate higher stock volatility with higher deal litigation risk and hiring an investment bank may reduce litigation risk.

Bidders domiciled in countries with the common law legal system origin, *Common Law*, and high average ownership concentration, *Ownership concentration*, might favor accounting firm advisors if they believe the choice would lead to more accurate estimates of target's value reducing the risk of negative deal outcomes. This is because the shareholder governance model in common law countries and blockholder monitoring makes managers more accountable (Ball, Kothari, and Robin 2000; Jensen and Meckling 1976; Schleifer and Vishny 1986), which increases the risk negative deal outcomes will lead to the dismissal of the managerial team (Lehn and Zhao 2006). High reporting standards in bidder's country, *High disclosure regulation*, should associate with lower chances the bidder will use overpriced stock to pay for the target reducing the need to hire an investment bank to certify such transactions (Bowers and Miller 1990). We also include an indicator variable *More aggregate earnings management* if the target country's aggregate earnings management is higher than that of the bidder country. These settings associate with increased information search and acquisition costs thus higher valuation uncertainty (Xie 2001; Louis 2004). Higher valuation uncertainty should favor accounting firm advisors. For completeness, we also include the aggregate earnings management score, *Aggregate earnings management*.

The advisor choice regression controls for the industry and year fixed effects. The statistical tests on the estimated coefficients are based on clustered standard errors robust to within-industry correlation (Rogers 1993) and heteroskedasticity-adjusted (White 1980). We cluster on industry as M&As tend to happen in industry waves (Harford 2005; Ahern and Harford 2014). All continuous variables are winsorized at the 1st and 99th percentiles. The baseline specification of the logit model predicting the adviser choice is as follows:

$$Pr(AF\ advisor = 1) = f(\text{variables for valuation uncertainty, controls, } \varepsilon), \quad (1)$$

where *AF advisor* is an indicator variable taking the value of 1 if an accounting firm is hired to advise on an M&A deal and 0 otherwise, *f* is the logistic function, and ε is a random error. Similar to past approaches for classifying transactions (Servaes and Zenner 1996; Rau 2000; Golubov et al. 2012), we consider a transaction advised by an accounting firm if the accounting firm is either the sole advisor or part of a syndicate. Table 1 summarizes the definitions of the variables used in the advisor choice model and other analyses of the paper.

Table 2 presents the descriptive statistics of the variables used in the advisor choice analysis. The table is partitioned into the M&A deals advised by accounting firms and by investment banks. We document that deals advised by accounting firms tend to be for targets in industries with lower accruals quality, and include more private, non-US, and relatively smaller targets. Accounting firms are also more likely to advise on deals where the target's country has a higher aggregate earnings management score than the bidder's. In sum, accounting firms advise precisely on the type of deals where accounting expertise should help resolve valuation uncertainties.

4.2 Regression results for the advisor choice analysis

Table 3 presents regression results for the advisor choice analysis. Panel A confirms the univariate evidence that accounting firms are more frequently selected to advise on transactions where the target is from the industry characterized by low accounting quality. This effect is economically significant—the odds an accounting firm will advise on an M&A transaction are 105.9% higher when the target is in a low accruals quality industry. To address the concern the coefficient on *Target in low AQ industry* may be affected by omitted correlated variables, we follow the approach from Altonji, Elder, and Taber (2005) and test by how much this coefficient changes compared to a model with only this covariate. If the change is substantial, then it is more likely that adding additional controls would reduce the estimated coefficient. The percentage change between

the coefficients is only 1.2%, which suggests that omitted variables are unlikely to explain the effect we document.

Other proxies for target's valuation uncertainty produce consistent evidence that accounting firms are more likely to advise on deals with high valuation uncertainty. These include deals targeting private, non-US and smaller targets. The complementary valuation uncertainty proxies are also economically important predictors of the advisor choice. In sum, Table 3 evidence supports the prediction that accounting firms are more likely to advise on deals with valuation uncertainty that their expertise can help to reduce.

4.3 Additional results for the advisor choice analysis

To corroborate the conclusion that accounting firms are more likely to advise on deals with high valuation uncertainty, we present four additional results. First, in model 1 of panel B, we calculate *Target in low AQ industry* at the country level for a sample of targets from largest EU markets, *Target in low AQ industry at country level*. Our conclusions from this regression are identical to our main findings.

Second, in model 2, we include an indicator variable for a target from an R&D intensive industry using the industry classification from Lev and Sougiannis (1996) and Hirschey, Richardson, and Scholz (2001), *Target in high R&D industry*. Previous studies highlight higher valuation difficulty for R&D intensive firms (Lev and Sougiannis 1996; Clem, Cowan, and Jeffrey 2004) and we find that bidders are more likely to select an accounting firm advisor for deals involving a target from such an industry.

Third, we use principal component analysis and create an index measure for target's valuation uncertainty that balances the four valuation proxies, *Target low reporting quality index*. The weights are 0.14 for *Target in low AQ industry*, 0.58 for *Private target*, 0.24 for *Non-US target* and 0.63 for an indicator variable for small targets, which includes targets in the bottom quintile ranked on deal size. The coefficient on this index measure is highly statistically significant.

Our final test identifies instances when the auditor issued a qualified opinion about the target's financial statements. High uncertainty surrounding the reliability of target's financial statements increases the difficulty of the advisor's valuation task, which should increase the likelihood that a bidder will select an accounting firm advisor. We collected target auditor opinions for public targets and code low-reliability financial statements as those with Compustat and Compustat Global auditor opinion codes 2, 3 and 5, *Target qualified audit opinion*. We also use the earnings and cash flows data of public targets to construct target *firm*-specific accruals measure, *Target low AQ*. This measure is defined as the standard deviation of target's asset-scaled total accruals, which is the difference between net income and cash from operations measured over four years prior to the M&A deal. We also control for whether the target has reported losses in the year prior to the acquisition, *Target Loss*, and for target's book-to-market ratio, *Target B/M*. Both the *target*-level qualified auditor opinion and low accruals quality variable are statistically significant with a consistently positive sign. Therefore, the valuation uncertainty intended to be captured by the target's accruals quality does not critically depend on whether the proxy is industry-level or firm-level; however, the firm-level measure significantly reduces the sample size.[10]

We recognize that because of familiarity, bidders may choose their auditors as advisor. We find that in 34.5% of transactions advised by accounting firms, the auditor is also the deal advisor. In unreported tests, we found no evidence that bidders systematically chose their auditors as advisors. To illustrate, PwC is both the advisor and auditor on 23.16% transactions involving an accounting firm advisor, which is close to the overall proportion of such transactions advised by PwC (23.26%). Lack of evidence that bidders systematically choose their auditors as advisors likely reflects that (1) the auditor may not have the knowledge advantage to value the target and (2) accounting firms try

[10] In unablated results, we also find significantly lower target reporting quality of deals advised by accounting firms compared to investment banks when we use the Flesch-Kincaid readability measure for the narrative component of the annual report to capture accounting quality. This data is available only for the largest UK public firms over the period 2005–2013 and we successfully matched 25 targets. The data was downloaded from http://reshare.ukdataservice.ac.uk/851859/

to avoid potential conflicts of interest arising from the joint role of auditor and M&A advisor, as stipulated in the code of professional conduct by certain professional body (see, e.g., IESBA 2010, pp. 86-88, on corporate finance services). In sum, results in this section suggest that bidders select accounting firms to advise on transactions where accounting firms' expertise can be particularly valuable in resolving target's valuation uncertainty.

5. Acquirer announcement return

This section examines whether investors perceive transactions advised by accounting firms to bring more benefits to the acquirers' shareholders than those advised by investment banks, particularly for deals involving hard-to-value targets. If accounting firms' expertise is perceived as beneficial, announcements for deals advised by accounting firms should trigger more positive price reactions for the acquirers' stocks. To test this prediction, we calculate a five-day announcement period cumulative abnormal return, *CAR*, where the normal return benchmark is the stock market index of the acquirer's listing exchange.

The main variable of interest is the indicator variable for the accounting firm advisor, *AF advisor*. We expect this variable to load positively when regressed on announcement day returns. To test whether a stronger price reaction for deals advised by accounting firms is tied to their expertise accumulated through audit engagements, we create an indicator variable to capture the industry audit-specialist status of an accounting firm, *AF advisor with industry expertise on accounting*. This variable takes the value of 1 if the acquirer advisor is an accounting firm and an audit specialist of the target's industry and 0 otherwise. The audit-specialist status of an industry is constructed according to the largest-industry-market-share definition in Lim and Tan (2008) and Mayhew and Wilkins (2003). Because industry accounting knowledge should be particularly valuable for targets in industries with low accounting quality, we interact the industry audit-specialist variable with the indicator variable *Target in low AQ industry*. We expect the interaction term to load positively in the return regression. The baseline specification of the regression model

for the acquirer return analysis is as follows:

$$\begin{aligned} CAR = {} & \alpha_0 + \alpha_1\, AF\ advisor + \alpha_2\, AF\ advisor\ with\ industry\ expertise\ on\ accounting \\ & + \alpha_3\, (AF\ advisor\ with\ industry\ expertise\ on\ accounting \\ & \quad \times Target\ in\ low\ AQ\ industry) \\ & + \alpha_4\, Target\ in\ low\ AQ\ industry \\ & + \Lambda_5\, Controls + \Lambda_6\, Year\ effects + \Lambda_7\, Industry\ Effects + \varepsilon. \end{aligned} \tag{2}$$

The regression controls are the same as in model (1). We control for the method of payment as cash-financed acquisitions elicit more favorable price reactions (Travlos 1987), and for the previous relation between the bidder and the advisor as acquirers are more likely to retain better-performing advisors (Sibilkov and McConnell 2014). We control for the size of the advisory team as co-advisors may benefit from the synergy of their expertise ensuring better risk sharing and monitoring, which can produce better outcomes (Hunter and Jagtiani 2003). Previous research documents higher price reactions for relatively larger transactions (Golubov et al. 2012) and for private targets (Fuller et al. 2002), so we control for the deal value and whether the target is a private firm. We also include controls for cross-border deals and for whether the target has significant family ownership as these transactions tend to have disappointing outcomes (Eckbo and Thorburn 2000; Basu, Dimitrova, and Paeglis 2009). Finally, we include acquirer characteristics and country controls, as well as dummy variables for the year and industry fixed effects.

Panel A of table 4 reports average CARs for deals split by the type of acquirer advisor. Price reactions for deals advised by accounting firms are on average over two times of those advised by investment banks (2.02% vs. 0.92%). These results suggest substantial gains to bidders when they hire accounting firms to advise on M&As.

Regressions results in panel B confirm that bidders experience negative price reactions when they attempt to acquire hard-to-value targets with average bidder's value reducing by around $50

million.[11] This result is consistent with past evidence (Gu and Lev 2011, Mauboussin 2010, Raman et al. 2013**,** and Marquardt and Zur 2015). The coefficient on *AF advisor* is positive for the baseline and the full specification of equation (2), which confirms higher price reactions to deals advised by accounting firms. For the baseline model, the magnitude of price reaction is 0.4% higher for deals advised by accounting firms, which translates into a $32 million shareholder value gain for a mean-sized bidder.

Consistent with the knowledge spillover hypothesis, the coefficient on the interaction term *AF advisor with industry expertise on accounting* × *Target in low AQ industry* is positive. This result suggests that investors recognize the audit-related expertise of accounting firms as their unique strength not shared by investment banks. Similarly to the logit regression, we also perform the Altonji, Elder, and Taber (2005) test to determine how stronger selection on unobservables would have to be compared to selection on observables in order to fully explain away our result. The difference in coefficients from equation (3) compared to the model that excludes all controls is less than 5%, which suggests that omitted correlated variables are unlikely to account for our result.

Finally, model 3 in Panel B shows that our conclusions are unchanged when we use *Target in low AQ industry* calculated at each target country level.

5.1 Further results: accounting firm characteristics

We perform additional tests related to accounting firm characteristics to corroborate the conclusion that knowledge spillover helps accounting firms offer superior M&A advisory services. First, model 1 in Panel C documents a stronger effect on the acquirer announcement return for deals with targets in low-accounting-quality industries when the accounting firm advisor is a Big Four (*Big 4*) rather than anon-Big Four. The Big Four are believed to be capable of perform higher-quality audits. Their bigger networks allow them to have more private and public clients as well as more in-

[11] We calculate this number by multiplying the coefficient value by the bidder's average market capitalization, i.e. −0.006×USD8466m.

house specialists, facilitating expertise building. This gives Big Four an advantage over non-Big Four firms in accumulating accounting knowledge that can aid the M&A advisory teams.

Model 2 extends equation (2) by including an indicator variable for whether the accounting firm advisor is also the auditor of the *target*. Holding such a dual role can reduce acquisition uncertainty as the AF advisor has access to *firm*-specific knowledge about the target accumulated through the audit process and informal discussions with the target's management. Firm-specific knowledge about the target can enhance knowledge of the target's *industry* that is captured by the accounting firm specialist status. For this test, we create an indicator variable *AF advisor is target auditor* that takes the value of 1 if the AF advisor is also target's auditor in the year before the transaction and is 0 otherwise. We also interact this indicator with *Target in low AQ industry*. Our search on Compustat, Compustat Global, Worldscope and Fame for target auditors identifies 275 target auditors for bidders using accounting firms, of which 69 (25%) include cases where the bidder's advisor is also target's auditor.[12] Regression results show a significant coefficient on the interaction term *AF advisor is target auditor* × *Target in low AQ industry*, consistent with investors perceiving dual roles of advisor and target's auditor as generating informational advantage when target has low reporting quality.

Recall that our earlier results suggest acquirers do not systematically choose their auditors as deal advisors. However, the acquirer auditor's knowledge may be useful in within-industry mergers, particularly in low reporting quality industries. In such transactions, the auditor has a competitive advantage to value the target. To test this prediction, we augment equation (2) with an indicator variable for whether the auditor advised the bidder on a transaction, *AF advisor is acquirer auditor*, and interact it with the indicator variables for intra-industry merger, *Intra-industry merger*, and with

[12] The small proportion of transactions where bidder's advisor is also target's auditor reflects that accounting firm advisors have to be careful in requesting information from target auditors as "[A] request from an acquiring partner for confidential client information from a target client partner is an ethically challenged request". Further, an acquisition of the target results in a loss of future audit fees from the target and an accounting firm "may prefer acquisition bids to be withdrawn or to fail since the acquisition of a target client results in the loss of future fees and partner income for that partner or practice." (McKenna 2015).

Target in low AQ industry. The positive coefficient on the triple interaction term reported in model 3 of panel C is consistent with knowledge spillover from the audit work benefiting the bidder. The negative coefficient on *Intra-industry merger* × *Target in low AQ industry* suggests that investment banks do not have a competitive advantage to advise on such transactions.

Model 4 reports results for a sample of deals where the party carrying out the due diligence can be identified. The variable *Due diligence by advisor* indicates whether the advisor is also the party carrying out the due diligence. Owing to conflict of interest concerns, investors are expected to react negatively to the announcements of deals when due diligence is performed by an investment bank (*Due diligence by advisor* = 1). Baker and Kiymaz (2011) document that investment banks are opportunistic and provide favorable opinions of M&A transactions to secure the deal-contingent advisory fees and in response to boards' seeking legal cover against shareholders unhappy with the deal's terms. The negative coefficient on *Due diligence by advisor* in model 4 supports this prediction. However, this negative impact is largely offset by the positive coefficient for the interaction term *AF advisor* × *Due diligence by advisor*. Due diligence should be particularly important in cases when target's report quality is low, and the positive interaction *AF advisor* × *Due diligence by advisor* × *Target in low AQ industry* supports this prediction. This result is consistent with the accounting expertise of accounting firms lending credibility to their role as due diligence advisors.

Prior research shows that geographic proximity facilitates knowledge transfer (Audretsch and Feldman 1996; Audretsch and Stephan 1996). Thus, the acquirer announcement return should be higher when the accounting firm advisor has the corporate finance and audit offices in the same city. We cannot identify the specific locations of the corporate finance and audit offices of accounting firm advisors but it is reasonable to assume they are likely to locate in the capital of a country. When the headquarters of the target is in the capital, *Target in capital city*., the advantage of hiring an accounting firm advisor would be stronger if there is a knowledge spillover from the audit to the

M&A advisory services. Consistent with the prediction, model 5 documents a positive coefficient on *AF advisor* × *Target in capital city*. Importantly, the zero coefficient on *Target in capital city* suggests that capital location does not affect price reactions for deals advised by investment banks.

5.2 Further results: target's reporting quality and announcement day return

To ensure that our conclusions are not driven by the specific measure of valuation difficulty, model 1 in Panel D reports regression results for equation (2) when we include the index measure capturing small, private, non-US targets in a low accruals quality industry, *Target reporting quality index*. We then interact this index measure with *AF advisor*. The positive coefficient on the interaction term corroborates that investors react more favorably to deals with higher valuation uncertainty that are advised by accounting firms.

In model 2, Panel D, we include an alternative index measure for target valuation uncertainty from a principal component analysis using target's accruals volatility, whether the target reported losses before the acquisition and target's B/M ratio, *Target low reporting quality index*2. The weights for each component are 0.70 for *Target low AQ*, 0.56 for *Target Loss* and -0.25 for *Target B/M*. The coefficient on the interaction between the index measure and *AF advisor* is positive and significant. We recognize that low accounting quality can associate with high operating uncertainty and to control for the latter, we include target's earnings volatility in model 2, *Target earnings volatility*, which is the volatility of asset-scaled net income measures over four years prior to the acquisition. Similar to McNichols and Stubben (2015), who used cash flow volatility to measure target's operating uncertainty, we find that target's earnings volatility does not associate with acquirer announcement returns when we control for target's reporting quality.

Model 3 documents that price reactions are higher when the accounting firm advises on deals where the target's auditor expresses a concern on whether the financial statements are presented fairly (i.e., qualified / adverse / no opinion). This result is consistent with investors perceiving

accounting firms as better able to understand the implications of not receiving an unqualified opinion. Accounting firm advisors are capable of forming their own assessment given the accounting expertise from their roles as the auditor of other clients.

Model 4 examines targets' announcement day returns, instead of acquirers'. Contrary to bidders, targets tend to experience significant positive price reactions. Past studies attribute the finding to a wealth transfer from the bidder to the target because bidders overpay for targets (Jensen and Ruback 1983; Jarrell, Brickley, and Netter 1988; Datta, Pinches, and Narayanan 1992). If accounting firm advisors promote valuation fairness, they should reduce the risk of wealth transfer from the bidder to the target. Consistently, model 4 shows lower target announcement returns when the *bidder* is advised by an accounting firm.

5.3 Further results: advisory team/advisor characteristics

Similar to past approaches for classifying transactions (Servaes and Zenner 1996; Rau 2000; Golubov, Petmezas, and Travlos 2012), we consider a transaction advised by an accounting firm if the accounting firm is either the sole advisor or part of a syndicate. However, our conclusions could be confounded by the pairing of investment banks with accounting firms and it is the former that generate benefits to the acquirer. To ensure robustness of our results, we also re-estimated equation (2) for deals with single advisors. Model 1 in Panel E reports that our conclusions are unchanged for this subsample. This result is unsurprising since accounting firms tend to advise on mid- and small-level transactions, which frequently have only one advisor (close to 66% of transactions advised by accounting firms have only one advisor).

Next, we show that investors do not perceive top-rated investment banks to have a competitive advantage to advise on deals where the target has low reporting quality. This result suggests the accounting firms' valuation advantage is not easily replicable. Specifically, we augment equation (2) to include an indicator for top-tier investment banks using the classification from Fang (2005) and Golubov et al. (2012), *Top IB*, and its interaction with the indicator variable *Target in low AQ*

industry. Results for model 2 in Panel E show an insignificant coefficient on this interaction term, suggesting that investors do not perceive top investment banks to have a competitive advantage to advise on such transactions. To sharpen this analysis, we also include an indicator variable for whether the advisor completed the most M&A transactions in the target's industry over the previous three years, *Advisor is industry specialist*. We then interact the advisor's industry specialist status with the target reporting quality measure. The interaction term tests whether investment bank advisors can develop valuation expertise similar to accounting firms. We do not find evidence that investors react more positively to specialist advisors when the target is in a low accrual quality industry. Together, model 2 results corroborate the view that understanding accruals is a unique strength of accounting firms not shared by even top-tier investment banks or specialist advisors.

Investment banks may create advisory teams to better cope with transactions involving hard-to-value targets. Advisory syndicates can reduce information acquisitions costs and efficiently leverage on individual members expertise (Grullon, Underwood, and Weston 2014). The last model in Panel E interacts the size of the syndicate with *Target in low AQ industry*; however, the coefficient on the interaction term is negative. A triple interaction with an indicator for top investment bank is not significant, which suggests that even including a large reputable investment bank in an advisory team does not overcome the challenges related to target valuation. However, pairing an investment bank with an accounting firm generates positive price reactions for deals involving a hard-to-value target. This result suggests advisory teams benefit from the competitive strength accounting firms bring to the advisory team, which lies in target valuation.

5.4 Endogeneity considerations

Acquirers selecting accounting firm advisors can be systematically different from those selecting investment bank advisors. To address this concern, we perform four tests. First, we carry out the acquirer return analysis using instrumental variables (IV) regression. The instrument is the proportion of M&A transactions advised by accounting firms in a two-digit industry of the bidder

over the past three years. Building on the network literature (Leary and Roberts 2014), we expect that a bidder will more likely choose an accounting firm advisor if peer firms more frequently rely on accounting firm services. However, past peer choices are unaffected by idiosyncratic shocks to the bidder that could influence the choice of the accounting firm advisor, such as particular bidder or target characteristics, which limits the correlation between the instrument and the return regression residual. Thus, this instrument meets both the exclusion restriction and relevance condition. Using this instrumental variable, we estimate the baseline acquirer return regression using two-stage least squares. Model 1 in Panel F reports results for the IV regression, which confirms that deals advised by accounting firms elicit more positive price responses at the announcement.

Second, for each bidder, we use the advisor choice regression (equation (1)) to estimate the probability of choosing an accounting firm advisor. This constitutes the propensity score for matching investment-bank-advised deals to accounting-firm-advised deals. Then we use the estimated probabilities to form match pairs of observations where firms have a similar ex-ante probability of being advised by an accounting firm, but different ex-post realizations (treatment and control groups). This is one-to-one nearest neighbor matching within a 0.05 caliper. This method allows us to find counterfactuals similar on the matching dimensions but that differ in terms of advisor and deal outcomes. Differences in acquirer returns between the two groups measure the effect of the advisor choice. The PSM sample has 1,382 deals advised by accounting firms and investment banks with non-missing information on announcement-period returns. The mean difference in predicted probability between the treatment (deals advised by accounting firms) and the control sample (matched deals advised by investment banks) is 0.02% and we report statistics for the quality of matching on individual covariates in Appendix C. The difference in CARs for the accounting firm advised deals and the PSM matched sample of investment bank deals is 0.69% (2.02% vs. 1.33%). We then re-estimate the acquirer return regression to control for residual differences in covariates as suggested by Shipman, Swanquist, and Whited (2017). Model 2 in Panel

F confirms more positive price reactions for deals where the target is in an industry with low accounting quality and the accounting firm is an audit specialist of the industry.

Third, we take advantage of a quasi-natural experiment due to the IFRS introduced in Europe. IFRS standardized reporting across European markets facilitating comparison and valuation. If both the target and acquirer report under IFRS, the benefits from appointing accounting firm advisors should be lower. Consistently, Model 3 in Panel F shows a negative coefficient for the interaction between *AF advisor* and the indicator variables for bidder and target reporting under IFRS.

Fourth, we run a placebo test that substitutes bidder's for target's accounting quality. We measure acquirer's accounting quality by the volatility of total accruals scaled by total assets over four years prior to the acquisition, *Acquirer low AQ.* Accounting knowledge about the *acquirer* should not on average facilitate *target's* valuation task, thus the interaction term between accounting firm target specialist status and acquirer reporting quality should be zero. Model 4 in Panel F shows an insignificant coefficient for the interaction term between advisor's audit specialist status of the target's industry and *acquirer* accounting quality. This result is consistent with accounting knowledge about the target, not about the acquirer, helping value the target. In sum, the results from tests that address the endogeneity concern provide consistent support to our conclusion that investors react more positively to M&A transactions advised by accounting firms.

6. Offer premium

We argue that the unique strength of accounting firms as M&A advisors stems from their accounting expertise, which helps reduce valuation uncertainty. Reduced valuation uncertainty allows the acquirer to more accurately estimate the target's reservation price and thereby lower the offer premium. To test this prediction, we define the variable *Offer premium* as (the ratio of the bid price per share to the target's closing stock price 1 day prior to announcement – 1) × 100. Like Dimopoulos and Sacchetto (2014), we consider only the premium corresponding to the final offer. This is the winning bid in a successfully completed takeover or otherwise the last withdrawn bid in

an unsuccessful takeover. The full specification of the regression model for the offer premium analysis is as follows:

$$\begin{aligned} \textit{Offer premium} = {} & \beta_0 + \beta_1 \textit{ AF advisor} + \beta_2 \textit{ AF advisor with industry expertise on accounting} \\ & + \beta_3 (\textit{AF advisor with industry expertise on accounting} \\ & \quad \times \textit{Target in low AQ industry}) \\ & + \beta_4 \textit{ Target in low AQ industry} \\ & + B_5 \textit{ Controls} + B_6 \textit{ Year effects} + B_7 \textit{ Industry Effects} + \varepsilon. \end{aligned} \tag{3}$$

As in the acquirer announcement-period return analysis, the coefficients of interest are β_1 to β_3. We expect accounting firms to help negotiate lower average premiums, particularly for targets with low accounting quality. The set of controls is the same as in equation (1).

Panel A of Table 5 reports average premiums for the sample split by the advisor type. Deals with accounting firm advisors have on average a 13.88% lower premium compared to deals advised by investment banks (25.46% vs. 29.56%), which is significant under a one-tailed *t*-test.[13] The univariate results provide preliminary evidence suggesting that bidders advised by accounting firms are able to pay lower premiums to their targets.

Panel B of table 5 reports the regression estimates of the offer premium analysis. Model 1 of the panel confirms the univariate results of lower premiums for accounting-firm-advised deals. Specifically, we document a 3.3% lower premium on deals advised by accounting firms, which translates into average savings of $61.5 million for a mean-sized deal. The positive coefficient of *Target in low AQ industry* is consistent with prior research suggesting that bidders tend to overpay for targets with poor accounting quality (Raman, Shivakumar, and Tamayo 2013; Marquardt and Zur 2015; McNichols and Stubben 2015). Model 2 shows that the lower premiums associate with the competitive strength of accounting firms, namely for deals where the accounting firm is audit specialist of the target's industry and the target's industry is of low accounting quality. We confirm

[13] For the PSM sample, the saving is 12.43% (an offer premium of 25.46% for accounting firm advisors vs. 29.07% for investment banks). Because the offer premium data are only available for listed targets, the PSM sample reduces to 64 deals advised by accounting firms and their matches advised by investment banks.

this conclusion for the PSM sample in model 3.

Together, the results in Table 5 confirm that the quality of accounting firms' advice, which is linked to audit-related accounting expertise, translates into more competitively priced transactions for the bidders.[14]

7. Additional analyses

7.1 Goodwill impairment likelihood

Goodwill is the part of the purchase price exceeding the fair market value of identifiable assets of the target. If the goodwill recognized from M&A transactions is driven by overpricing, it would have a greater chance to be impaired when the overpricing becomes clear to investors over time. IFRS requires goodwill to be tested at least annually for impairment. Such goodwill impairment, however, will be less likely if accounting firms' expertise helps avoid overpricing.

Panel A of table 6 shows the fraction of the combined firms reporting goodwill impairment within five years after the transactions, as examined in Fich, Rice, and Tran (2016), Gu and Lev (2011), and Li et al. (2011).[15] We document that the likelihood of experiencing goodwill impairment shortly after the transaction is 25.77% lower among the combined firms from accounting-firm-advised deals than from investment-bank-advised deals (26.2% for the PSM sample). Thus, transactions advised by accounting firms have a lower likelihood of post-deal impairment of goodwill recognized from M&A transactions, which corroborates our main conclusion.

7.2 Deal completion rates

If accounting firms are better at collecting and analyzing target information available prior to the announcement, the risk of material information emerging after the announcement should be lower. This in return should reduce the risk of merger failure. Merger failure can occur for a variety

[14] In unreported results, we find that our conclusions are unchanged when we define the offer premium as the ratio of the bid price per share to the target's closing stock price 4 weeks prior to the announcement.
[15] Information on goodwill impairment is from Worldscope and if missing, we use information on special items from Compustat Global.

of reasons, which include the occurrence of "material adverse effect" events, problems discovered during the due diligence process, or a receipt of a higher bid (Luo 2005). Material adverse effect clauses allow the bidder to terminate the deal if specific events are triggered, which include economic or industry shocks, financial misreporting, and regulatory changes (Denis and Macias 2013). Bates and Lemmon (2003) report that 21% of M&A transactions fail, and that failed deals lead to reputational costs for the managerial team such as forced bidder firm CEO departure (Lehn and Zhao 2006) and negative market reactions (Jacobsen 2014; Davidson, Dutia, and Cheng 1989).

To test the prediction that accounting firms help reduce the risk of deal termination, we identify all deals with SDC withdrawn status. There are 639 transactions falling into this category. Panel B of Table 6 reports a lower frequency of deal termination for transaction advised by accounting firms compared to investment banks for the pooled sample (0.13% vs. 7.38%) and the PSM sample (0.13% vs. 0.87%). This result is consistent with accounting firms being able to reduce the risk that adverse information emerging after the deal announcement increases the deal completion rate.

7.3 Future profitability

An alternative explanation for our results is that deals advised by accounting firms capture instances where acquirers estimate lower benefits of the transaction, thus are willing to pay lower premiums, but investors overestimate the expected merger gains and overreact at the deal announcement. To test this proposition, Panel C of table 6 reports the mean industry-adjusted future profitability measured over five years after the transaction, of the combined firms from accounting-firm-advised deals versus investment-bank-advised deals. We do not find evidence that the future performance of deals advised by accounting firms is different compared to investment-bank advised transactions for the full or the PSM sample. Thus, it is unlikely that accounting firms advise on targets with poor reporting quality, yet better ex-post performance. These results are in line with our main findings on the competitive strength and service quality of accounting firm advisors and are consistent with investors correctly interpreting the benefit from hiring accounting firms as advisors.

8. Conclusion

This study provides evidence consistent with knowledge spillover of audit-related accounting expertise to M&A advisory services. Our results support the perspective that the competitive strength of accounting firm M&A advisors is due to their accounting expertise that helps reduce valuation uncertainty. A question remains: why do so many acquirers still hire investment bank advisors? According to Axworthy and Stinga (2015), "[M]any clients still do not perceive the 'Big 4' as deal advisors. At their core they are accounting firms and their corporate finance practices in the past have carried out due diligence work. Companies often overlook them for lead advisory work and choose investment banks or boutique advisory firms for this type of service.". Indap (2015) points out that "[l]arge companies are particularly status conscious and because of legal scrutiny from being listed, may hesitate to stray towards companies whose identity – fairly or not – lies in bookkeeping.". Executives often show a clear preference for investment banks not justified by service quality. Noonan (2016) quotes an M&A executive at a large London multinational company who replied with double "No" when asked whether top US investment banks "work harder or smarter than other global banks" to justify their frequent advisory roles. Our evidence on the competitive strength of accounting firms in the valuation area, coupled with the vast evidence that even reputable investment banks appointments do not mitigate the overpayment risk, should entice managers to reevaluate their future M&A advisory choices.

Appendix A. M&A advisor league tables

Thomson Reuters Worldwide Mid-Market and Small-Cap Rankings for the first quarter of 2015

First Quarter 2015 | Mid-Market M&A Up To US$500m | Financial Advisors

Worldwide Mid-Market Rankings (MM1)

MM1 - Undisclosed Values & Values up to US$500m

Financial Advisor	# of Deals per Advisor: 2015 Rank	2014 Rank	# of Deals	Change in # of Deals	
PricewaterhouseCoopers	1	1	69	-71	▼
Ernst & Young LLP	2	3	57	-18	▼
Sumitomo Mitsui Finl Grp Inc	3*	7	47	-7	▼
Goldman Sachs & Co	3*	6	47	-10	▼
KPMG	5	2	46	-48	▼
Rothschild	6	5	44	-15	▼
Lazard	7	10*	42	2	▲
Mizuho Financial Group	8	15	41	6	▲
Morgan Stanley	9	13	37	0	-
Jefferies LLC	10*	25*	31	10	▲
JP Morgan	10*	16	31	-2	▼
Houlihan Lokey	12*	10*	30	-10	▼
Deloitte	12*	4	30	-33	▼
Nomura	14	20	29	-1	▼
Lincoln International	15	25*	23	2	▲
Moelis & Co	16*	25*	22	1	▲
Bank of America Merrill Lynch	16*	18*	22	-9	▼
M&A International	16*	18*	22	-9	▼
Macquarie Group	19*	24	21	-1	▼
Citi	19*	22	21	-6	▼
Deutsche Bank	21*	45*	20	6	▲
Credit Suisse	21*	23	20	-6	▼
RBC Capital Markets	23*	25*	19	-2	▼
UBS	23*	42*	19	4	▲
Evercore Partners	25*	37*	18	1	▲
Stifel/KBW	25*	33*	18	0	-
Raymond James Financial Inc	27*	40*	17	1	▲
Global M&A	27*	33*	17	-1	▼
Baker Tilly International	27*	29*	17	-3	▼

First Quarter 2015 | Small-Cap M&A Up To US$50m | Financial Advisors

Worldwide Small-Cap Rankings (MM1a)

MM1a - Undisclosed Values & Values up to US$50m

Financial Advisor	# of Deals per Advisor: 2015 Rank	2014 Rank	# of Deals	Change in # of Deals	
Ernst & Young LLP	1	3	55	-10	▼
PricewaterhouseCoopers	2	1	54	-60	▼
Sumitomo Mitsui Finl Grp Inc	3	6	40	-7	▼
KPMG	4	2	39	-41	▼
Rothschild	5	7	37	-3	▼
Mizuho Financial Group	6	10*	35	4	▲
Houlihan Lokey	7*	10*	26	-5	▼
Goldman Sachs & Co	7*	13	26	-2	▼
Lazard	9	15*	24	1	▲
Lincoln International	10	17*	21	2	▲
Deloitte	11	4	20	-32	▼
Nomura	12*	17*	19	0	-
M&A International	12*	14	19	-7	▼
Macquarie Group	14*	52*	17	9	▲
Baker Tilly International	14*	21*	17	-1	▼
Jefferies LLC	14*	26*	17	3	▲
Global M&A	17*	21*	16	-2	▼
IMAP	17*	5	16	-34	▼
Morgan Stanley	19*	17*	15	-4	▼
Moelis & Co	19*	26*	15	1	▲
Citi	19*	43*	15	6	▲
JP Morgan	19*	26*	15	1	▲
Raymond James Financial Inc	23*	52*	14	6	▲
UBS	23*	73*	14	8	▲
BCMS Corporate Ltd	23*	34*	14	2	▲
Deutsche Bank	26*	88*	13	8	▲

Appendix B1. Names of M&A advisors associated with PwC

The table shows names of advisors on SDC and their codes where the parent is PwC.

Advisor name	SDC advisor code	Parent Name
Price Waterhouse Corporate Fin	PRICE-CORP-FIN	PricewaterhouseCoopers
Pricewaterhouse Coopers Secur	PWC-SECURITIES	PricewaterhouseCoopers
PricewaterhouseCoopers	PWC	PricewaterhouseCoopers
PricewaterhouseCoopers (Aus)	PWC-AUS	PricewaterhouseCoopers
PricewaterhouseCoopers (JP)	PWC-JAPAN	PricewaterhouseCoopers
PricewaterhouseCoopers (SG)	PWC-SG	PricewaterhouseCoopers
Pricewaterhousecoopers Corpora	PWC-CF-SAS	PricewaterhouseCoopers
PricewaterhouseCoopers Secur	PWC-SEC	PricewaterhouseCoopers
PwC Advisory Co Ltd (JP)	PWC-ADV-JAPAN	PricewaterhouseCoopers
PwC Transaction Services Inc	PWC-TRANS-SVCS	PricewaterhouseCoopers
PricewaterhouseCoopers (UK)	PWC-UK	PricewaterhouseCoopers

Appendix B2. SDC parent advisor codes and names

The table reports parent advisor codes and names of accounting firms on SDC.

SDC parent advisor codes	SDC parent advisor names
ARTHUR-ANDERSEN	Arthur Andersen
BAKER-TILLY-INT	Baker Tilly
BDO	BDO
CROWECLARK	Crowe Clark Whitehill
DELOITTE	Deloitte
ERNST-YOUNG	Ernst & Young
GRANT-INTL	Grant Thornton
KPMG	KPMG
MCGLADREY-CM	McGladrey Capital Markets
PANNELL-KERR	Pannell Kerr Forster
PKF-INTL	PKF International
PKFITALIA	PKF Italia
PWC	PricewaterhouseCoopers
RSM-BENTJEN	RSM Bentley Jennison
RSM-TENON	RSM Tenon Group
RSMROB	RSM Robson Rhodes
SMITH-W	Smith & Williamson Securities
TENON-GROUP	Tenon Group

Appendix C. Propensity score matching quality

The table reports quality of propensity score matching for the sample of 793 transactions advised by accounting firms matched to a control sample of transactions advised by investment banks. We report means and medians for variables in the advisor choice equation (1) for the treatment (deals advised by accounting firms) and the control sample (deals advised by investment banks) and the respective p-values for the differences. Matching uses nearest neighbor with a 0.05 calliper.

	Treatment sample mean	Control sample mean	p-value for difference	Treatment sample median	Control sample median	p-value for difference
A. Valuation uncertainty						
Target in low AQ industry	0.045	0.041	0.690	0.000	0.000	0.690
Private target	0.415	0.418	0.913	0.000	0.000	0.913
Non-US target	0.886	0.900	0.385	1.000	1.000	0.385
Deal value ($mil)	278.9	316.6	0.401	49.032	46.223	0.554
B. Deal value, financing, and method of payment						
Financing required	0.156	0.182	0.197	0.000	0.000	0.197
Cash offering	0.415	0.386	0.273	0.000	0.000	0.273
Number of considerations offered	1.428	1.424	0.908	1.000	1.000	0.419
C. Past relation with the advisor						
Returning acquirer advisor	0.334	0.342	0.776	0.000	0.000	0.776
D. Other deal characteristics						
Percentage of shares sought	89.918	88.472	0.256	100.000	100.000	0.246
Number of acquirer advisors	1.524	1.621	0.299	1.000	1.000	0.106
Hostile deal	0.003	0.004	0.654	0.000	0.000	0.654
Competed deal	0.000	0.000	1.000	0.000	0.000	1.000
Domestic	0.504	0.525	0.420	1.000	1.000	0.420
Family owned target	0.003	0.001	0.564	0.000	0.000	0.563
E. Acquirer characteristics						
Acquirer size	4631.7	5011.6	0.425	815.777	853.952	0.518
Acquirer B/M	0.675	0.668	0.846	0.503	0.485	0.554
Acquirer leverage	0.165	0.164	0.921	0.128	0.137	0.628
Acquirer stock momentum	0.090	0.079	0.497	0.040	0.047	0.554
Acquirer stock volatility	0.107	0.106	0.864	0.059	0.059	0.872
F. Country characteristics (Acquirer)						
Common law	0.508	0.505	0.914	1.000	1.000	0.914
Ownership concentration	0.200	0.290	0.995	0.240	0.240	0.614
Disclosure regulation	0.694	0.693	0.824	0.750	0.750	0.614
Aggregate earnings management	12.136	12.077	0.869	7.000	7.000	0.742
G. Country characteristics (Target)						
More aggregate earnings management	0.169	0.165	0.829	0.000	0.000	0.829

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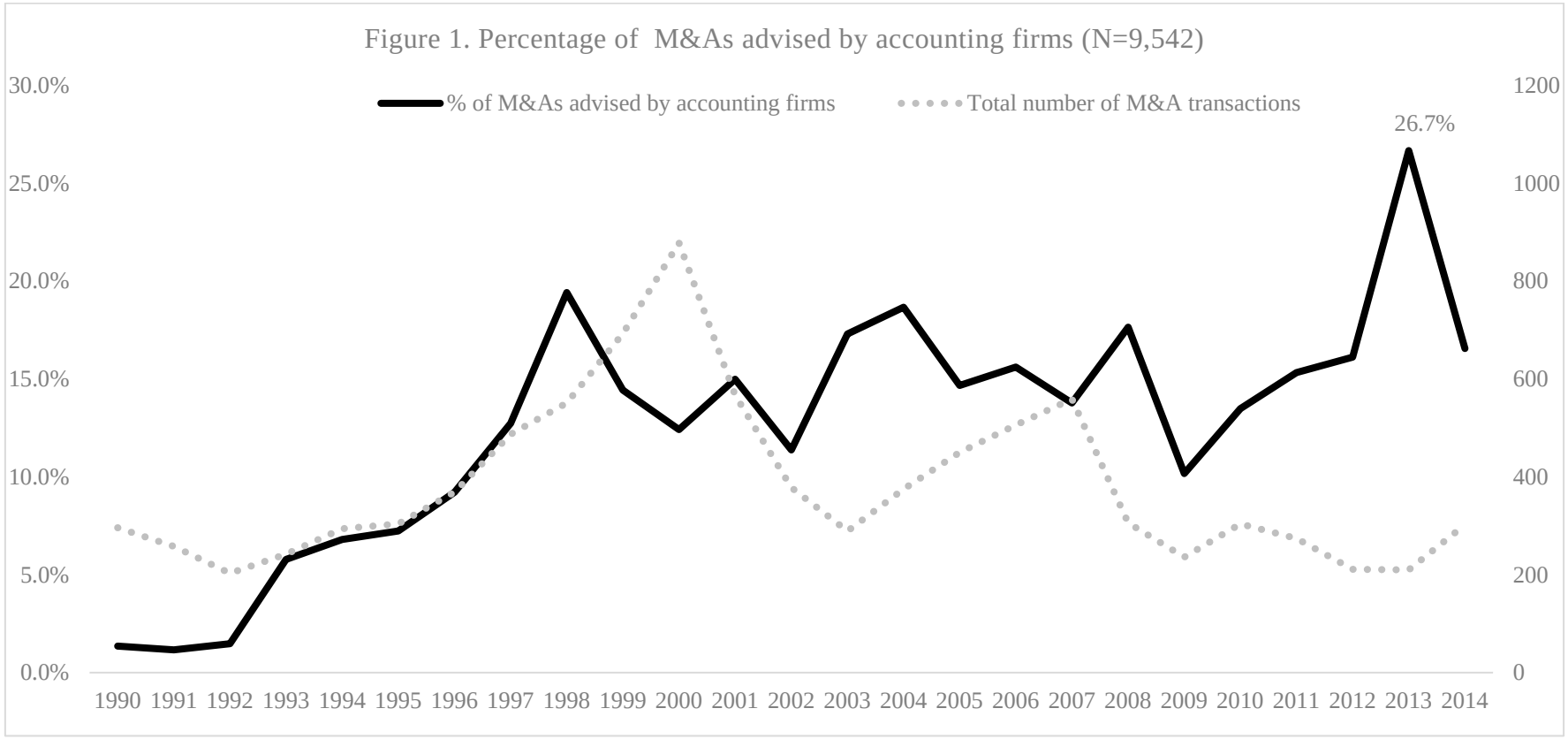

The figure reports the total number of M&A transactions over the period 1990–2014 and the percentage of M&A transactions advised by accounting firms.

Table 1 Variable definitions

This table presents the definitions of the main variables used in the study.

Variable	Definition
Target valuation uncertainty measures	
Target in low AQ industry	An indicator variable equal to 1 if the target belongs to the top two industries with the lowest accruals quality, and 0 otherwise. We measure accruals quality by the standard deviation of the asset-scaled total accruals over a four-year period before the acquisition and then take the equal-weighted average across all publicly listed firms in a 2-digit SIC industry.
Target in low AQ industry measured at country level	An indicator variable equal to 1 if the target belongs to the top two industries in a country with the lowest accruals quality, and 0 otherwise. We measure accruals quality by the standard deviation of the asset-scaled total accruals over a four-year period before the acquisition and then take the equal-weighted average across all publicly listed firms in a country in a 2-digit SIC industry.
Private target	An indicator variable equal to 1 if the target is a private firm and 0 otherwise.
Non-US target	An indicator variable equal to 1 if the target is not incorporated in the US and 0 otherwise.
Deal value	The market value of the shares sought in the M&A deal expressed in USD million using the exchange rate at the end of the month preceding the transaction.
Target in high R&D industry	An indicator variable equal to 1 if the target is from an R&D intensive industry using the industry classification from Lev and Sougiannis (1996) and Hirschey, Richardson, and Scholz (2001) and 0 otherwise.
Target low reporting quality index	An index measure from the principal component analysis of target's valuation uncertainty proxies. The weights are 0.14 for *Target in low AQ industry*, 0.58 for *Private target*, 0.24 for *Non-US target* and 0.63 for an indicator variable for small targets, which includes targets in the bottom quintile ranked on deal size.
Target low reporting quality index2	An alternative index measure created based on the principal component analysis of the target's valuation uncertainty proxies. The weights are 0.70 for *Target low AQ*, 0.56 for *Target Loss* and -0.25 for *Target B/M*.
Target low AQ	The target's standard deviation of the asset-scaled total accruals over four-year period prior to the M&A deal.
Target loss	An indicator variable equal to 1 if the target reported a loss in the most recent fiscal year before the acquisition, and 0 otherwise.
Target qualified opinion	An indicator variable for low-reliability financial statements coded as 1 for targets with Compustat Global auditor opinion codes 2, 3 and 5, and 0 otherwise.
Accounting advisor characteristics	
Big 4	An indicator variable equal to 1 if the accounting firm advisor is a Big 4 auditor and 0 otherwise.
AF advisor is target auditor	An indicator variable equal to 1 if the accounting firm advisor is also target's auditor and 0 otherwise.
AF advisor is acquirer auditor	An indicator variable equal to 1 if the accounting firm advisor is also acquiror's auditor and 0 otherwise.
Due diligence by advisor	An indicator variable equal to 1 if the advisor is responsible for target's due diligence and 0 otherwise.

(continued on next page)

Table 1 (continued)

Variable	Definition
Deal characteristics	
AF advisor	An indicator variable equal to 1 if the acquirer advisor is an accounting firm and 0 otherwise
AF advisor with industry expertise on accounting	An indicator variable equal to 1 if the acquirer advisor is an accounting firm whose parent audit firm has expertise as an audit-specialist of the target's industry and 0 otherwise. An industry audit-specialist is defined analogously according to the largest-industry-market-share definition in Lim and Tan (2008) and Mayhew and Wilkins (2003), with the market shares by audit clients' total assets substituting for the market shares by audit clients' sales revenues in the original definition. We calculate the measure each year for each target market.
Percentage of shares sought	The percentage of target shares the bidder seeks to acquire (1 = 100%).
Hostile deal	An indicator variable equal to 1 if the board officially rejects the offer but the acquirer persists with the takeover and 0 otherwise.
Competed deal	An indicator variable equal to 1 if a third party launched an offer for the target while the original bid was pending and 0 otherwise.
Domestic	An indicator variable equal to 1 if the target is incorporated in the same country as the acquirer and 0 otherwise.
Financing required	An indicator variable equal to 1 if the source of funding for the transaction is either borrowing, bridge loan, common stock issue, debt issue, junk bond issue, mezzanine financing, rights issue, staple offering, or preferred stock, and 0 otherwise.
Number of considerations offered	The number of securities used in the payment for target stock.
Cash offering	An indicator variable equal to 1 if the transaction payment method is cash and 0 otherwise.
Number of acquirer advisors	The number of financial advisors advising the acquirer in the M&A deal.
Returning acquirer advisor	An indicator variable equal to 1 if the acquirer advisors advised the acquirer in a prior M&A deal and 0 otherwise. We search for past M&A transactions over a three-year period.
Intra-industry merger	An indicator variable equal to 1 if the acquirer and the target are in the same industry based on Kenneth French 10 industry classifications and 0 otherwise.
Offer premium	The ratio of the bid price per share to the target's closing stock price 1 day prior to announcement less 1. The ratio is expressed in percentage.
Top IB	An indicator variable equal to 1 for top-tier investment banks using the classification from Fang (2005) and Golubov et al. (2012) and 0 otherwise.
Advisor is industry specialist	An indicator variable equal to 1 for whether the advisor completed the most M&A transactions in the target's industry over the previous three years and 0 otherwise.
Industry effects	Acquirer's industry dummy variables based on the two-digit SIC code.
Year effects	Year dummy variables for the M&A deal announcement year.
Acquirer characteristics	
Acquirer size	Acquirer's market capitalization measured at the end of the fiscal year before the M&A deal date and expressed in USD millions using the exchange rate at the end of the month preceding the transaction.
Acquirer B/M	Acquirer's book value of equity to market value of equity ratio at the fiscal year end (FYE) prior to the M&A deal.
Acquirer leverage	Acquirer's ratio of long-term debt to average assets at the FYE prior to the M&A deal.
Acquirer stock momentum	Acquirer's buy-and-hold stock returns for 90-days prior to the previous FYE.
Acquirer stock volatility	Stock price standard deviation measured over 90-days before the previous FYE, scaled by the mean price level over this period.
IFRS acquirer	An indicator variable equal to 1 if the acquirer reports under IFRS and 0 otherwise.

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Table 1 (continued)

Target characteristics	
Family owned target	An indicator variable equal to 1 if a family or group of families controls at least 20% of the target and 0 otherwise.
IFRS target	An indicator variable equal to 1 if the target reports under IFRS and 0 otherwise.
Target B/M	Target's book value of equity to market value of equity ratio at the FYE prior to the M&A deal.
Target earnings volatility	Target's earnings volatility measured over the 4 years prior to the M&A.
Target in capital city	An indicator variable equal to 1 if the target's headquarter is in the capital and 0 otherwise.
Targets' CARs	Targets' CARs (−2, 2) calculated around the deal announcement.
Country characteristics (Acquirer)	
Common law	An indicator variable equal to 1 if the legal system of the bidder country originates from the UK common law system and 0 otherwise.
Ownership concentration	Ownership concentration index of the acquirer's country of incorporation, which is the median proportion of common shares owned by the three largest shareholders in the ten largest privately owned nonfinancial firms.
High disclosure regulation	A measure for the bidder country based on the country disclosure score from Hope (2003). The higher the score, the higher the quality of the disclosure regulation in the country.
Aggregate earnings management	An aggregate score of the earnings management activities of the nonfinancial firms in the acquirer's country of incorporation.
Country characteristics (Target)	
More aggregate earnings management	An indicator variable equal to 1 if the target country's aggregate earnings management score is higher than that of the bidder country and 0 otherwise. The score is from Leuz et al. (2003).

Table 2 Descriptive statistics

This table presents the descriptive statistics of the variables used for analysis. All variables are defined in table 1.

Variable	(1) Accounting firm acquirer advisor (N = 758)			(2) Investment bank acquirer advisor (N =8,544)			(1) - (2) Difference in mean	
	Mean	Median	S.D.	Mean	Median	S.D.	% diff.	*t/z*
A. Valuation uncertainty								
Target in low AQ industry	0.045	0.000	0.207	0.032	0.000	0.177	39.4%	144.23
Private target	0.418	0.000	0.494	0.179	0.000	0.384	133.2%	210.56
Non-US target	0.885	1.000	0.319	0.819	1.000	0.385	8.1%	16.71
Deal value	303	46	950	2015	379	4692	−85.0%	−0.02
Deal value / Acquirer size	0.457	0.066	1.652	0.568	0.152	1.491	−19.6%	−8.84
B. Deal value, financing, and method of payment								
Financing required	0.157	0.000	0.364	0.234	0.000	0.423	−32.8%	−60.62
Cash offering	0.410	0.000	0.492	0.418	0.000	0.493	−1.8%	−2.55
Number of considerations offered	1.423	1.000	0.681	1.458	1.000	0.732	−2.4%	−2.44
C. Past relation with the advisor								
Returning acquirer advisor	0.325	0.000	0.469	0.488	0.000	0.500	−33.5%	−50.00
D. Other deal characteristics								
Percentage of shares sought	90.103	100.000	22.360	84.304	100.000	27.246	6.9%	0.20
Number of acquirer advisors	1.516	1.000	0.888	1.846	1.000	1.199	−17.9%	−12.56
Hostile deal	0.003	0.000	0.051	0.022	0.000	0.148	−88.3%	−627.95
Competed deal	0.001	0.000	0.036	0.052	0.000	0.221	−97.4%	−495.37
Domestic	0.500	0.500	0.500	0.420	0.000	0.494	19.1%	27.48
Family owned target	0.003	0.000	0.051	0.005	0.000	0.073	−51.0%	−601.82

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Table 2 (continued)

Variable	(1) Accounting firm acquirer advisor (N = 843)			(2) Investment bank acquirer advisor (N = 13,212)			(1) - (2) Difference in mean	
	Mean	Median	S.D.	Mean	Median	S.D.	% diff.	*t*/*z*
E. Acquirer characteristics								
Acquirer size	4681	850	8450	8894	3534	11090	−47.4%	0.00
Acquirer B/M	0.690	0.486	0.726	0.686	0.491	0.845	0.7%	0.64
Acquirer leverage	0.163	0.137	0.159	0.183	0.150	0.159	−11.0%	−49.53
Acquirer stock momentum	0.110	0.053	0.372	0.127	0.072	0.401	−13.1%	−24.54
Acquirer stock volatility	0.108	0.061	0.156	0.121	0.055	0.194	−10.9%	−45.46
F. Country characteristics (Acquirer)								
Common law	0.509	1.000	0.500	0.390	0.000	0.488	30.6%	44.28
Ownership concentration	0.284	0.150	0.163	0.302	0.240	0.161	−5.9%	−25.95
High disclosure regulation	0.696	0.833	0.160	0.684	0.750	0.156	1.7%	7.79
Aggregate earnings management	11.996	7.000	6.605	13.161	13.500	6.584	−8.9%	−0.96
G. Country characteristics (Target)								
More aggregate earnings management	0.172	0.000	0.377	0.161	0.000	0.367	0.066	12.77

Table 3 Type of advisor chosen by acquirers: accounting-firm vs. investment-bank advisor

The table reports the results of the advisor choice analysis for the acquirer. The dependent variable *AF advisor* takes the value of 1 if the acquirer has chosen an accounting firm advisor in the M&A deal, and 0 otherwise. The explanatory variables are defined in table 1. ln denotes the logarithm value of a variable and N is the number of observations. *p*(Wald X^2) is the *p*-value of the Wald X^2-test for model specification. Pseudo R^2 is the pseudo R-squared.

	(1) Baseline		(2) Full model		
	Estimate	*p*	*Estimate*	% change in odds	*p*
Panel A: Regression results					
Intercept	−1.066	0.006	−1.076		0.031
Target in low AQ industry	0.702	0.042	0.722	105.90	0.064
Private target	0.501	0.000	0.452	57.20	0.000
Non-US target	0.318	0.010	0.347	41.40	0.013
ln *Deal value*	−0.038	0.723	−0.494	−39.00	0.000
Financing required	−0.152	0.327	−0.109	−10.30	0.456
Cash offering	0.005	0.952	−0.044	−4.30	0.582
Number of considerations offered	−0.054	0.424	−0.042	−4.10	0.546
Returning acquirer advisor	−0.360	0.003	−0.363	−30.40	0.002
Percentage of shares sought	0.012	0.000	0.012	1.20	0.000
Number of acquirer advisors	0.198	0.000	0.175	19.10	0.002
Hostile deal	−0.621	0.236	−0.502	−39.50	0.295
Competed deal	−2.906	0.006	−2.876	−94.40	0.003
Domestic	−0.482	0.000	−0.065	−6.30	0.549
Family owned target	−0.733	0.149	−0.469	−37.50	0.487
ln *Acquirer size*	0.058	0.192	0.063	6.50	0.157
ln *Acquirer B/M*	0.070	0.145	0.064	6.60	0.202
ln *Acquirer leverage*	0.105	0.569	0.021	2.10	0.926
Acquirer stock momentum	0.130	0.546	0.148	15.90	0.540
Acquirer stock volatility	−0.141	0.466	−0.137	−12.80	0.538
Country characteristics (Acquirer):					
Common law	0.796	0.000	0.837	130.90	0.000
Ownership concentration	1.385	0.248	1.531	362.30	0.174
High disclosure regulation	−2.191	0.001	−2.033	−86.90	0.002
Aggregate earnings management	−0.009	0.763	−0.011	−1.10	0.720
Country characteristics (Target):					
More aggregate earnings management	0.094	0.399	0.115	12.20	0.274
Year and industry effects	No		Yes		
N	9302		9302		
p(Wald X^2)	0.000		0.000		
Pseudo R^2	18.69%		21.20%		

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Table 3 (continued)

Panel B: Additional results	(1) AQ recalculated at the country level		(2) High R&D targets		(3) Index measure for valuation uncertainty		(4) Target-level controls	
	Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*
Intercept	−0.272	0.774	−1.096	0.027	−1.839	0.000	−33.879	0.000
Target in low AQ industry at the country level	0.490	0.001						
Target in high R&D industry			0.149	0.010				
Target low reporting quality index					0.790	0.000		
Target qualified opinion							11.964	0.000
Target low AQ							4.197	0.008
Target loss							0.202	0.676
Target B/M							0.249	0.442
Target in low AQ industry			0.741	0.059	0.601	0.128	3.666	0.183
Private target	0.360	0.022	0.453	0.000	−0.010	0.930		
Non-US target			0.359	0.011	0.154	0.292	9.343	0.000
ln *Deal value*	−0.484	0.000	−0.495	0.000	−0.389	0.000	−0.725	0.000
Deal controls	Yes		Yes		Yes		Yes	
Acquirer firm controls	Yes		Yes		Yes		Yes	
Acquirer country controls	Yes		Yes		Yes		Yes	
Year effects	Yes		Yes		Yes		Yes	
Industry effects	Yes		Yes		Yes		Yes	
N	5854		9302		9302		1060	
p(Wald X^2)	0.000		0.000		0.000		0.000	
Pseudo R^2	20.21%		21.23%		21.51%		37.15%	

Table 4 Acquirer announcement-period CAR

Panel A reports the average acquirer CARs partitioned by the accounting firm and investment bank advised deals. Panel B shows the main regression results of acquirer announcement returns. Panels C, D, and E report additional regression results concerning accounting firm characteristics, target's reporting quality, and investment bank specialization. Panel F reports regressions that address endogeneity concerns. The dependent variable is the acquirer CAR calculated for the five days (−2, 2) around the announcement (day 0) of an acquisition deal, adjusted for the market return based on the stock market index of the acquirer's country of incorporation. Controls are the same as in equation (1). The other explanatory variables are defined in table 1. ln denotes the logarithm value of a variable and N is the number of observations. *F* is the F-statistic for the model specification and *p*(*F*) is the corresponding *p*-value. R^2 is the R-squared. Model 1 of panel F uses IV estimation to control for the endogeneity of the AF acquirer advisor variable. Model 2 of panel F is based on the paired sample matched by the propensity score.

Panel A: Descriptive statistics	N	Mean	S.E.	*t*
Full sample:				
Accounting firm advisor	691	2.02%	0.32%	6.40
Investment bank advisor	7771	0.92%	0.08%	11.78
% diff.		118.4%	0.32%	3.37

Panel B: Main regression results	(1) Baseline		(2) Full model		(3) AQ recalculated at the country level	
	Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*
Intercept	0.055	0.027	0.053	0.031	0.060	0.035
AF advisor	0.004	0.075	0.005	0.017	0.006	0.047
AF advisor with industry expertise on accounting			−0.010	0.279	−0.007	0.523
AF advisor with industry expertise on accounting × Target in low AQ industry			0.100	0.058		
Target in low AQ industry	−0.006	0.089	−0.008	0.053		
AF advisor with industry expertise on accounting × Target in low AQ industry at country level					0.029	0.012
Target in low AQ industry at country level					−0.011	0.110
Deal controls	Yes		Yes		Yes	
Acquirer firm controls	Yes		Yes		Yes	
Acquirer country controls	Yes		Yes		Yes	
Year effects	Yes		Yes		Yes	
Industry effects	Yes		Yes		Yes	
N	8462		8462		5377	
p(*F*)	0.000		0.000		0.000	
R^2	6.51%		6.73%		8.13%	

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Table 4 (continued)

Panel C: Accounting firm characteristics	(1) Big 4 AF advisor		(2) AF advisor is target auditor		(3) AF advisor is acquirer auditor		(4) Due diligence		(5) Target in the capital city	
	Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*
Intercept	0.053	0.031	0.045	0.049	0.054	0.025	0.106	0.060	0.046	0.070
AF advisor	0.004	0.018	0.006	0.143	0.003	0.182	0.006	0.388	0.005	0.021
AF advisor with industry expertise on accounting	−0.010	0.284			−0.007	0.479			−0.012	0.200
AF advisor with industry expertise on accounting × Target in low AQ industry	0.096	0.081			0.042	0.008			0.098	0.061
Target in low AQ industry	−0.010	0.043	−0.007	0.047	0.003	0.576	−0.011	0.528	−0.005	0.217
Big 4	−0.005	0.494								
Big 4 × Target in low AQ industry	0.037	0.016								
AF advisor is target auditor			−0.001	0.810						
AF advisor is target auditor × Target in low AQ industry			0.027	0.051						
AF advisor is acquirer auditor					−0.001	0.931				
AF advisor is acquirer auditor × Intra industry merger × Target in low AQ industry					0.050	0.002				
Intra industry merger × Target in low AQ industry					−0.013	0.027				
AF advisor is acquirer auditor × Intra industry merger					0.006	0.611				
AF advisor is acquiror auditor × Target in low AQ					0.010	0.271				
Intra industry merger					−0.001	0.556				
Due diligence by advisor							−0.152	0.000		
AF advisor × Due diligence by advisor							0.144	0.000		
AF advisor × Due diligence by advisor × Target in low AQ industry							0.066	0.007		
Target in capital city									−0.003	0.180
AF advisor × Target in capital city									0.009	0.052
Deal controls	Yes		Yes		Yes		Yes		Yes	
Acquirer firm controls	Yes		Yes		Yes		Yes		Yes	
Acquirer country controls	Yes		Yes		Yes		Yes		Yes	
Year and industry effects	Yes		Yes		Yes		Yes		Yes	
N	8462		6436		8451		701		6934	
p(*F*)	0.000		0.000		0.000		0.000		0.000	
R^2	6.79%		7.84%		6.67%		40.94%		7.82%	

(continued on next page)

Table 4 (continued)

Panel D: Target's reporting quality and announcement day return	(1)		(2)		(3)		(4)	
	Index		Index2		Target qualified opinion		Target CAR	
	Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*
Intercept	0.058	0.006	0.061	0.148	0.020	0.609	0.086	0.860
AF advisor	−0.003	0.529	−0.033	0.019	−0.060	0.000	−0.027	0.000
AF advisor × Target reporting quality index	0.012	0.098						
Target reporting quality index	−0.007	0.397						
AF advisor × Target reporting quality index2			0.130	0.004				
Target reporting quality index2			−0.009	0.455				
Target earnings volatility			0.006	0.866				
AF advisor × Target qualified audit opinion					0.069	0.000		
Target qualified audit opinion					−0.003	0.568		
Deal controls	Yes		Yes		Yes		Yes	
Acquirer firm controls	Yes		Yes		Yes		Yes	
Acquirer country controls	Yes		Yes		Yes		Yes	
Year and industry effects	Yes		Yes		Yes		Yes	
N	8462		999		2724		1056	
p(*F*)	0.000		0.000		0.000		0.000	
R^2	6.58%		5.70%		13.49%		34.19%	

(continued on next page)

Table 4 (continued)

Panel E: Advisory team/advisor characteristics	(1) Single advisor		(2) Advisory specialization		(3) Team characteristics	
	Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*
Intercept	0.037	0.204	0.053	0.030	0.054	0.029
AF advisor	0.008	0.006	0.005	0.017	0.003	0.117
AF advisor with industry expertise on accounting	−0.008	0.221	−0.010	0.275		
AF advisor with industry expertise on accounting × Target in low AQ industry	0.035	0.005	0.100	0.077		
Target in low AQ industry	−0.004	0.371	−0.008	0.210	0.010	0.119
Top IB			0.001	0.360	0.001	0.385
Top IB × Target in low AQ industry			0.001	0.936		
Advisor is industry specialist			0.000	0.923		
Advisor is industry specialist × Target in low AQ industry			−0.013	0.426		
Number of acquirer advisors					−0.002	0.234
Number of acquirer advisors × Target in low AQ industry					−0.015	0.007
Number of acquirer advisors × Target in low AQ industry × Top IB					0.004	0.434
Number of acquirer advisors × Target in low AQ industry × AF advisor					0.025	0.037
Deal controls	Yes		Yes		Yes	
Acquirer firm controls	Yes		Yes		Yes	
Acquirer country controls	Yes		Yes		Yes	
Year and industry effects	Yes		Yes		Yes	
N	4502		8462		8462	
p(*F*)	0.000		0.000		0.000	
R^2	6.48%		6.75%		6.75%	

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Table 4 (continued)

Panel F: Endogeneity regressions	(1) 2SLS		(2) PSM		(3) IFRS		(4) Placebo test	
	Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*
Intercept	0.035	0.008	0.028	0.348	0.055	0.031	0.034	0.014
AF advisor	0.093	0.017	0.009	0.069	0.007	0.007	0.007	0.270
AF advisor with industry expertise on accounting			−0.015	0.009	−0.010	0.285	−0.002	0.826
AF advisor with industry expertise on accounting × Target in low AQ industry			0.118	0.031	0.102	0.044	0.180	0.000
Target in low AQ industry	−0.007	0.079	0.000	0.971	−0.008	0.050	−0.003	0.611
AF advisor × Acquirer IFRS × Target IFRS					−0.006	0.002		
Acquirer IFRS × Target IFRS					−0.005	0.221		
AF advisor with industry expertise on accounting × Acquirer low AQ							−0.028	0.801
Acquirer low AQ							−0.016	0.310
Deal controls	Yes		Yes		Yes		Yes	
Acquirer firm controls	Yes		Yes		Yes		Yes	
Acquirer country controls	Yes		Yes		Yes		Yes	
Year and industry effects	Yes		Yes		Yes		Yes	
N	8462		1382		8462		4661	
p(*F*)	0.000		0.000		0.000		0.000	
R^2	5.72%		9.27%		6.61%		10.31%	

Table 5 Offer premium

Panel A reports the average offer premium partitioned by the type of advisor. Panel B shows the offer premium regressions. The dependent variable is the offer premium defined as (the ratio of the bid price per share to the target's closing stock price 1 day prior to announcement – 1) × 100. *Deal controls* are dummy variables for external financing for the transaction and returning acquirer advisor, log of deal size, the number of acquirer advisors, and indicators for significant family ownership of the target and the termination agreement. *Acquirer firm controls* are the log values of the acquirer size, leverage, and B/M, the acquirer stock momentum and volatility. *Acquirer country controls* are the country characteristics for the acquirer defined in table 1. The other explanatory variables are defined in table 1. N is the number of observations. *F* is the F-statistic for the model specification and *p*(*F*) is the corresponding *p*-value. R^2 is the R-squared.

Panel A: Descriptive statistics	N	Mean	S.E.	*t*
Full sample:				
Accounting firm advisor	64	25.46%	2.36%	10.78
Investment bank advisor	2655	29.56%	0.49%	60.39
% diff.		−13.88%	2.41%	−1.70

Panel B: Regression results	(1) Baseline		(2) Industry expertise on accounting		(3) PSM	
	Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*
Intercept	0.312	0.000	0.314	0.000	0.565	0.040
AF advisor	−0.033	0.054	−0.051	0.036	−0.053	0.098
AF advisor with industry expertise on accounting			0.116	0.076	0.064	0.336
AF advisor with industry expertise on accounting × Target in low AQ industry			−0.112	0.096	−0.198	0.083
Target in low AQ industry	0.394	0.000	0.394	0.000	0.041	0.693
Deal controls	Yes		Yes		Yes	
Acquirer firm controls	Yes		Yes		Yes	
Acquirer country controls	Yes		Yes		Yes	
Year effects	Yes		Yes		No	
Industry effects	Yes		Yes		Yes	
N	2719		2719		128	
p(*F*)	0.000		0.000		0.000	
R^2	17.99%		18.06%		44.88%	

Table 6 Future goodwill impairment likelihood, deal completion rates and future firm profitability

Panel A reports the fraction of the combined firms reporting goodwill impairment within five years after the transactions as in Fich, Rice, and Tran (2016) for the pooled sample and the PSM sample. Panel B reports the fraction of deals with SDC withdrawn status. Panel C reports the mean industry-adjusted future profitability of the combined firms measured over five years after the transaction. ROA is the ratio of income before extraordinary items to average assets.

Panel A: Future goodwill impairment	N	Mean	S.E.	*z*
Full sample:				
Accounting firm advisor	40	55.00%	7.97%	6.90
Investment bank advisor	1379	74.09%	1.16%	64.07
% diff.		−25.77%	8.05%	−2.37
PSM sample:				
Accounting firm advisor	40	52.50%	8.00%	6.57
Investment bank advisor	40	70.97%	5.81%	12.21
% diff.		−26.02%	9.89%	−1.87
Panel B: Percentage of withdrawn deals	N	Mean	S.E.	*z*
Full sample:				
Accounting firm advisor	764	0.13%	0.13%	1.00
Investment bank advisor	8644	7.38%	0.28%	26.24
% diff.		−98.23%	0.31%	−23.37
PSM sample:				
Accounting firm advisor	764	0.13%	0.13%	1.00
Investment bank advisor	764	0.87%	0.33%	2.66
% diff.		−84.97%	0.35%	−2.10
Panel C: Future industry-adjusted ROA	N	Mean	S.E.	*t*
Full sample:				
Accounting firm advisor	688	−0.12%	0.30%	−0.38
Investment bank advisor	7915	0.01%	0.06%	0.16
% diff.		−1250.43%	0.31%	−0.41
PSM sample:				
Accounting firm advisor	688	−0.12%	0.30%	−0.38
Investment bank advisor	688	−0.61%	0.33%	−1.85
% diff.		−81.13%	0.45%	1.11