Bidder Returns in the US Financial Services Industry: Evidence from Earnouts*

Leonidas Barbopoulos[1]

John O.S. Wilson[2]

Abstract

We present new evidence on the announcement period and long-run returns of bidders for a sample of mergers and acquisitions (M&A) involving US financial institutions financed with earnout (contingent) versus non-earnout (non-contingent) payments. Using the Propensity Score Matching approach, in which the Propensity Score generator is validated with the Rosenbaum-bounds method, we find that the earnout (treated) method of payment in M&A of financial institutions is associated with higher announcement period and long-run returns than the non-earnout (matched) methods of payment. Both announcement period and long-run returns to bidders increase when the relative earnout value is high and when the management of the target is retained in the post-merger period. Overall, earnouts provide a more useful mechanism in mitigating valuation risk compared to other more conventional methods of payment in M&A.

Keywords: Earnout; Methods of payment; Mergers and acquisitions; Financial institutions; Propensity score matching; Rosenbaum-bounds.

JEL Classification: G34

[1] Please address correspondence to Leonidas Barbopoulos, School of Economics and Finance, University of St Andrews, The Scores, St Andrews, Fife KY16 9AL, UK. Tel: +44133461955. Email: leonidas.barbopoulos@st-andrews.ac.uk.

[2] John Wilson, Centre for Responsible Banking & Finance, School of Management, University of St Andrews, North Haugh, St Andrews, Fife, KY16 9AJ, UK. Tel: +441334462803. Email: jsw7@st-andrews.ac.uk.

* The authors thank Samer Adra, James Ang, Lamont Black, Matthew Cain, Santiago Carbo Valverde, Barbara Casu, Jerry Coakley, Bob DeYoung, John Doukas, Tarik Driouchi, Espen Eckbo, Annita Florou, Scott Frame, John Goddard, Owain ap Gwylim, Jens Hagendorff, David Marques Ibanez, Ed Kane, Olga Kuzmina, Donal McKillop, Phil Molyneux, Sarmistha Pal, Federica Poli, Alex Preda, Anna Sarkisyan, Bert Scholtens, Sotiris Staikouras and Larry Wall for comments and suggestions on previous drafts of this paper. The authors also thank participants of IFABS conference Valencia King's College London seminar series; and the Wolpertinger Conference Gothenburg for useful insights. The usual disclaimer applies.

1. Introduction

Shareholders of bidding and target firms face valuation risk when negotiating the price and payment method in mergers and acquisitions (M&A).[1] One way of managing this risk is to make part of the payment contingent upon the future performance of the target firm under existing management via the utilization of an earnout contract. Under the terms of an earnout contract the selling firm receives additional future payments provided it achieves pre-specified performance requirements. The earnout contract normally involves two stages. In the first stage, the payment is delivered to the seller at the time of the M&A announcement (in the form of cash, stock, or mixed payments), while the second (usually in cash) is delivered after a pre-determined period has elapsed following the M&A announcement. Earnout contracts share the risk of possible mis-valuations between the bidder and the target during the announcement period, and are likely to eliminate moral hazard problems in the post-merger or integration period.[2] However such contracts can often be complex and give rise to substantial monitoring costs, which could offset some of the aforementioned benefits. In recent years, earnouts have been used to manage valuation risk in acquisitions of private targets operating in the hi-tech and service industries. In such industries, information asymmetry is high and the value of the firm is often dependent on the knowledge, skill, creativity, and flair of key personnel.[3]

A small literature employs samples of merging firms based in hi-tech and other service and knowledge-based industries to assess the determinants of earnout usage, and its impact on the returns of bidding firms in the short- and long-run (Kohers and Ang, 2000; Barbopoulos and Sudarsanam, 2012). These studies conclude that earnouts are more frequently used in M&A where the mis-valuation risk is high. Furthermore, the use of earnout contracts leads to significantly higher announcement period and long-run returns to bidding firm's shareholders compared to non-earnout payment methods (such as full in cash, or stock, or mixed).[4]

[1] Valuation risk in M&A arises from information asymmetry. In order to appropriate a large proportion of any benefits arising from the transaction, each party has a strong incentive to propose a price that overvalues itself and undervalues the other party.
[2] A target willing to accept a greater proportion of the total deal payment sends a credible signal of quality to the bidding firm and to the market more generally.
[3] As a proportion of M&A deals, the use of earnout has increased from approximately one per cent to three per cent since 2001 (J.P Morgan, 2011).
[4] Higher returns are attributed to the likely ability of earnout to mitigate the extent of information asymmetry between merging firms and (in the majority of cases) retain specialised human capital of the target firm, who are incentivized to maximise performance during the integration period (and thus receive the contingent payment). Upon the elimination of these issues, the likelihood of success of the M&A increases, which is reflected on the announcement period and long-run returns of the bidding firm.

Evidence relating to the impact of earnout financing on the bidding firms announcement and long-run returns is not yet available for the financial services industry. This is somewhat surprising provided that previous literature suggests that the assets held by financial institutions are rather (more) opaque and difficult to value (compared to non-financial firms).[5] Therefore M&A involving financial institutions pose additional complexities for the bidding institution, both at the pre-bid (valuation and premium/synergy estimation) and during the integration (synergy realisation) periods.[6] As a consequence, to the extent that the earnout payment is a useful mechanism in mitigating valuation risk compounded by opacity merits serious investigation. As such, the US financial services industry provides a useful laboratory for such an investigation.

This paper presents new evidence on announcement period and long-run returns of bidders for a large sample of mergers and acquisitions (M&A) involving US financial institutions, which are financed using various methods of payment and payment structures (fully delivered at the announcement period, such as cash, stock, mixed, and contingent such as earnout). We test whether the use of earnout as a structural payment mechanism, versus other payments that are delivered fully at the announcement period, increases the announcement period and long-run returns of bidders' shareholders of US financial institutions. We further test whether the retention of the target firm's management in the post-merger period, and also the relative earnout value (the ratio of the earnout value to total deal value) increases the returns to bidders' shareholders both in the short- and long-run. As such this paper is the first to explore the effects of earnout financing on bidders' short- and long-run returns when both merging institutions operate in the financial services industry.

We employ a two stage approach. The first stage compares the mean announcement period returns of the portfolio consisting of deals financed with earnout to a matched portfolio of deals using non-earnout

[5] Outside investors may have trouble in valuing financial institutions as they do not have access to information collected by supervisors during on-site examinations. Evidence also suggests that CEO certification of financial statements led to increases in the value of banks following the passing of the Sarbanes-Oxley Act. This suggests that certification reduced the opacity of bank balance sheets. No such effect was apparent for non-financial firms (Hirtle, 2006).

[6] For example, the risks associated with loans and trading assets increase the level of valuation uncertainty in the financial services industry. In banking, this is compounded by agency problems arising from high leverage (Morgan, 2002). In the case of insurance companies, the uncertainties associated with the volatility of cash flows and stock prices, investment performance, and the loyalty of customers complicate asset valuations (Klumpes, 2002; Zhang, Cox and Van Ness, 2009; Cummins and Weiss, 2013). For asset management companies, client relationships are of particular importance to ensuring success. However, these client relationships are portable, and can move with particular managers (Bengtsson and Delbecque, 2011). Therefore, the retention of key personnel is essential. Overall, financial institutions tend to exhibit higher volatility of stock prices, earnings, and cash-flows compared to their non-financial counterparts (Houston and Stiroh, 2007), which is likely to give rise to the level of complexity in the valuation process and planning.

methods of payment. The appropriate matched deals are identified using the propensity score matching (PSM) method, based on a logistic regression, which is validated with the Rosenbaum-bounds (RB) method. The PSM approach addresses self-selection concerns with regard to the endogeneity of the decision of financial institutions to use earnout.[7] This also represents a methodological contribution to the established literature. The paper also comprises a standard univariate analysis of bidders' announcement period and long-run returns. This involves comparing the risk-adjusted returns of bidders financing deals using earnout relative to counterparts using traditional methods of payment only, such as full-cash (cash), full-stock (stock), and mixed payments (involving only cash and stock).[8] The second stage of our analysis comprises a multiple regression analysis of the impact of earnout on bidders' announcement period and long-run returns, while controlling for the impact of several transaction- and merging institution-specific features (including target firm listing status, relative size of transaction, the mid-industry segments of bidding and target institutions, and foreign acquisitions deals).

The main findings of our analysis indicate that the use of earnout in M&A involving financial institutions leads to significantly higher announcement period and long-run returns to bidders' shareholders, compared to (matched) deals financed with non-earnout payments. This is also confirmed using the standard univariate analysis. Earnout interacts with several transaction- and merging institution-specific characteristics (such as the target firm's listing status, the relative size of the transaction, and the mid-industry segments of merging institutions), in determining the announcement period and long-run returns of bidders. We show that the higher the size of the earnout contract, as a fraction of the total transaction value, the higher the announcement period and long-run returns of bidders. We also find that the announcement period gains to bidders increase when the management team of the target firm is retained. Our PSM, consistent with standard uivariate analysis, along with the multiple regression analysis of bidders' post-merger performance shows that bidders using earnout significantly outperform their non-earnout counterparts over the period of two years following the announcement. Overall, the results presented in this paper suggest that the market reacts favourably to the use of earnout contracts in M&A involving financial institutions.

[7] Specifically, the PSM approach allows us to identify identical M&A transactions which did not use earnout contracts, thus creating a counterfactual which is then compared with announcement period and long-run returns to those transactions using earnout.
[8] The results of this analysis are reported separately in Appendix B.

Our paper contributes to the literature in the following three ways. First, this paper is the first to explore the effects of earnout financing on bidders' short- and long-run returns when both target and bidder operate in the financial services industry only. This provides the opportunity to incorporate factors specific to the financial sector when assessing how the market reacts to M&A announcements and whether that reaction persists in the long-run. Second, we are the first to implement both the PSM and RB methods in the M&A literature to address self-selection concerns with regard to the endogeneity of the decision of financial institutions to use earnout. Furthermore, we are also the first using PSM and RB methods in the identification of the benchmark portfolio in the buy-and-hold returns of bidders when assessing the long-run returns of bidders. Third, given that M&A involving financial institutions pose additional complexities to the bidding firm regarding their valuation and planning, we investigate the announcement period and post-merger returns to bidders' shareholders conditional on the retention of target firms' management in the post-merger period.

The remainder of the paper is organised as follows. Section 2 examines the incentives relating to the choice of payment method in M&A transactions, and how such a choice affects returns to bidding institutions. Section 2 also formulates reviews salient literature and presents testable hypotheses. Section 3 outlines the methods used to conduct the empirical analysis. This section also discusses the determinants of bidders' announcement period returns. Section 4 provides a description of the data employed and discusses the main findings. Finally, Section 5 provides a conclusion.

2. Related Literature and Hypotheses

The method of payment used in M&A signals different (private) information regarding the bidding and target firms' valuations during the pre-bid period, the value of the deal (including the M&A bid premium), as well as the value of the newly formed entity.[9] For the bidder in cash-financed deals, and for both the bidder and target in stock-exchanged deals, information asymmetry creates valuation uncertainty and leads them to demand a discount to the apparent value of the bidding or target firm (Myers and Majluf, 1984; Travlos, 1987; Eckbo, Giammarino and Henkel, 1990). As a consequence, announcement period returns are significantly higher in cash-financed than in stock-exchanged M&A bids, for both bidding and target firms'

[9] Akerlof (1970) argues that buyers can find it costly to identify the accurate value of assets sold when sellers have incentives to mislead buyers by hiding (important) bad news. In an M&A setting, this could be more applicable to unlisted, or privately held targets, where there may be significant lack of information (arising from limited disclosure requirements) of the target firm's value.

shareholders (Becher, 2000; Hagendorff, Collins and Keasey, 2008; and Gupta and Misra, 2010).[10] A cash offer is usually made by bidders who attach a high value to the target firm under their control, and by so doing signal their confidence that the target firm will be of high-value during the post-merger (or integration) period (Fishman, 1989).[11] Less confident bidders could prefer instead, to use a stock-exchange or an earnout contract, which is conditional upon the current and future value of the target.[12] Another array of studies has analysed the interaction effect between the method of payment and the target firm's listing status on the distribution of announcement and long-run returns of the bidding firm (Chang, 1998; Fuller, Netter and Stegemoller, 2002; Ekkayokkaya, Holmes and Paudyal, 2009; Officer, Poulsen and Stegemoller, 2009). Their results show that when payment methods share the valuation risk between the merging partners, or when outside blockholders are created (which leads to more effective monitoring of the bidding firm's managerial performance during the post-merger period), the gains to bidders' shareholders appear higher than otherwise (Chang, 1998; Draper and Paudyal, 2006; Faccio, McConnell and Stolin, 2006).

Evidence relating to the impact of earnout contracts on the announcement period returns of bidding firms involved in M&A is rather limited. A small number studies utilise samples of firms from service industries (non-financial firms) to investigate the impact of earnout on the returns of bidders in the short- and long-run. Kohers and Ang (2000) show that earnout financed bids yield positive announcement period and long-run returns for bidding firms' shareholders. These returns are superior to bidders' returns in transactions financed by cash and stock (especially when targets are private and located in hi-tech and service sectors). Datar, Frankel, and Wolfson (2001) show that foreign bidders use earnout less frequently than domestic bidders. The managers of foreign target institutions appear to be unwilling to accept deferred payments owing to possible future conflicts arising: from discrepancies in calculations of the payment amount and

[10] DeYoung, Evanoff and Molyneux (2009) provide a comprehensive review of the accounting and market based evidence in relation to M&A involving financial institutions.

[11] A cash offer is a 'clean' and 'secure' method of financing for the target firm as it ignores both the current and future value of the bidding firm's equity. However, it is not free of problems for the bidding firm's shareholders. Since the bidding firm's shareholders do not share any of the target firm's overvaluation risk with the target firm's shareholders, any valuation error or failure of the realisation of future cash flows will rest entirely with the bidding firm's shareholders. In contrast stock payments reduce the potential valuation errors as the bidder shares any of the target firm's overvaluation risk with the target firm's shareholders during the post-merger period.

[12] Target firm shareholders are likely to prefer cash payment as it is not conditional upon the future value of merging firms. Nevertheless, target shareholders could be disadvantaged, if the M&A creates more value during the integration period than is implied in the cash offer premium.

performance goals; and differences in accounting practices and other corporate governance mechanisms.[13] Barbopoulos and Sudarsanam (2012) show that UK bidders of non-financial firms using earnout experience higher announcement and long-run returns compared to other payment methods. Such benefits are greater in deals involving firms operating in industries where intangible assets are an important source of firm value.

Cain, Denis, and Denis (2011) examine the determinants of earnout use in M&A bids of US non-financial firms. They show that the size and the length of the earnout contract are greater when the uncertainty surrounds the value of the target firm is higher. In a recent contribution, Lukas, Reuer, and Welling (2012) examine the impact of uncertainty on the optimal timing of M&A using earnout. Based on a game-theoretic option pricing approach they show that optimal size of the earnout contract and initial payment combinations are endogenously determined.

Additional considerations on the success of the M&A which financing involves earnout may arise from the relation of earnout presence and tax-deferred considerations in the M&A financing process. Extant theoretical and empirical research has investigated the choice of payment method in M&A, the taxability of gains to target shareholders, and its direct impact on premium offered (Franks, Harris and Mayer, 1988; Huang and Walkling, 1987). In general, stock financed deals are tax-deferred as target shareholders continue to have ownership in the combined firm. On the contrary, cash financed deals require target shareholders to exchange ownership for cash, and thus the transaction is necessarily taxable. Therefore, cash financed deals enjoy higher returns than stock offers, which compensate target shareholders for the immediate payment of taxes.[14] Earnout financed deals, although their tax-deferability is dependent on the specific situation, are likely to be tax-deferred and thus require lower premium, which leads, *ceteris paribus*, to higher odds of success of the deal.

Kohers and Ang (2000) and Barbopoulos and Sudarsanam (2012) contend that earnouts guarantee the retention of the target firm's skilled human capital during the post-merger or integration period. The same authors also contend that the earnout motivates the management of the target firm to achieve pre-specified performance related goals in order to ensure receipt of the contingent or second payment. Thus, the retention

[13] Mantecon (2009) confirms the aforementioned results by showing that the use of earnout is advantageous for domestic, but not foreign bidders' shareholders.

[14] However, Stulz (1988) and Amihud, Lev and Travlos (1990) content that the bidding firm's insiders who value control will prefer financing M&A by cash (which, according to the tax argument, requires higher premium) or debt rather than by stock which dilutes their holdings and increases the risk of losing control.

of valuable human capital is likely to reduce problems associated with integrating the merged firms in the post-merger period, and hence improve the odds of M&A success. As a result, the earnout may significantly contribute to value creation in both the immediate post-merger period and in the long-run. Accordingly we expect that the post-merger performance of bidders involved in M&A of financial institutions using earnout to be superior to that of bidders employing other methods of financing such as cash, stock, or mixed payments, especially when the valuable target firm's human capital is retained in the post-merger period.

Overall, previous literature suggests that the use of earnout leads to significantly higher announcement period and long-run returns to bidding firm's shareholders compared to non-earnout payment methods such as cash, stock, or mixed (Kohers and Ang, 2000; Barbopoulos and Sudarsanam, 2012). Higher returns are attributed to the likely ability of earnout to mitigate the extent of information asymmetry between merging institutions and (in the majority of cases) retain specialised human capital of the target firm, who are incentivized to maximise performance during the integration period and thus receive the contingent payment. Upon the elimination of these issues, the likelihood of success of the M&A increases, which is reflected on the announcement period and long-run returns of the bidding firm. Based on the insights provided by prior literature the remainder of this paper tests three central hypotheses as follows:

H1: Bidders using earnout to finance M&A of financial institutions experience higher announcement period returns than counterparts using non-earnout methods of payment.

H2: Bidders using earnout to finance M&A of financial institutions experience higher long-run returns than counterparts using non-earnout methods of payment.

H3: In deals where the managers of the target firms are retained in the post-merger period, bidders enjoy higher announcement end long-run returns.

3. Methods

In this section we present the methodology used to estimate bidders' announcement period and long-run returns.

3.1. Measurement of Announcement Period Abnormal Returns

We follow a number of recent studies (including Fuller, Netter, and Stegemoller, 2002; Faccio, McConnell, and Stolin, 2006) with similar sample characteristics to calculate announcement period excess returns using the market-adjusted model as follows:[15]

$$AR_{i,t} = R_{i,t} - R_{m,t} \quad (1)$$

Where: $AR_{i,t}$ is the excess return of bidder i on day t; $R_{i,t}$ is the return of bidder i on day t measured as the percentage change in price index of bidder i; and $R_{m,t}$ is the market return defined as the percentage change of the corresponding Datastream value-weighted market index (TOTMKUS) for the United States on day t. The announcement period cumulative excess return is the sum of the excess returns of the 5-days (t-2 to t+2) surrounding the day of the announcement of the M&A bid, t, which is day 0, as outlined in Equation 2 as follows:

$$CAR_i = \sum_{t=-2}^{t=+2} (R_i - R_m)_t \quad (2)$$

The mean announcement period abnormal returns (mean of CAR_i) of bidders is analyzed by the method of payment used to finance the deals (non-earnout and earnout). To assess the comparative performance of bidders using earnout versus different methods of payment, we compare the mean CAR_i of the portfolio consisting of deals financed with earnout to a matched portfolio of deals using non-earnout methods of payment. The appropriate matched deals are identified using the PSM method, based on a logistic regression, which is validated using the Rosenbaum-bounds method (discussed in detail in section 3.2.).[16]

3.2. Propensity Score Matching (PSM)

Earnout contracts are only used in a small proportion of our large sample of M&A transactions. This raises concerns as to whether sample-selection bias reduces the reliability of our derived results and conclusions from both the univariate and multiple regression analyses. Such bias can arise if there is an endogenous

[15] Brown and Warner (1980) suggest that adjusting for systematic risk, *beta*, does not improve the precision of the short-run abnormal returns. Hence, the use of market adjusted return does not affect the robustness of our findings.

[16] A standard univariate analysis on the announcement period performance of M&A deals that financed with earnout and non-earnout payments (cash, stock, and mixed) as well as the comparative performance between earnout financed deals and each of non-earnout financed ones using a *t*-test is also performed. The results of this analysis are reported in Appendix B.

relationship between the choice of the earnout and the other covariates used in our empirical analysis. To address such concerns, we need to identify a group of institutions involved in M&A deals which share similar characteristics to our sample of deals using earnout. Unfortunately, matching directly on individual covariates is likely to be infeasible if the number of covariates is large. Consequently, we utilise a Propensity Score Matching (PSM) approach along with the Rosenbaum-bounds method.[17] This approach allows us to aggregate all covariates to derive a single score using a likelihood function.

In the current setting, the PSM approach allows us to assess whether matching, or selected, bids from the non-earnout (untreated) group of transactions shape bidders' announcement period returns differently to earnout (treated) financed bids. We select matching M&A bids (with similar ex-ante institution- and transaction-specific characteristics) from the non-earnout group, and assess whether the announcement period and long-run returns arising from these bids differ from their earnout counterparts.

The causal effect of earnout financing is assessed by investigating what the announcement period and long-run performance of bidders that used earnout would have been if they had not used earnout in the M&A transaction. The conditional probability of earnout presence, $p(x)$, is estimated in a logistic regression based on several ex-ante institution- and transaction-specific characteristics 'x'. Therefore, the PSM approach identifies similar earnout financed M&A bids, from the non-earnout group, by matching based on the propensity score $p(x)$. This is shown in Equation 3.

$$p(x) = pr(D = 1 \mid x)$$
$$0 \leq pr(D = 1 \mid x) \leq 1 \qquad (3)$$

Where D the event dummy equals 1 for earnout financed bids and 0 otherwise (non-earnout). The conditional probability is computed from a discrete choice model such as a logit or a probit (Rosenbaum and Rubin, 1983; Rosenbaum and Rubin, 1985; Heckman, Ichimura, and Todd, 1997).

We choose the variables ('x') that are likely to affect the decision of merging firms to earnout. These include: the age of the bidder; the size of the bidder; target size (or transaction value of M&A); the listing status of the target; the target's domicile; the mid-industry segments of the merging institutions; and bidder capital-to-assets ratio. The Rosenbaum-bounds (RB) method is also used as a robustness check to ensure that

[17] Although PSM has become a popular approach in estimating casual effects in policy impact research, it has been only recently used in the finance literature (Behr and Heid, 2011; Saunders and Steffen, 2011; Carbo-Valverde, Rodriguez-Fermandez, and Kane, 2012; and Casu, Clare, Thomas, and Sarkisyan, 2013).

our logistic model produces estimates that are free of any hidden-bias, or that are not sensitive to any bias caused due to omitted covariates in our logistic model (Rosenbaum, 2002).

3.3. Measurement of Post-Merger Period Abnormal Returns

The post-merger period excess returns of bidders are analyzed based on the buy-and-hold-abnormal-returns (BHARs) approach. This approach represents the most commonly used method to determine long-run returns in event time (Barber and Lyon, 1997; Lyon, Barber and Tsai, 1999). BHARs are derived as the difference between the buy-and-hold-return of an investor in the bidding company and the buy-and-hold-return of the benchmark portfolio. The benchmark portfolio is the corresponding Datastream value-weighted market index (TOTMKUS) for the US (shown in Equation 4). To ensure that the estimation of the BHARs is robust, the benchmark portfolio is also identified based on the PSM (accompanied with the RB) approach, as discussed in section 3.2 (shown in Equation 5).[18]

$$BHAR_{i,t} = \prod_{t=s}^{s+T}\left(1+R_{i,t}\right) - \prod_{t=s}^{s+T}\left(1+R_{m,t}\right) \quad (4)$$

$$BHAR_{i,t} = \prod_{t=s}^{s+T}\left(1+R_{i,t}\right) - \prod_{t=s}^{s+T}\left(1+R_{control\_firm,t}\right) \quad (5)$$

Equations (4) and (5) calculate the BHARs for a period of 12, 24, and 36 months following the month of M&A announcement.

3.4. Multiple Regression Cross-Sectional Analysis

We further examine the impact of earnout based on a multiple regression model, where the effects of all other factors shaping the announcement period and long-run bidders' returns are controlled simultaneously. These factors include: the bidding institution's age; the bidding institution's size; the transaction value; the relative size of the transaction; the bidding institution's growth opportunities; the target institution's listing status; the mid-industry segments of the merging institutions; the target institution's domicile; the size of the earnout contract as a proportion of the total deal value (relative earnout value); the length of the earnout

[18] Market values and market-to-book-ratios have been frequently used in prior research as matching criteria (Lyon, Barber and Tsai, 1999). Our approach uses several transaction- and firm-specific covariates are used to estimate propensity scores, which are then used in matching.

contract; the common equity as percentage of total assets; a variable that represents a sub-group of earnout deals in which the target firm's management team is retained during the integration period; a dummy variable that represents the matched bids from the non-earnout group as identified via the PSM method; and a dummy variable representing the merger wave or the timing of M&A announcement. Appendix A provides a full definition of the variables used and their respective sources. The estimable models are:

$$CAR_i = \alpha + \sum_{i=1}^{N} X_i + \varepsilon_i \quad (6)$$

$$BHAR_i = \alpha + \sum_{i=1}^{N} X_i + \varepsilon_i \quad (7)$$

Where: CAR_i, is the announcement period cumulative abnormal return of bidders, as estimated in Equations 1 and 2; 'α' measures the announcement period excess returns to bidders' shareholders after controlling for the effects of all other covariates, denoted 'X'. BHARs are buy-and-hold-abnormal-returns of bidders as estimated in Equation 4; 'α' measures the long-run excess returns to bidders' shareholders after controlling for the effects of all other covariates that have been used in previous literature, denoted 'X'.

(Insert Appendix A near here)

4. Data and Results

4.1. Data

The sample comprises M&A bids announced by US bidders between 1st of January 1986 and 31st December 2009, which are recorded by the Security Data Corporation (SDC) database.[19] The SDC database records 230,067 cases of M&A bids involving US bidders of any listing status over the sample period. For an M&A bid to remain in the sample, the bidder must be a listed US financial institution with a market value of at least $1 million (four weeks prior the announcement of the deal), while the target institution must be an institution operating in the financial sector. Domestic and foreign public, private, and subsidiary targets are included in the sample. To avoid small transactions, the deal value should be at least $1 million. We keep only completed deals in our sample in order to ensure that we investigate the impact of different payment methods (including earnout) in the post-merger period. To ensure that the bidder enjoys control over the

[19] We have chosen the sample period to end at 31st of December of 2009 in order to be fully compatible with the 3-year post-merger event window analysis.

target institution's assets, only M&A bids of at least 50 percent of a target institution's equity to be acquired are included. To avoid the confounding effects of multiple M&A bids, cases where more than one bid is announced by the same bidder within a 5-day window (window analyzed) are excluded. For an M&A bid to be included in the sample, the daily stock return index, inclusive of dividends, and the market value of the bidder should be available from Datastream.[20] Once all the aforementioned criteria have been satisfied, 2,973 bids remain in our sample.[21]

The annual distribution of M&A bids of financial institutions in our sample covers three major merger waves since the mid-1980s (see Table 1). The first merger wave of financial institutions was observed towards the late-1980s, while the second and largest wave was observed in the late-1990s. This (observed) rapid increase can be attributed to several factors, such as: the liberalization of trade and investment; deregulation of financial services sector; privatization of state-owned enterprises; relaxation of controls regarding capital mobility across many countries; and the integration of international financial markets. The most recent (third) merger wave commenced in 2003, only to stop abruptly as a result of the onset of the recent financial crisis.

(Insert Table 1 near here)

Table 1 shows the frequency of earnout use. Similar to other payment methods, the use of earnout is highly correlated with overall (total) M&A activity. Clearly, stock offers represent the preferred medium of M&A financing, while cash offers are relatively scarce by comparison. Almost 3% of M&A transactions use earnout in the financing process, while the remainder utilizes non-earnout methods of payment such as cash, stock and mixed. Similar proportions of earnout activity in samples of non-financial firms are reported by earlier US research. This is somewhat surprising given the opacity and valuation uncertainty surrounding financial institutions. The high uncertainty involved in receiving a second stage payment, could make the earnout unattractive to the target firm's management team. We do note however, that the use of earnout contracts is much more prevalent in M&A involving targets (such as asset management companies) where

[20] Data relating to whether the target firm's management team is retained post-merger is collected from Factiva.

[21] Our final sample comprises 13 'multiple' bidders using earnout. These bidders announce 30 M&A deals in total. There are also 57 'unique' bidders that announce only one M&A deal during the sample period. On average, unique bidders are larger, younger, and have lower MTBV-ratios than multiple bidding counterparts. Furthermore, unique bidders are involved in larger deals and deals in which a large part of the deal value is contingent on future performance. In order to conserve space, we do not report these results. However, these results are available from the authors upon request. Furthermore, we identify that 70 (= 13+57) bidders in our sample involved in M&A using earnout are also involved in 181 M&A that do not use earnout as a method of payment. Among them, 37 are unique (involved in only one deal) with the other 33 involved in 144 M&A.

the retention of managers with specialised skills is of crucial importance in the post-integration period. Furthermore, the average contract length is longer for financial institutions relative to their non-financial counterparts.

Table 2 provides a description of the mid-industry relatedness of merging institutions. In the majority of transactions, merging institutions share the same mid-industry segments (shown in the diagonal of the Panels A and B). Panel C depicts the mid-industry relatedness of merging institutions involved in M&A of financial institutions that use earnout in the financing process. The use of earnout is more prevalent in deals involving asset management companies. This illustrates the importance of earnout as a tool in ensuring the retention of target institution's managers with specific specialized skills following the merger (Bengtsson and Delbecque, 2011).

(Insert Table 2 near here)

Table 3 (Panel A) shows that M&A bids are more common where merging institutions share the same mid-industry segment (SMIS). Bids of domestic target institutions are more common compared to those of foreign targets. Table 3 (Panel A) also reveals that the majority of M&A transactions in our sample involve unlisted targets.

(Insert Table 3 near here)

The average transaction value varies significantly between: non-earnout and earnout financed M&A bids; M&A involving listed and unlisted target firms; domestic and foreign M&A bids; and SMIS and DMIS M&A bids. On average, cash financed deals are significantly smaller compared to those financed with stock or mixed or earnout payments. Previous literature suggests that cash offers are often made by bidders to signal their confidence that the target firm will be of high-value during the post-merger period (Fishman, 1989). Such confidence is likely to be earned from the greater cost-efficiency gains that are expected to be realized during the post-merger period, which is evident only for small, rather than large deals.[22] Within stock financed deals, M&A of listed target institutions represent the higher average transaction values. The average transaction value for DMIS M&A bids is much higher than SMIS counterparts irrespective of the

[22] Altunbas, Molyneux and Thornton (1997) show evidence indicating limited opportunities for cost savings from big-bank mergers while they suggest that such mergers are more likely to result in an increase in total costs.

listing status of the target institution. Similarly, the average transaction value in foreign transactions is much higher, compared to that for domestic transactions, irrespective of the listing status of the target institution.

Additional information presented in Table 3, Panel B, reveals that bidders using non-earnout methods of payment are smaller than those using earnout (medians of 39 versus 50 million dollars). This contradicts previous evidence presented for non-financial firms, but nevertheless is confirmed by the higher median relative size ratio of bids using earnout versus non-earnout. This finding could reflect the ability of larger bidders to convince target institution's managers to agree to the use of earnout in the M&A transaction.[23] Bidders for listed target institutions are much larger than those bidding for unlisted targets. The average earnout value for bids of unlisted targets is much higher than for bids of listed targets.

Table 3, Panel B also highlights that the value of the earnout contract (earnout size) is much larger in M&A bids involving financial institutions in different mid-industry segments (DMIS) compared to same mid-industry segment (SMIS) counterparts. The average length of the earnout contract (which is collected from LexisNexis) in M&A transactions of financial institutions is approximately three years, which is longer than the two-year period reported by previous studies of non-financial firms.[24]

4.2. Propensity Score Matching Estimates on Announcement Period Returns

To ensure that our main comparative analysis between bidders' returns from earnout and non-earnout financed M&A yields free of sample-selection bias results , we employ the PSM method to identify similar (in terms of characteristics/covariates and/or level of riskiness) deals to those have used earnout but have used non-earnout payments (such as cash, stock, or mixed). For this purpose, we begin by estimating propensity scores for the decision of the merging institutions to use earnout via a logit model, as outlined in Section 3.2. Overall, the PSM is a multi-step approach involving the: estimation of propensity scores for earnout and non-earnout groups via a logistic regression; matching of the earnout group scores with non-

[23] Larger bidders are: more likely to enjoy more power in merger negotiations; more prepared to offer higher premiums due to hubris (Roll, 1986); and more likely to maximise the probability of becoming TBTF (Brewer and Jagtiani, 2013). Large bidders are more likely to have exhausted growth opportunities and thus, bidding for a private target with earnout could boost their profitability during the post-merger period.

[24] Cain, Denis, and Denis (2011) show, that while the interquartile range for the earnout period ranges from one to three years, 'the data indicate that post-merger performance is typically measured over a period of two years. Similar figures are reported by Eckbo (2009).

earnout group scores; and estimation of the average influence of earnout financing versus non-earnout (matched portfolio) financing on the announcement period performance of bidders.

We estimate the propensity scores for 87 earnout and 2,886 non-earnout financed M&A bids. The results are reported in Table 4, panel A. Our findings show that earnout occurs more frequently, in M&A involving privately held target firms, and in M&A in which bidders are better capitalised financial institutions. Furthermore, earnout is used more frequently in M&A involving asset management companies, and less frequently in deals involving banks and foreign targets.[25]

(Insert Table 4 near here)

We select M&A bids from the non-earnout group based on the 1:1 Matching Ratio (MR) and perform that selection for 1%, 5%, and 10% Absolute Probability Difference (APD) between the earnout and non-earnout groups' propensity scores respectively. We also match M&A bids based on the 2:1, 3:1, 5:1, and 10:1 MRs for the same APDs. Results based on our various matching approaches are reported in Table 4, panels C to E.[26]

Panel B reports the results of the Rosenbaum-bounds (RB) test, which is based on the 1:1 MR and 1% APD (which offers the most precise matching approach). Initially, the critical RB parameter (Γ=1). At Γ = 1 (shown in Panel B) indicates no hidden bias. However, if the earnout group yields higher CAR due to unobserved variables that impact significantly on the selection decision, then the PS matched CAR will be biased. Our results suggest that doubts over the statistical significance of the estimated mean CAR (2.54%) would emerge if an unobserved covariate caused the odds of assignment to earnout group to differ by around 1.53 or 53%. This finding suggests that our logit model offers consistent and bias free estimates.

As highlighted previously (section 3.2.) the PSM approach identifies matches conditioned on the propensity score $p(x)$ (and not on each ex-ante characteristic 'x'). It is therefore important to check whether the matching procedure is able to balance the distribution of all the relevant covariates across both earnout and non-earnout groups. Rosenbaum and Rubin (1985) point out that the two-sample *t*-test for comparing the distributions of the covariates' means is appropriate. Statistics are reported in Table 4, panel C. The

[25] The HL Goodness of fit test fails to reject the null hypothesis of no evidence of a lack of fit (Prob Chi-squared = 0.2743). HL Goodness-of-Fit refers to the Hosmer and Lemeshow (2000) goodness-of-fit test on the null hypothesis that there is no difference between the 'observed' and 'predicted' values of the depended variable (i.e. there is no lack of fit).

[26] The MR represents the number of deals selected from the untreated (or non-earnout) group per deal in the earnout (treated) group. For example 1:1 MR matches one untreated deal to one treated deal, and or 10:1 matches ten untreated deals to one treated deal.

distributions of covariates between earnout and non-earnout groups are not statistically different, further suggesting successful matching.[27]

Evidence suggests that the earnout group yields higher announcement period returns compared to the matching group based on the PSM approach, but such differences are sensitive to the MRs and the APDs (panels D and E). More specifically, the 1:1 MR approach shows that the earnout group outperforms the matching group by 2.52% in 1% APD, whereas the same differential remains strong in 3:1, 5:1 and 10:1 MRs (differentials of 1.52%, 1.72% and 1.76% respectively, all significant at 5% and 10% level).[28] These results confirm that the earnout group tends to significantly outperform the matched (or non-earnout) group.[29] Overall, our findings provide strong support for our first Hypothesis, which predicts higher returns to bidders' shareholders utilizing the earnout method to finance M&A transactions.

4.3. Univariate Analysis of Announcement Period Returns

Appendix B reports the findings of our standard univariate analysis of announcement period returns. Results are presented according to: method of payment; listing status of the target institution (unlisted (which involve private and subsidiary) and listed); domicile of merging institutions; and the mid-industry segment of the merging institutions.

M&A transactions involving financial institutions yield insignificant abnormal returns to bidders' shareholders (0.06%). This finding is clearly shaped from bids of unlisted target institutions (which yield returns of 0.99%) compared to bids of listed counterparts (which experience losses of 1.01%). Deals involving subsidiary targets (1.98%) contribute more to the latter figure than deals involving private counterparts (0.70%). Overall, we find that the listing status of the target institution and the method of payment employed to finance the M&A transaction are important factors in explaining the distribution of

[27] Only at the 5:1 and 10:1 matching ratio (MR), the mean of 'CPTL' appears different between the earnout and non-earnout groups, albeit this difference is very weak (at 10% significance level). This is unsurprising given that in the 5:1 and 10:1 MR, a large number of observations (M&A deals) from the non-earnout (untreated) group enter the matching space. When compared to the earnout group (a very concentrated group of M&A deals), the distribution of 'CPTL' covariate appears slightly different. Overall, the weak statistical significance between the differences in the distributions of 'CPTL' suggests that our matching design is efficient.

[28] The lower performance of the matched portfolio, compared to earnout M&A portfolio, is likely to be driven by the inclusion of several M&A bids in the matched portfolio that financed with all-stock. This reflects well documented evidence that all-stock offers, which are included in our non-earnout group, generate negative announcement period returns to bidders' shareholders.

[29] Previous studies that investigate the impact of earnout financing on bidders' returns using samples of non-financial firms have not addressed the sample selection bias which could have influenced their results significantly. As such we offer an important methodological contribution in the related earnout literature, and more generally in the M&A research.

bidders' announcement period returns, further confirming evidence from earlier studies based on samples of non-financial firms (Chang, 1998; Fuller, Netter and Stegemoller, 2002).

M&A transactions involving financial institutions yield significantly higher returns to bidders' shareholders when earnout is employed, compared to cases when non-earnout methods of payment (such as cash, stock and mixed) are used. When the different methods of financing are considered, bidders using earnout contracts significantly outperform their counterparts using non-earnout methods of payment by 2.56%. This is also confirmed in the multiple regression cross-sectional analysis (discussed below). Overall, our findings provide strong support for our first Hypothesis, which asserts higher returns to bidders' shareholders utilizing earnout to finance M&A transactions. It also confirms findings of previous studies that examine the impact of earnout on bidders' returns around M&A transactions involving non-financial firms (Kohers and Ang, 2000; Barbopoulos and Sudarsanam, 2012).

(Insert Appendix B near here)

Our findings presented thus far provide strong evidence that M&A bids of financial institutions financed with earnout add significantly more value to the portfolios of bidders' shareholders than other method of payment. This difference is clearly driven by bids financed with stock versus earnout. In short, M&A bids of financial institutions using stock experience significant losses (of -0.40%) (which comprise for the most part bids of listed targets that financed with stock (-1.21%)). We obtain a highly significant differential of 2.94% when comparing the performance of the stock financed portfolio (-0.40%) to that constructed from earnout financed M&A bids (2.54%). Bids financed with earnout also outperform counterparts using cash offers (by a differential of 1.88%).

We compare the announcement period returns of bidders' shareholders from earnout versus non-earnout (as a group and by different methods of payment) financed bids that involve unlisted (private and subsidiary together and individually) and listed targets. Bids of unlisted target institutions that financed with earnout outperform their counterparts using other forms of payment. M&A bids of private target institutions using earnout yield higher returns compared to non-earnout counterparts (when subsidiary targets are involved, only median differences are significant at the 5% level). This is likely to be due to the ability of the earnout to reduce adverse selection and moral hazard. In fact, earnout financed bids of unlisted targets outperform those using non-earnout payments by 1.77% (which is mainly driven by M&A involving private targets).

The portfolio of M&A transactions financed with earnout yields significantly higher returns compared to deals financed with cash or stock. Finally, when listed targets are involved in the M&A using earnout, no statistically significant differentials are obtained between the earnout and each of the non-earnout methods of payment. This is likely to be caused by the low number of deals financed with earnout involving listed targets. We show that in M&A involving financial institutions this is not evident. This is not in line with previous studies that find significant differences between M&A financed with earnout and stock (Barbopoulos and Sudarsanam, 2012).

The findings discussed above are driven by M&A bids of domestic target institutions and deals of both merging partners operating within the same mid-industry segment (SMIS). Previous research suggests that earnout financed M&A involving non-financial targets benefit more (in terms of announcement period returns) only when the target is based in the domestic market (Mantecon, 2009; Barbopoulos and Sudarsanam, 2012). Our results confirm that only domestic bidders' returns are significantly higher for earnout financed M&A bids. In the same context, the majority of the returns are driven from M&A bids of unlisted (financial) target institutions. M&A bids of merging institutions that are based in the SMIS and financed with earnout outperform counterparts using other methods of payment.

Overall, the standard univariate analysis shows that the use of earnout in M&A transactions involving financial institutions yield substantial returns to bidders' shareholders, which are significantly higher than the returns obtained when cash, stock, and mixed methods of payment are used. Furthermore, the returns accrued to bidders' shareholders are clearly driven by: the listing status of the target institution; the target institution's domicile; and the mid-industry segment of the merging institutions.

4.4. Multiple Regression Analysis of Announcement Period Returns

Table 5 reports the findings of our multiple regression analysis which controls for several factors simultaneously in shaping bidders' returns in the announcement period. To avoid possible multi-collinearity between different sets of covariates, Equation 6 is estimated in a nested form with various combinations of covariates. The results obtained from the cross-sectional analysis not only support the findings of the univariate analysis and also the first hypothesis presented in Section 2, but also further corroborate the significant impact of the use of earnout in the determination of bidders' returns in the announcement period.

The EA coefficient, (which represents the presence of earnout in the financing process of M&A) is positive and significant across all models (Models 1 to 3 and 7 to 9). This supports Hypothesis 1, which contends higher announcement period returns to bidders' shareholders when earnout is used to finance M&A bids of financial institutions.

(Insert Table 5 near here)

The inclusion of EA and MBD (Models 7 to 11) further confirms the findings from the PSM approach discussed in the univariate analysis (see Section 4.3). In fact the EA coefficient is positive and significant, while the MBD coefficient is negative, supporting the view that the earnout group tends to significantly outperform the matching group, after controlling for the effects of several other variables.[30]

We divide our earnout sample of financial institutions based on the proportion of the payment contingent on future performance. By so doing, we construct the 'REAV' variable, the 'high REAV' and 'low REAV' variables (defined in Appendix A). Deals under the category of 'high REAV' ('low REAV') are considered as high (low)-risk or more (less)-opaque (given the nature of assets held by financial institutions). In fact, the REAV increases with the uncertainty of target firm's value, or perhaps with the level of uncertainty involved in the deal's integration process (Cain, Denis, and Denis, 2011). The 'REAV' variable is positive and significant (Model 4), indicating that the larger the contingent payment, the higher the announcement period returns of bidders. This is perhaps due to the bidder sharing more risk with the target institution during the post-merger period. The size of the REAV' coefficient (0.058) appears much larger than the coefficient of the earnout dummy variable (the EA coefficient ranges from 0.019 to 0.024) (Models 1 to 4, and 7 to 9). Further analysis suggests that the magnitude of the 'REAV' coefficient is driven by the 'high REAV' variable (Model 5). Overall, our findings suggest that the presence of earnout in M&A involving financial institutions is likely to interact with the level of opacity and thus with the probability of success of the deal. These results are not affected by the stage of the merger wave during which the M&A is announced (Models 7 and 8). The analysis also confirms that the announcement period returns of bidders are significantly affected by the retention of the target firm's management in the post-merger or integration period (Model 11).

[30] As in the case of univariate analysis, the negative performance of the matched-bids group (MBD) compared to the earnout group (EA), is likely to be driven from the inclusion of several M&A bids in the matching portfolio that financed with all-stock.

Other variables appear important in explaining bidders' announcement period returns. AGE is negative and significant, suggesting that bidders with lower information asymmetry experience lower returns. MV is negative and significant in Models 1 to 8 and 12 (albeit the significance level varies across model specifications). The negative coefficient on DV across Models 1 through 8 provides partial support to recent evidence that suggests that financial institutions are willing to pay higher premiums for large deals (Brewer and Jagtiani, 2013). PRV, SBS, and UNL appear positive and significant across all models, implying that deals involving private and subsidiary target (unlisted) generate higher returns than deals involving listed targets. CPTL appears as positive and highly statistically significant across Models 3 to 11. This suggests that the market views better capitalised financial institutions to be in a better position to reap the benefits arising from M&A transactions.[31]

More evidence presented in Table 5, Model 11, suggests that the retention of target firm's management in the post-merger period has a positive and significant influence on the returns of bidders during the announcement period. Clearly the coefficient TMGT_RTN (target management retention) appears positive and highly statistically significant different from zero in Model 11, which compared to the coefficient EA in Models 1-3 and 7-9 (inclusive), it appears much larger (0.060 versus approximately 0.019). This suggests that in earnout financed deals the market is likely to observe in which cases the target firm's management group will be retained in the post-merger period, or in which cases the earnout conditions will be successfully accomplished, which ultimately leads into higher returns to bidders shareholders compared to cases in which the target management is not likely to be retained. This finding provides great support to our Hypothesis 3.

Overall, the above analysis shows that the use of earnout in M&A transactions involving financial institutions yields significant higher announcement period returns to bidders' shareholders, compared to those using non-earnout payment methods (i.e. the full payment is in cash, stock, and mixed payments). The likely elimination of target firms' valuation uncertainty during the pre-merger period in the presence of earnout reduces the possibility of overpayment, which is therefore priced as good news in the stock market. Furthermore, earnout financed M&A in which the target firm's management group is likely to be retained in

[31] Similar results are discussed by Fiordelisi and Molyneux (2010) in their study of determinants of shareholder value creation for a large sample of European banks. Specifically, the authors, show that shareholder value has a positive relationship with cost-efficiency changes.

the post-merger period is priced more favourably compared to similar deals in which the management of the target is not likely to be retained.

4.5. Analysis of Long-Run Returns

Our findings based on our PSM (and univariate) and multivariate analyses of bidders' long-run returns (BHARs) are presented in Tables 6 and 7. Table 6 (Panel A) shows the univariate analysis results. The main findings show that bidders using earnout to finance M&A experience higher long-run returns than counterparts using non-earnout payment methods. This is evident during the analysis of BHARs over the period of 24 months following the M&A announcement. Specifically, the differentials representing the 2-year period examined are statistically significant, especially in earnout versus stock financed deals. Such evidence supports earlier literature and Hypothesis 2. Furthermore, Panel B shows that when the benchmark portfolio is identified based on the PSM method (accompanied with the RB method), rather using the market index, the earnout portfolio outperforms the matched one in both economic and statistical terms. Specifically results reported in Panel B confirm the higher returns of the earnout portfolio in the post-merger period, especially in 2 years following the M&A announcement, further supporting our Hypothesis 2.

(Insert Table 6 near here)

Table 7 presents the results of our multiple regression analysis of the determinants of bidders' long-run returns (estimated based on the Equation 4). Once again to avoid possible multi-collinearity between different sets of covariates, Equation 7 is estimated in nested form with various combinations of covariates. The results obtained from the cross-sectional analysis show the positive impact of the use of earnout in M&A. The EA coefficient is positive and significant in Model 5, consistent with our univariate analysis and further supporting our Hypothesis 2. Over the same period, our findings indicate that high-REAV (earnout financed) deals yield positive and significant returns (Model 8). This is consistent with the view that earnout contributes in delivering superior long run returns in risky-deals.

(Insert Table 7 near here)

One of the most important findings discussed in this section is related to the impact of target firm's retained management team on bidders' long-run returns. Models 2, 6 and 10 show that in earnout financed M&A where the target firm's management team is retained, bidders' long-run synergistic gains are

significantly higher compared to deals financed with non-earnout payments, further supporting our Hypothesis 3. Specifically, the TMGT_RTN coefficients in Models 2, 6 and 10 increase from 0.14 (1year) to 0.26 (2-years) and to 0.31 (3-years), further indicating the significant impact of target firm's management retention during the post-merger period on long-run returns of bidders financing M&A deals with earnouts. The above results are possibly reflecting the likely impact of earnout financing in eliminating moral hazard issues in the post-merger period by incentivising target firms' managers to accomplish pre-specified performance goals and thus increase the likelihood of receiving the contingent or second payment. Compared to similar deals (in terms of firm- and deal-specific factors and identified using the PSM method) in which such incentive is limited, the impact of earnout financing is more apparent.

5. Conclusion

We present new evidence on the announcement period and long-run returns of bidders for a large sample of M&A involving US financial institutions financed with earnout (contingent) versus non-earnout (non-contingent) payments. Using the propensity score matching (PSM) analysis, augmented with the Rosenbaum-bounds (RB) method, consistent with our univariate evidence, we find that bidders enjoy higher announcement period returns when using earnout compared to traditional methods of payment such as full-in-cash, full-in-stock or a combination of cash and stock payments. These returns are larger in takeover bids of unlisted targets, domestic targets, and where both merging institutions are based in the same mid-industry segment.

A multiple regression analysis assesses the impact of earnout on bidders' announcement period returns, while controlling for other transaction- and merging institution-specific characteristics. These findings suggest that the size of the earnout contract as a fraction of the total transaction value has a positive association with the announcement period returns of bidders. Bidders experience higher announcement period returns when the management of the target is likely to be retained in the post-merger period.

The long-run analysis shows that bidders employing the earnout method of payment enjoy significantly higher gains in the post-merger period. These returns are sensitive to several firm- and transaction-specific characteristics. The retention of the target firm's management team enhances the gains of bidders during the post-merger period. Overall, the higher bidder abnormal returns associated with the earnout method of

payment in M&A involving financial institutions seem to be associated with lower adverse selection and moral hazard concerns arising from asymmetric information problems between the merging partners (valuation risk) leading to higher abnormal returns.

References

Akerlof, G.A., 1970. The market for lemons: qualitative uncertainty and the market mechanism, *Quarterly Journal of Economics* 84, 488-500.

Altunbas, Y., Molyneux, P., and J. Thornton, 1997. Big bank mergers in Europe - an analysis of the cost implications, *Economica* 64, 317-329.

Amihud, Y., Lev, B., and N.G. Travlos, 1990. Corporate Control and the Choice of Investment Financing: The Case of Corporate Acquisitions, *Journal of Finance* 45, 603-616.

Barber, B.M., and J.D. Lyon, 1997. Detecting long-run abnormal stock returns: the empirical power and specification of test statistics, *Journal of Financial Economics* 43, 341-372.

Barbopoulos, L., and S. Sudarsanam, 2012. Determinants of earnout as acquisition payment currency and bidders' value gains, *Journal of Banking & Finance* 36, 678-694.

Becher, D.A., 2000. The valuation effects of bank mergers, *Journal of Corporate Finance* 6, 189-214.

Behr, A., and F. Heid, 2011. The success of bank mergers revisited. An assessment based on a matching strategy, *Journal of Empirical Finance* 18, 117-135.

Bengtsson, E., and B. Delbecque, 2011. Revisiting the European asset management industry, *Financial Markets, Institutions & Instruments* 20, 163-190.

Brewer, E., and J.A. Jagtiani, 2013. How much did banks pay to become too-big-to-fail and to become systemically important? *Journal of Financial Services Research*, 43, 1-35.

Brown, S.J., and J.B. Warner, 1980. Measuring security price performance, *Journal of Financial Economics* 8, 205-258.

Cain, M.D., D.J. Denis, and D.K. Denis, 2011. Earnouts: a study of financial contracting in acquisition agreements, *Journal of Accounting and Economics* 51, 151-170.

Carbo, V., S.F. Rodriguez Fermandez, and E.J. Kane, 2011. Regulatory arbitrage in cross-border banking mergers within the EU, *Journal of Money, Credit and Banking* 44, 1609-1629.

Casu, B., A. Clare, A. Sarkisyan, and S. Thomas, 2012. Securitization and bank performance, *Journal of Money, Credit and* Banking, forthcoming.

Chang, S., 1998. Takeovers of privately held targets, methods of payment, and bidder returns, *Journal of Finance* 53, 773-784.

Cummins, D.J. and M.A. Weiss, 2013. Systemic risk and the U.S. insurance sector, *Networks Financial Institute Policy Brief*, Number 2013-PB-02.

Datar, S., R. Frankel, and M. Wolfson, 2001. Earnouts: the effects of adverse selection and agency costs on acquisition techniques, *Journal of Law, Economics, & Organization* 17, 201-238.

DeYoung, R., D.D. Evanoff, and P. Molyneux, 2009. Mergers and acquisitions of financial institutions: a review of the post-2000 literature, *Journal of Financial Services Research* 36, 87-110.

Draper, P., and K. Paudyal, 2006. Acquisitions: Private versus Public, *European Financial Management* 12, 2006, 57-80.

Eckbo, E.B., 2009. Bidding strategies and takeover premiums: a review, *Journal of Corporate Finance* 15, 149-178.

Eckbo, E.B., R.M. Giammarino, and R.L. Henkel, 1990. Asymmetric information and the medium of exchange in takeovers, *Review of Financial Studies* 3, 651-675.

Ekkayokkaya, M., Holmes, P., and K. Paudyal, 2009. Limited Information and the Sustainability of Unlisted-Target Acquirers' Returns, *Journal of Business Finance and Accounting* 36, 1201–1227.

Faccio, M., J.J. McConnell, and D. Stolin, 2006. Returns to acquirers of listed and unlisted targets, *Journal of Financial and Quantitative Analysis* 41, 197-220.

Fiordelisi, F., and P. Molyneux, 2010. The Determinants of Shareholder value in European banking, *Journal of Banking & Finance* 34, 1189-1200.

Fishman, M.M., 1989. Preemptive bidding and the role of the medium of exchange in acquisitions, *Journal of Finance* 44, 41-57.

Franks, J., Harris, R., and C. Mayer, 1988. Means of Payment in Takeovers: Results for the United Kingdom and the United States, in A.J. Auerbach (ed) Corporate Takeovers: Causes and Consequences, Chicago, University of Chicago Press.

Fuller, K., J. Netter, and M. Stegemoller, 2002. What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions, *Journal of Finance* 57, 1763-1793.

Gupta, A., and L. Misra, 2010. Listing effects and the private company discount in bank acquisitions, in: Lee, C.F., Lee, A. C., and J. Lee. (eds.) *Handbook of Quantitative Finance and Risk Management*. (Springer, New York).

Hagendorff, J., M. Collins, and K. Keasey, 2008. Investor protection and the value effects of bank merger announcements in Europe and the US, *Journal of Banking & Finance* 32, 1333-1348.

Heckman, J.J., H. Ichimura, and P.E. Todd, 1997. Matching as an econometric evaluation estimator: evidence from evaluating a job training program, *Review of Economic Studies* 64, 605-654.

Hirtle, B. 2006. Stock market reaction to financial statement certification by bank holding company CEOs. *Journal of Money, Credit and Banking*, 38, 1263-1291.

Hosmer, W.D., and S. Lemeshow, 2000. *Applied logistic regression*. Second Edition. (John Wiley & Sons, New York).

Houston, J.F., and K.J. Stiroh, 2007. Three decades of financial sector risk, *Federal Reserve Bank of New York Staff Report*, Number 248.

Huang, Y-S., and R.A. Walkling, 1987. Target abnormal returns associated with acquisition announcements: Payment, acquisition form, and managerial resistence, *Journal of Financial Economics* 19, 329-49.

J.P. Morgan, 2011. Contingent consideration. *J.P. Morgan Mergers Insight*. 4th March 2011.

Kiymaz, H., 2004. Cross-border acquisitions of US financial institutions: impact of macroeconomic factors, *Journal of Banking & Finance* 28, 1413-1439.

Klumpes, P.J.M., 2002. Incentives facing life insurance firms to report actuarial earnings: evidence from Australia and the UK, *Journal of Accounting, Auditing and Finance* 17, 237-256.

Kohers, N., and J. Ang, 2000. Earnouts in mergers and acquisitions: agreeing to disagree and agreeing to stay, *Journal of Business* 73, 445-476.

Lukas, E., J.J. Reuer, and A. Welling, 2012. Earnout in mergers and acquisitions: A game-theoretic option pricing approach, *European Journal of Operational Research*, 223, 256-263.

Lyon, J., Barber, B., and C.L. Tsai, 1999. Improved methods for test of long-run abnormal stock returns, *Journal of Finance* 54, 165-201.

Manteon, T., 2009. Mitigating risks in cross-border acquisitions, *Journal of Banking & Finance* 33, 640-651.

Morgan, D.P., 2002. Rating banks: risk and uncertainty in an opaque industry, *American Economic Review* 92, 874-888.

Myers, S., and N.S. Majluf, 1984. Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.

Officer, M.S., A.B. Poulsen, and M. Stegemoller, 2009. Target-firm information asymmetry and acquirer returns, *Review of Finance* 13, 467-493.

Rosenbaum, P.R., and D.B. Rubin, 1983. The central role of the propensity score in observational studies for casual effects, *Biometrika* 70, 41-55.

Rosenbaum, P.R., and D.B. Rubin, 1985. Constructing a control group using multivariate matched sampling methods that incorporate the propensity score, *American Statistician* 39, 33-38.

Rosenbaum, P.R. 2002. Observational Studies. 2nd edition. New York: Springer.

Roll, R., 1986. The hubris hypothesis of corporate takeovers, *Journal of Business* 59, 197-216.

Saunders, A., and S. Steffen, 2011. The costs of being private: Evidence from the loan market, *Review of Financial Studies* 24, 4091-4122.

Stulz, R., 1988. Managerial Control of Voting Rights: Financing Policies and the Market for Managerial Control, Journal of Financial Economics, 20, 25–54.

Travlos, N.G., 1987. Corporate takeover bids, method of payment, and bidding firm's stock returns, *Journal of Finance* 52, 943-963.

White, H., 1980. A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity, *Econometrica* 48, 817-838.

Zhang, T., Larry, A.C., and A.R. Van Ness, 2009. Adverse Selection and the Opaqueness of Insurers, *Journal of Risk and Insurance* 76, 295-321.

Table 1
M&A Activity by Location and Method of Payment
The table presents the activity of M&A involving financial institutions according to the target institution's domicile (Domestic versus CBA), merging institutions mid-industry segments (DMIS and SMIS), and the currency of financing (earnout, and non-earnout which includes cash, stock and mixed payments). Appendix A provides definitions of the variables.

Year	All	DOM	CBA	SMIS	DMIS	EA	NEA	Cash	Stock	Mixed
1986	55	54	1	49	6	0	55	9	36	10
1987	57	55	2	47	10	0	57	13	33	11
1988	32	32	0	29	3	0	32	9	18	5
1989	75	75	0	64	11	0	75	22	47	6
1990	44	44	0	37	7	0	44	16	21	7
1991	60	60	0	52	8	0	60	11	33	16
1992	118	117	1	102	16	4	114	21	64	29
1993	187	185	2	149	38	3	184	47	115	22
1994	232	232	0	198	34	5	227	61	130	36
1995	160	160	0	145	15	1	159	39	96	24
1996	155	151	4	133	22	2	153	40	94	19
1997	241	236	5	197	44	4	237	48	159	30
1998	237	232	5	188	49	8	229	32	187	10
1999	175	172	3	132	43	9	166	25	123	18
2000	146	138	8	103	43	4	142	35	82	25
2001	129	128	1	87	42	6	123	38	54	31
2002	96	94	2	69	27	4	92	33	25	34
2003	136	134	2	106	30	6	130	43	36	51
2004	137	133	4	109	28	5	132	40	32	60
2005	143	139	4	100	43	8	135	46	29	60
2006	151	146	5	100	51	3	148	64	28	56
2007	114	102	12	82	32	6	108	29	19	60
2008	63	60	3	48	15	9	54	20	17	17
2009	30	25	5	18	12	0	30	8	11	11
Total	2,973	2,904	69	2,344	629	87	2,886	749	1,489	648
%	100	97.7	2.3	78.8	21.2	2.9	97.1	25.2	50.1	21.8

Table 2
M&A Activity by Mid-Industry Segment
The table presents the mid-industry segments (where the macro-industry for all bids is 'Financial') for both bidders (vertically) and targets (horizontally). The table is divided into three panels. Panel A presents the full sample. Panel B presents only bids financed with non-earnout payment methods. Panel C presents only bids financed with earnout payment methods. The diagonal in each panel presents the number of M&A bids in the same mid-industry segment (SMIS). Other than the diagonal represents M&A bids in different mid-industry segments (DMIS).

	Alternative Financial Investments (AFI)	Asset Management (AM)	Banks (BANK)	Brokerage (BROK)	Credit Institutions (CI)	Diversified Financials (DF)	Insurance (INS)	Other Financials (OF)	Total
Panel A: All bids									
Alternative Financial Investments (AFI)	**2**	2	1	1	1	0	1	7	**15**
Asset Management (AM)	1	**30**	7	5	2	1	3	18	**67**
Banks (BANK)	1	23	**1,981**	31	26	6	18	152	**2,238**
Brokerage (BROK)	1	9	7	**49**	3	2	2	10	**83**
Credit Institutions (CI)	0	2	4	2	**20**	0	2	5	**35**
Diversified Financials (DF)	0	0	0	0	0	**0**	0	0	**0**
Insurance (INS)	0	9	6	11	5	0	**205**	11	**247**
Other Financials (OF)	1	11	166	13	8	4	13	**72**	**288**
Total	**6**	**86**	**2,172**	**112**	**65**	**13**	**244**	**275**	**2,973**
Panel B: Only non-earnout (NEA) bids									
Alternative Financial Investments (AFI)	**1**	1	1	1	0	0	0	6	**10**
Asset Management (AM)	1	**22**	7	4	1	1	2	8	**46**
Banks (BANK)	1	22	**1,975**	30	21	6	15	148	**2,218**
Brokerage (BROK)	1	7	7	**46**	3	2	2	10	**78**
Credit Institutions (CI)	0	2	4	2	**18**	0	2	4	**32**
Diversified Financials (DF)	0	0	0	0	0	**0**	0	0	**0**
Insurance (INS)	0	9	6	11	5	0	**188**	9	**228**
Other Financials (OF)	1	7	165	13	6	3	12	**67**	**274**
Total	**5**	**70**	**2,165**	**107**	**54**	**12**	**221**	**252**	**2,886**
Panel C: Only earnout (EA) bids									
Alternative Financial Investments (AFI)	**1**	1	0	0	1	0	1	1	**5**
Asset Management (AM)	0	**8**	0	1	1	0	1	10	**21**
Banks (BANK)	0	1	**6**	1	5	0	3	4	**20**
Brokerage (BROK)	0	2	0	**3**	0	0	0	0	**5**
Credit Institutions (CI)	0	0	0	0	**2**	0	0	1	**3**
Diversified Financials (DF)	0	0	0	0	0	**0**	0	0	**0**
Insurance (INS)	0	0	0	0	0	0	**17**	2	**19**
Other Financials (OF)	0	4	1	0	2	1	1	**5**	**14**
Total	**1**	**16**	**7**	**5**	**11**	**1**	**23**	**23**	**87**

Table 3
Summary Statistics
Panel A presents the M&A activity by target status and method of payment, merging institutions mid-industry segments (DMIS versus SMIS), and target institution's domicile (domestic versus CBA). The sample comprises of M&A bids announced by US bidding institutions between 01/01/1986 and 31/12/2009 and recorded by the Security Data Corporation (SDC). Targets are financial institutions, private, public, and subsidiary ones, operate both in the domestic and in the foreign economy. In Panel A: *N* represents the number of deals; % of total is the proportion of the bids in this group with respect to all bids. Appendix A provides definitions of the variables.

Panel A

		All	EA	NEA	Cash	Stock	Mixed	SMIS	DMIS	DOM	CBA
All	*N*	2,973	87	2,886	749	1,489	648	2,359	614	2,904	69
	% of All	-	2.9	97.1	25.2	50.1	21.8	79.4	20.6	97.7	2.3
	Mean of DV (in ml $)	458.7	295.5	463.6	177.3	592.7	498.1	396.0	699.7	447.2	940.9
	Sum of DV (in bn $)	1,364	26	1,338	133	882	323	934	430	1,299	65
Unlisted (UNL) Target	*N*	1,596	85	1,511	506	678	327	1,209	387	1547	49
	% of All	53.7	2.9	50.8	17.0	22.8	11.0	40.1	13.0	52.0	1.7
	Mean of DV (in ml $)	145.3	294.5	136.9	182.9	51.7	242.2	110.9	252.7	131.8	570.5
	Sum of DV (in bn $)	232	25	207	93	35	79	134	98	204	28
Listed (PUB) Target	*N*	1,377	2	1,375	243	811	321	1,150	227	1357	20
	% of All	46.3	0.1	46.3	8.2	27.3	10.8	38.7	7.6	45.6	0.7
	Mean of DV (in ml $)	821.9	337.5	822.6	165.4	1,044.9	758.7	695.7	1,461.8	806.8	1,848.2
	Sum of DV (in bn $)	1,132	1	1,131	40	847	244	800	332	1,095	37

Panel B

	MV (in Mil $)		MTBV		RS		DV (in Mil $)		EAV (in Mil $)		REAV		EALGTH	
	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median
All	4,826.16	466.37	0.35	1.52	0.39	0.10	458.69	39.24	75.21	13.00	0.30	0.27	38.66	36.00
DOM	4,096.20	453.09	1.30	1.51	0.36	0.11	447.23	38.23	75.46	12.33	0.30	0.27	38.66	36.00
CBA	35,547.91	5,799.96	-39.08	2.13	1.56	0.05	940.85	156.80	54.00	54.00	0.41	0.41	0.00	0.00
SMIS	3,956.68	453.46	0.45	1.51	0.39	0.11	395.96	37.57	31.88	9.50	0.26	0.20	40.79	36.00
DMIS	8,166.72	511.08	-0.01	1.56	0.38	0.09	699.69	48.09	115.66	22.50	0.35	0.33	37.52	36.00
UNL	3,709.93	343.38	-0.89	1.52	0.35	0.08	145.28	23.00	76.37	11.65	0.31	0.28	38.66	36.00
PUB	6,119.91	693.72	1.74	1.52	0.43	0.14	821.94	79.02	26.25	26.25	0.08	0.08	0.00	0.00
EA	7,149.98	345.80	2.49	1.80	0.29	0.12	295.47	50.00	75.21	13.00	0.30	0.27	38.66	36.00
NEA	4,756.10	468.20	0.29	1.52	0.39	0.10	463.61	38.91	-	-	-	-	-	-
Cash (only NEA)	6,804.34	393.01	-2.27	1.43	0.32	0.09	177.25	32.10	-	-	-	-	-	-
Stock (only NEA)	4,053.54	503.57	0.96	1.56	0.46	0.09	592.67	39.00	-	-	-	-	-	-
Mixed (only NEA)	4,002.99	397.56	1.66	1.48	0.32	0.15	498.06	49.02	-	-	-	-	-	-

Table 4

Announcement Period Excess Returns of Bidders (offering Earnout vs. NEA (Matched) Bids based on the PSM Approach)

Panel A presents the output of the logistic regression that used in the PSM technique (see Appendix A for the definition of each variable). Pseudo R-Squared is a likelihood-based measure. HL Goodness-of-Fit refers to the Hosmer and Lemeshow (2000) goodness-of-fit test on the null hypothesis that there is no difference between the 'observed' and 'predicted' values of the depended variable (i.e. there is no lack of fit). *VIF* is the Variance Inflation Factor which quantifies the severity of multicollinearity. Variance inflation is the reciprocal of tolerance. ***Panel B*** shows the outcome of the Rosenbaum-bounds test. ***Panel C*** presents the descriptive statistics based on the 1:1, 3:1 and 10:1 Matching Ratio (MR) only for 1% Absolute Probability Difference (APD) (see Appendix A for the definition of each variable). APD is a value between 0 and 1 that provides the allowable absolute difference of the propensity scores between the earnout and non-earnout groups. MR is a value from 1 to N for N:1 non-earnout to earnout matching. The MR represents the number of deals selected from the untreated (or non-earnout) group per deal in the earnout (treated) group. For example 1:1 or 10:1 MR matches 1 or 10 untreated deals per treated one. For each continuous variable (MV, DV, RS, Age, Capital), the mean of each of them for the corresponding treated (earnout) and untreated (non-earnout) group, as well as the differential between the treated (earnout) and the untreated (non-earnout) groups in each case is presented; statistical significance of difference in means for each variable is tested using the *t*-test of equality of means. ***Panel D*** presents the bidding firm's announcement period returns for each group (both earnout and matched/non-earnout groups). Announcement period, 5-day (*t*-2,*t*+2), abnormal returns (in percent) of all groups of bidders. Abnormal returns (AR) are market adjusted returns (see Equation 1 in text).APD is a value between 0 and 1 that provides the allowable absolute difference of the propensity scores between the earnout and non-earnout groups. MR is a value from 1 to N for N:1 non-earnout to earnout matching. The MR represents the number of deals selected from the untreated (or non-earnout) group per deal in the earnout (treated) group. For example 1:1 or 10:1 MR matches 1 or 10 untreated deals per treated one. ***Panel E*** presents differentials of abnormal returns between the earnout group and each of the matched M&A-bids groups from the non-earnout sample. Statistical significance of the means and their differences are tested using *t*-test. *N* refers to number of observations in each group or portfolio.

Panel A: Logistic Regression Output	
Intercept	-4.663***
Age	-0.073
MV	0.033
DV	0.079
PRV	1.215***
CBA	-2.006**
DMIS	-0.080
CPTL	0.353***
Asset Management (AM)	1.255***
Bank (BANK)	-3.043***
Brokerage (BROK)	-0.829
Credit Institutions (CI)	0.522
Insurance (INS)	0.054
Year Fixed Effects	Yes
Pseudo (McFadden) *R*-Squared (in %)	25.97
HL Goodness-of-fit Test	9.8690
HL Goodness-of-fit Test [Pr > Chi-Squared]	0.2743
Mean VIF	2.76
Mean Tolerance	0.59
N	2,973
Panel B: Rosenbaum Bound	
Treated Sample Mean	2.54***
N	87
Control Sample Mean (APD = 1%; MR = N:1)	0.02
N	83
Mean Difference	2.52***
RB: *p*-value of estimated difference at Γ = 1	0.0032
RB: critical value of Γ at cut-off *p* = 0.05	1.35
RB: critical value of Γ at cut-off *p* = 0.10	1.53

Continued (Table 4)

Table 4 (continued)

Panel C: Traded (EA) versus Matched (NEA) Samples Statistics					
	EA (Treated Group)	NEA (Matched Group) APD = 1% MR = 1:1	NEA (Matched Group) APD = 1% MR = 3:1	NEA (Matched Group) APD = 1% MR = 5:1	NEA (Matched Group) APD = 1% MR = 10:1
Total (*N*)	87	83	240	360	550
DOM (*N*)	86	81	236	354	541
CBA (*N*)	1	2	4	6	9
SMIS (*N*)	42	35	106	154	239
DMIS (*N*)	45	48	134	206	311
PRV (*N*)	60	58	168	234	308
SBS (*N*)	25	8	25	40	78
UNL (*N*)	85	66	193	274	386
PUB (*N*)	2	17	47	86	164
Mean **MV**	7,150	6,118	6,741	6,171	6,500
Mean Difference (EA vs. NEA)	-	1,032	409	979	650
t-stat of difference (EA vs. NEA)	-	(0.22)	(0.11)	(0.29)	(0.21)
Mean **DV**	296	566	872	807	944
Mean Difference (EA vs. NEA)	-	-270	-576	-511	-648
t-stat of difference (EA vs. NEA)	-	(-0.77)	(-0.95)	(-1.00)	(-1.24)
Mean **RS**	0.29	0.61	0.53	0.45	0.42
Mean Difference (EA vs. NEA)	-	-0.32	-0.24	-0.16	-0.13
t-stat of difference (EA vs. NEA)	-	(-0.78)	(-0.63)	(-0.52)	(-0.50)
Mean **Age**	3,971	3,458	3,961	4,034	4,389
Mean Difference (EA vs. NEA)	-	513	10	-63	-418
t-stat of difference (EA vs. NEA)	-	(1.01)	(0.02)	(-0.16)	(-1.05)
Mean **CPTL**	26.61	26.52	22.86	21.28	19.27
Mean Difference (EA vs. NEA)	-	0.09	3.75	5.33*	7.34*
t-stat of difference (EA vs. NEA)	-	(0.02)	(1.29)	(1.77)	(1.81)
Panel D: Treated (EA) and Matched (NEA) Samples Announcement period Performances					
Earnout (**Treated**) Group — Mean	2.54***	-	-	-	-
Earnout (**Treated**) Group — *t*-stat	(3.38)	-	-	-	-
Earnout (**Treated**) Group — *N*	87	-	-	-	-
Non-Earnout (**Matched**) Group — Mean	-	0.02	1.02***	0.82***	0.78***
Non-Earnout (**Matched**) Group — *t*-stat	-	(0.03)	(2.81)	(2.71)	(3.20)
Non-Earnout (**Matched**) Group — *N*	-	83	240	360	550
Panel E: Differentials: Treated (EA) versus Matched (NEA) M&A-bids					
Mean Difference (**Treated** vs. **Matched**)	-	2.52***	1.52**	1.72***	1.76***
t-stat	-	(2.66)	(2.03)	(2.80)	(2.68)

***, **, * indicate significance at 1%, 5% and 10% respectively.

Table 5

Determinants of Announcement Period Returns of Bidders: A Cross Sectional Analysis

Announcement period (5-days) excess returns of bidders are regressed against a set of explanatory variables. Equation (6) is estimated using ordinary least square.

$$CAR_i = \alpha + \sum_{i=1}^{N} X_i + \varepsilon_i$$

The intercept (α) measures the excess returns to bidders after accounting for the effects of all explanatory variables. 'X' represents the vector of explanatory variables (see Section 3.2.4 for more details with respect the impact of each variable on bidders' returns and also Appendix A for the definitions of each variable). The standard errors are corrected for possible heteroscedasticity by using the White's (1980) heteroscedasticity consistent standard errors method.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Constant	0.022***	0.023***	0.003	0.003	0.003	0.002	0.007	0.007	0.002	-0.001	0.006
AGE	-0.003**	-0.003**	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002**	-0.003***	-0.003***	-0.004***
MV	-0.002**	-0.002**	-0.001*	-0.002**	-0.002**	-0.002**	-0.001*	-0.001*			
DV	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001			
RS									0.001	0.001	0.001
MTBV	0.001	0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
PRV	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.014***	0.014***			
SBS	0.028***	0.028***	0.027***	0.028***	0.028***	0.029***	0.026***	0.026***			
UNL									0.019***	0.020***	0.019***
CBA	0.002	0.002	-0.001	-0.001	0.001	-0.002	-0.001	-0.001	-0.002	-0.002	-0.002
DVRSFN	-0.001	-0.001	-0.001	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	0.001
EA	0.019***	0.024***	0.019**				0.019**	0.020**	0.019**		
EALGTH		-0.003	-0.003	-0.004	-0.003	0.002	0.003	-0.003	-0.004		-0.033*
CPTL			0.007***	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***	0.006***
REAV				0.058***							0.157**
High_REAV					0.028***						
Low_REAV						0.002					
MWD							-0.007***	-0.007***			
MWD × EA								-0.007			
MBD									-0.009*	-0.010*	-0.004
TMGT_RTN											0.060***
***F*-Test**	18.79***	17.03***	17.21***	17.48***	17.42***	16.67***	16.51***	15.25***	10.66***	20.66***	13.75***
R^2 (adj.) in %	5.94	5.98	6.61	6.71	6.69	6.42	6.90	6.91	3.83	5.82	5.49
N	2,973	2,973	2,973	2,973	2,973	2,973	2,973	2,973	2,973	2,973	2,933

***, **, and * indicate significance at 1, 5, and 10 percent respectively.

Table 6

Long-run Excess Returns (Buy-and-Hold-Abnormal-Returns - BHARs) of Bidders (offering Earnout vs. Matched Non-Earnout Payments)

Bidders' post-merger buy-and-hold abnormal returns (BHARs) for 12 months (1-year), 24 months (2-years) and 36 months (3-years) following the month of the M&A announcement are presented. BHARs are estimated based on the methods outlined in the Section 3.3.

The benchmark portfolio or the control firm in the estimation of BHARs is the market index in Equation 4 (Panel A) or derived via the PSM method in Equation 5 (Panel B).

In panel B the matching portfolio is designed on the basis of 1:1, 3:1, 5:1 and 10:1 Matching Ratio (MR) only for 1% Absolute Probability Difference (APD) (see Appendix A for the definition of each variable). APD is a value between 0 and 1 that provides the allowable absolute difference of the propensity scores between the earnout and non-earnout groups. MR is a value from 1 to *N* for *N*:1 non-earnout to earnout matching. The MR represents the number of deals selected from the untreated (or non-earnout) group per deal in the earnout (treated) group. For example 1:1 or 10:1 MR matches 1 or 10 untreated deals per treated one. In both panels statistical significance of the means and their differences are tested using *t*-test. *N* refers to number of observations in each portfolio. ***, **, and * indicate significance at 1, 5, and 10 percent respectively.

Panel A: BHARs based on Equation 4

		All	NEA	Cash	Stock	Mixed	EA	EA vs. NEA	EA vs. Cash	EA vs. Stock	EA vs. Mixed
1 year post-merger window	Mean	-2.42	-2.49	0.47	-4.99	-0.18	0.08	2.57	-0.39	5.07	0.26
	t-stat	(-3.94)	(-4.05)	(0.40)	(-5.83)	(-0.14)	(0.02)	(0.70)	(-0.10)	(1.56)	(0.07)
	N	2,971	2,885	749	1,489	647	86				
2 years post-merger window	Mean	-4.10	-4.42	-0.51	-8.01	-0.67	7.04	11.46	7.55	15.05	7.71
	t-stat	(-4.41)	(-4.72)	(-0.27)	(-6.45)	(-0.32)	(1.06)	(2.43)	(1.72)	(3.04)	(1.64)
	N	2,966	2,883	749	1,488	646	83				
3 years post-merger window	Mean	-4.40	-4.56	-3.24	-4.72	-5.73	1.32	5.88	4.56	6.04	7.05
	t-stat	(-3.69)	(-3.81)	(-1.29)	(-2.96)	(-2.22)	(0.14)	(0.81)	(0.56)	(0.85)	(0.89)
	N	2,960	2,878	747	1,486	648	82				

Panel B: BHARs (Earnout only) - based on Equation 5

		MR=1:1	MR=1:3	MR=1:5	MR=1:10
1 year post-merger window	Mean	7.13	5.02	2.78	4.36*
	t-stat	(1.02)	(1.30)	(0.87)	(1.66)
	N	82	237	354	549
2 years post-merger window	Mean	17.60**	15.67***	12.10***	10.30***
	t-stat	(2.15)	(2.67)	(2.65)	(2.89)
	N	79	228	339	518
3 years post-merger window	Mean	1.80	7.14	7.32	6.19
	t-stat	(0.13)	(0.89)	(1.16)	(1.36)
	N	76	223	331	516

Table 7

Determinants of Long-Run Returns (BHARs) of Bidders: A Cross Sectional Analysis

Regression of long-run returns to bidders on explanatory variables. Bidders' post-merger buy-and-hold abnormal returns for 12 months, 24 months and 36 months following the month of the M&A announcement are regressed on a set of explanatory variables using Equation 7 (see Section 3.2. and 3.4. for more details with respect the impact of each variable on bidders' returns and the set-up of the model; and Appendix A for the definitions of each variable). In Models 1–4 (5–8) [9–12], the dependent variable is 12 (24) [36] month BHARs. Equation (7) is estimated using ordinary least square.

$$BHAR_i = \alpha + \sum_{i=1}^{N} X_i + \varepsilon_i$$

The intercept (α) measures the excess returns to bidders after accounting for the effects of all explanatory variables. 'X' represents the vector of explanatory variables (see Section 3.2.2 for more details with respect the impact of each variable on bidders' returns and also Appendix A for the definitions of each variable). The standard errors are corrected for possible heteroscedasticity by using the White's (1980) heteroscedasticity consistent standard errors method.

	1 year post-merger window				2 years post-merger window				3 years post-merger window			
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**
Constant	0.060	0.066	0.054	0.054	0.160*	0.174*	0.138	0.0148*	0.255**	0.281**	0.240**	0.249**
AGE	0.001	0.001	0.001	0.001	-0.001	-0.001	-0.001	-0.001	-0.013	-0.016	-0.013	-0.014
MV	-0.005	-0.005	-0.005	-0.005	-0.008	-0.008	-0.007	-0.007	-0.012	-0.011	-0.012	-0.012
DV	-0.008	-0.008	-0.008	-0.008	-0.019**	-0.019**	-0.018**	-0.018**	-0.014	-0.016*	-0.013	-0.014
MTBV	0.001*	0.001**	0.001*	0.001*	0.001	0.001	0.001	0.001	0.001*	0.001*	0.001*	0.001*
UNL	-0.034**	-0.034**	-0.031**	-0.032**	-0.086***	-0.087***	-0.077***	-0.080***	-0.108***	-0.112***	-0.105***	-0.106***
CBA	0.091**	0.091**	0.087**	0.088**	0.049	0.050	0.035	0.040	-0.018	-0.018	-0.024	-0.022
DVRSFN	0.003	0.002	0.006	0.005	0.001	0.001	0.007	0.004	0.001	0.002	-0.001	0.002
EA	0.043				0.165**				0.106			
EALGTH	0.001				0.008				0.006			
CPTL	-0.005	-0.005	-0.002	-0.003	-0.012	-0.013	-0.003	-0.006	0.010	0.011	0.013	0.013
MBD			-0.024				0.015				0.101	
High_REAV				0.008				0.013*				0.112
TMGT_RTN		0.141**				0.259***				0.314***		
***F*-Test**	1.75*	2.28**	1.96**	1.82*	3.21***	3.50***	2.59***	2.97***	3.06***	3.92***	3.35***	3.27***
R^2 (adj.) in %	0.65	0.78	0.68	0.67	1.29	1.19	0.97	1.07	0.96	1.33	1.22	1.29
N	2,973	2,933	2,973	2,973	2,973	2,933	2,973	2,973	2,973	2,933	2,973	2,973

***, **, and * indicate significance at 1, 5, and 10 percent respectively.

Appendix A
Variable Definitions

The table defines the variables used in the empirical analysis, and indicates the data source used. SDC denotes Thomson-Reuters SDC M&A database. With an dummy variable, a sample observation without the value of 1 has the value of 0. Age, MV, DV, EAV, CPTL, EALGTH, and RS are log transformed in subsequent regressions.

Variable Type / Name	Description	Data source
All	Refers to the entire sample analysed in this paper.	SDC
Age	Number of days between day the bidder is first recorded on Datastream and bid's announcement day.	Datastream
Market Value (**MV**)	Bidder's market value of equity at four weeks prior to bid's announcement, in millions dollars.	Datastream
Deal Value (**DV**)	Bid's transaction value, in millions dollars.	SDC
Earnout Value (**EAV**)	Value of earnout contract, in millions dollars (proxy for size of earnout).	SDC
Relative Size (**RS**)	Ratio of DV to MV.	Datastream & SDC
Relative EAV (**REAV**)	Ratio of EAV to DV.	SDC
Market-to-book value (**MTBV**)	Market-to-book value of bidder equity at four weeks, and book value of equity from the most recent accounting statement, prior to bid's announcement day.	Datastream
EA length (**EALGTH**)	The log of the earnout period is following the bid's announcement day (in months).	LexisNexis & InvestEgate
Capital (**CPTL**)	The CPTL variable is computed as follows for the different types of financial institutions: (a) **Banks:** common equity / (total assets – customer liabilities on acceptances); (b) **Insurance companies:** (common equity + policyholders' equity) / total assets; (c) **Other financial companies:** common equity / (total assets – custody securities).	Datastream
Foreign (**CBA**)	Dummy = 1 with a US bidder and non-US target, and = 0 when both bidder and target are US institutions (= **DOM**).	SDC
Diversifying (**DVRSFN**)	Dummy = 1 when bidder and target are based in different mid-industry segments **(DMIS)**, and = 0 when both are based in the same mid-industry segment **(SMIS)** (= Focused).	SDC
Cash	Dummy = 1 when payment is 100% cash.	SDC
Stock	Dummy = 1 when payment is 100% stock exchange.	SDC
Mixed	Dummy = 1 when payment is mixture of cash, stock, and other methods of payment excluding earnout.	SDC
Earnout (**EA**)	Dummy = 1 when payment includes earnout in addition to cash, stock, or mixed, and = 0 otherwise (= Non-Earnout) (**NEA**).	SDC
Non-Earnout (**NEA**)	Dummy = 1 with full-cash, or full-stock, or mixed payment without EA, and = 0 when EA is included.	SDC
Private (**PRV**)	Dummy = 1 if target is private, and = 0 otherwise.	SDC
Public (**PBL**)	Dummy = 1 if target is publicly listed, and = 0 otherwise.	SDC
Subsidiary (**SBS**)	Dummy = 1 if target is a subsidiary institution, and = 0 otherwise.	SDC
Unlisted (**UNL**)	Dummy = 1 if target is unlisted i.e. private or subsidiary, and = 0 otherwise.	SDC
Alternative Financial Investments (**AFI**)	Dummy = 1 if both merging-partners are in the Alternative Financial Investments sub-sector, and = 0 otherwise.	SDC
Asset Management (**AM**)	Dummy = 1 if both merging-partners are in the Asset Management sub-sector, and = 0 otherwise.	SDC
Banks (**BANK**)	Dummy = 1 if both merging-partners are in the Banking sub-sector, and = 0 otherwise.	SDC
Brokerage (**BROK**)	Dummy = 1 if both merging-partners are in the Brokerage sub-sector, and = 0 otherwise.	SDC
Credit Institutions (**CI**)	Dummy = 1 if both merging-partners are in the Credit Institutions sub-sector, and = 0 otherwise.	SDC
Diversified Financials (**DF**)	Dummy = 1 if both merging-partners are in the Diversified Financials sub-sector, and = 0 otherwise.	SDC
Insurance (**INS**)	Dummy = 1 if both merging-partners are in the Insurance sub-sector, and = 0 otherwise.	SDC
Other Financials (**OF**)	Dummy = 1 if both merging-partners are in the Other Financials sub-sector, and = 0 otherwise.	SDC
Low Relative EAV (**Low_REAV**)	Dummy = 1 if REAV < its median, and = 0 if the REAV ≥ its median.	SDC
High Relative EAV (**High_REAV**)	Dummy = 1 if REAV > its median, and = 0 if the REAV ≤ its median.	SDC
Matching Bid Dummy (**MBD**)	Dummy = 1 if the M&A bid form the non-earnout group is matched with a M&A bid from the earnout group, based on the propensity score matching method, and = 0 otherwise.	Defined *via* Table 6 Bellow
Merger Wave Dummy (**MWD**)	Equals 1 if the M&A announcement it taking place during the period 1998-2000, and 0 otherwise.	SDC
Target Management Retention (**TMGT_RTN**)	Equals 1 if the management team of the target firm is retained after the M&A announcement, and = 0 otherwise.	Factiva and SEC Fillings

Appendix B

Announcement Period Excess Returns of US Bidders (Offering Earnout vs. Non-Earnout Payments)

Announcement period, 5-day (*t*-2, *t*+2), abnormal returns (in percent) of all sample bidders (**Panel A**) divided by target listing status (unlisted - private and subsidiary- and listed), methods of payment (cash, shares, mixed, and earnout), the target institution's domicile (**Panels B and C**, domestic and foreign respectively), and the bidding and target institutions' mid-industry segments (**Panels D and E**, SMIS and DMIS respectively) are presented. See Appendix A for the definitions of the variables. Abnormal returns (AR) are market adjusted returns (see Equation 1 in text). Statistical significance of the means and their differences are tested using *t*-test. *N* refers to number of observations in each portfolio.

		All	Earnout	NEA	Cash	Stock	Mixed	Earnout vs. NEA	Earnout vs. Cash	Earnout vs. Stock	Earnout vs. Mixed
Panel A: All US Bids											
	Mean	0.06	2.54***	-0.02	0.66***	-0.40***	0.08	2.56***	1.88***	2.94***	2.46***
All Bids	*t*-stat	(0.63)	(3.38)	(-0.16)	(3.55)	(-3.12)	(0.41)	(4.56)	(3.11)	(5.25)	(3.88)
	N	2,973	87	2,886	749	1,489	648				
Private	Mean	0.70***	2.17**	0.63***	0.38*	0.53***	1.14***	1.54**	1.79***	1.64**	1.03
(PRV)	*t*-stat	(5.04)	(2.35)	(4.53)	(1.76)	(2.74)	(3.62)	(2.37)	(2.63)	(2.36)	(1.30)
Targets	*N*	1,242	60	1,182	293	632	257				
Subsidiary	Mean	1.98***	3.84***	1.84***	1.80***	1.12	2.41***	2.00	2.04	2.72*	1.43
(SBS)	*t*-stat	(5.54)	(2.82)	(4.98)	(3.83)	(1.33)	(2.96)	(1.44)	(1.41)	(1.79)	(0.90)
Targets	*N*	354	25	329	213	46	70				
Unlisted	Mean	0.99***	2.66***	0.89***	0.98***	0.57***	1.42***	1.77***	1.68**	2.09***	1.24*
(UNL)	*t*-stat	(7.31)	(3.48)	(6.58)	(4.00)	(3.01)	(4.66)	(2.95)	(2.49)	(3.48)	(1.75)
Targets	*N*	1,596	85	1,511	506	678	327				
Listed	Mean	-1.01***	-2.41	-1.01***	0.00	-1.21***	-1.27***	-1.40	-2.41	-1.19	-1.14
(PUB)	*t*-stat	(-8.02)	(-0.82)	(-7.99)	(0.01)	(-7.19)	(-4.78)	(-0.48)	(-0.83)	(-0.41)	(-0.39)
Targets	*N*	1,377	2	1,375	243	811	321				
Panel B: US Bids of Domestic (DOM) Target Institutions											
	Mean	0.05	2.40***	-0.03	0.69***	-0.42***	0.09	2.43***	1.71***	2.82***	2.31***
All Bids	*t*-stat	(0.48)	(3.21)	(-0.27)	(3.57)	(-3.34)	(0.41)	(4.33)	(2.77)	(5.10)	(3.66)
	N	2,904	86	2,818	714	1,472	632				
Private	Mean	0.64***	1.95**	0.58***	0.37	0.49***	1.04***	1.37**	1.58**	1.46**	0.91
(PRV)	*t*-stat	(4.68)	(2.14)	(4.22)	(1.49)	(2.59)	(3.25)	(2.15)	(2.31)	(2.19)	(1.15)
Targets	*N*	1,217	59	1,158	287	622	249				
Subsidiary	Mean	2.09***	3.84***	1.95***	1.94***	1.13	2.50***	1.89	1.90	2.71*	1.34
(SBS)	*t*-stat	(5.52)	(2.82)	(4.94)	(3.78)	(1.32)	(2.98)	(1.34)	(1.26)	(1.77)	(0.84)
Targets	*N*	330	25	305	194	44	67				
Unlisted	Mean	0.95***	2.51***	0.86***	1.00***	0.53***	1.35***	1.65***	1.51**	1.98***	1.16*
(UNL)	*t*-stat	(7.01)	(3.31)	(6.32)	(3.91)	(2.87)	(4.36)	(2.76)	(2.19)	(3.40)	(1.68)
Targets	*N*	1,547	84	1,463	481	666	316				
Listed	Mean	-0.99***	-2.41	-0.98***	0.05	-1.21***	-1.18***	-1.43	-2.46	-1.20	-1.23
(PUB)	*t*-stat	(-7.76)	(-0.82)	(-7.73)	(0.20)	(-7.15)	(-4.44)	(-0.49)	(-0.85)	(-0.41)	(-0.42)
Targets	*N*	1,357	2	1,355	233	806	316				
Panel C: US Bids of Foreign (CBA) Target Institutions											
	Mean	0.62	15.07	0.41	0.04	1.54	0.02	14.66	15.03	13.53	15.05
All Bids	*t*-stat	(0.76)	-	(0.51)	(0.07)	(0.61)	(0.01)	-	-	-	-
	N	69	1	68	35	17	16				
Unlisted	Mean	2.06**	15.07	1.79*	0.53	3.02	3.31*	13.28	14.54	12.04	11.76
(UNL)	*t*-stat	(2.13)	-	(1.89)	(1.03)	(0.89)	(2.10)	-	-	-	-
Targets	*N*	49	1	48	25	12	11				
Listed	Mean	-2.91**	-	-2.91**	-1.19	-2.02	-7.24**	-	-	-	-
(PUB)	*t*-stat	(-2.47)	-	(-2.47)	(-0.98)	(-0.71)	(-3.10)	-	-	-	-
Targets	*N*	20	0	20	10	5	5				

Continued (Appendix B)

Appendix B (Continued)

		All	Earnout	NEA	Cash	Stock	Mixed	Earnout vs. NEA	Earnout vs. Cash	Earnout vs. Stock	Earnout vs. Mixed
Panel D: US Bids of Same-Mid-Industry Segments (SMIS)											
	Mean	-0.02	3.56***	-0.08	0.56***	-0.46***	0.16	3.64***	3.00***	4.02***	3.40***
All Bids	*t*-stat	(-0.18)	(3.07)	(-0.82)	(2.57)	(-3.50)	(0.68)	(3.13)	(3.52)	(5.34)	(2.88)
	N	2,359	42	2,317	553	1,262	502				
Private	Mean	0.56***	2.82*	0.49***	0.20	0.40**	1.05***	2.33***	2.62***	2.42***	1.77*
(PRV)	*t*-stat	(3.84)	(1.94)	(3.43)	(0.76)	(2.13)	(2.98)	(2.71)	(2.90)	(2.76)	(1.74)
Targets	*N*	966	28	938	224	519	195				
Subsidiary	Mean	2.22***	5.39**	2.04***	2.02***	1.36	2.52***	3.35*	3.37*	4.03*	2.87*
(SBS)	*t*-stat	(5.04)	(2.67)	(4.54)	(3.36)	(1.20)	(3.15)	(1.72)	(1.70)	(1.84)	(1.72)
Targets	*N*	243	13	230	145	33	52				
Unlisted	Mean	0.89***	3.64***	0.79***	0.92***	0.46**	1.36***	2.85***	2.72***	3.18***	2.28**
(UNL)	*t*-stat	(6.06)	(3.07)	(5.45)	(3.17)	(2.42)	(4.16)	(3.52)	(2.86)	(4.15)	(2.43)
Targets	*N*	1,209	41	1,168	369	552	247				
Listed	Mean	-0.97***	0.52	-0.98***	-0.15	-1.18***	-1.01***	1.50	0.67	1.70	1.53
(PUB)	*t*-stat	(-7.01)	-	(-7.01)	(-0.52)	(-6.60)	(-3.21)	-	-	-	-
Targets	*N*	1,150	1	1,149	184	710	255				
Panel E: US Bids of Different-Mid-Industry Segments (DMIS)											
	Mean	0.36	1.59*	0.26	0.95***	-0.06	-0.17	1.33*	0.64	1.65*	1.76*
All Bids	*t*-stat	(1.55)	(1.65)	(1.10)	(2.62)	(-0.14)	(-0.35)	(1.69)	(0.73)	(1.72)	(1.76)
	N	614	45	569	196	227	146				
Private	Mean	1.21***	1.60	1.16***	0.97*	1.14*	1.43**	0.44	0.63	0.46	0.17
(PRV)	*t*-stat	(3.30)	(1.35)	(3.01)	(1.66)	(1.73)	(2.06)	(0.37)	(0.54)	(0.34)	(0.13)
Targets	*N*	276	32	244	69	113	62				
Subsidiary	Mean	1.45**	2.16	1.36**	1.33*	0.51	2.09	0.80	0.83	1.65	0.07
(SBS)	*t*-stat	(2.40)	(1.23)	(2.12)	(1.84)	(0.62)	(0.94)	(0.42)	(0.44)	(0.87)	(0.02)
Targets	*N*	111	12	99	68	13	18				
Unlisted	Mean	1.28***	1.75*	1.22***	1.15**	1.07*	1.58**	0.53	0.60	0.68	0.17
(UNL)	*t*-stat	(4.08)	(1.80)	(3.68)	(2.48)	(1.80)	(2.18)	(0.53)	(0.61)	(0.59)	(0.14)
Targets	*N*	387	44	343	137	126	80				
Listed	Mean	-1.21***	-5.33	-1.19***	0.49	-1.47***	-2.28***	-4.14	-5.82	-3.86	-3.05
(PUB)	*t*-stat	(-3.99)	-	(-3.92)	(0.90)	(-2.85)	(-5.31)	-	-	-	-
Targets	*N*	227	1	226	59	101	66				

***, **, * indicate significance at 1%, 5% and 10% respectively.