Earnout Financing in the Financial Services Industry*

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Abstract

This paper explores the effects of earnout contracts used in US financial services M&A. We use propensity score matching (PSM) to address selection bias issues with regard to the endogeneity of the decision of financial institutions to use such contracts. We find that the use of earnout contracts leads to significantly higher acquirer abnormal (short- and long-run) returns compared to counterpart acquisitions (control deals) which do not use such contracts. The larger the size of the deferred (earnout) payment, as a fraction of the total transaction value, the higher the acquirers' gains in the short- and long-run. Both acquirer short- and long-run gains increase when the management team of the target institution is retained in the post-acquisition period.

Keywords: Earnouts; Acquisitions of financial institutions; Propensity score matching; Rosenbaum-bounds.

JEL Classification: G34.

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Highlights

- We use the US financial services industry as a laboratory to investigate the returns to acquirers' shareholders when earnout contracts are used instead of a single up-front payment.
- Propensity score matching (PSM) is used to deal with selection bias concerns with regard to the endogeneity of the decision of financial institutions to use such contracts.
- Acquirers enjoy higher short- and long-run abnormal returns when using earnout contracts compared to conventional methods of payment.
- The retention of management of targets plays an important role in determining acquirer returns.

1. Introduction

The managers of financial institutions face valuation risk when negotiating the price and payment method in Mergers and Acquisitions (M&A).[1] One way of reducing this risk is to use an earnout contract. An earnout contract is an agreement where part of the purchase price of a firm is paid at some agreed point in the future (normally three years after the close of the acquisition). The earnout contract involves payments in two stages. The first payment is made at the time of the M&A announcement (in the form of cash, stock, or a combination of cash and stock), while the second (usually in cash) is delivered upon satisfactory performance of the target after a pre-determined period has elapsed following the M&A announcement. Earnout financed deals mostly involve privately held target firms in which valuation risk, due to asymmetric information problems between the involved parties is likely to be higher compared to deals involving listed targets. The target firm's management in earnout financed deals is often retained during the post-merger period.[2]

Earnout contracts share the risk of possible mis-valuation due to the enhanced likelihood of information sharing between the contracting parties. Furthermore, earnout contracts can reduce integration problems in the post-merger period as the target's management team, that are regularly a small group of shareholders, are incentivized to maximise performance during the post-merger period (so as to increase the odds of receiving the deferred payment). However, earnout contracts can lead to opportunistic behaviour on the part of bidding and target firms. Retained management may engage in short term high risk behaviour in order to maximise cash flows and assure the contingent payment, while the acquirer has an incentive to adjust or distort reported performance in order to lower the size of the contingent payment. Ultimately, the monitoring costs associated with earnout contracts may offset the possible gains.

In this paper we use the US financial services industry as a laboratory to investigate the returns to acquirers' shareholders when earnout contracts are used compared to M&A's financed with single up-front payments. Our choice of industry is justified on the grounds that the assets held by financial institutions (such as banks, insurers, and asset management companies) are often opaque and difficult to value (Morgan, 2002; Jones et al, 2012; Flannery et al 2013). The use of earnout contracts in mergers involving financial institutions may lessen the likelihood of mis-valuation. As a consequence, we conjecture that acquirers using earnout contracts will experience higher returns than their non-earnout counterparts. These superior returns

arise from the ability of earnout contracts to reduce information asymmetries between merging institutions and thus increase the likelihood of successful integration.

Client relationships are often of importance in the financial services industry, however they are portable, and can move with particular managers, especially after takeover (Bengtsson and Delbecque, 2011). Therefore, we also investigate whether the retention of the target firm's management in M&A using earnout contracts is a source of value creation in the post-merger period. We conjecture that acquirers experience higher returns in cases where the target's management team is retained. This is because the retained management of the target institution can help alleviate problems associated with integrating the merged entities, and thus increase the likelihood of a successful deal.

We employ a two-stage approach. In the first stage, we compare the mean announcement period abnormal returns of a portfolio consisting of deals where earnout contracts are used with a control portfolio of deals financed with a single up-front payment. Appropriate control deals are identified using propensity score matching (PSM). This allows us to match deals where earnout contracts are used with similar non-earnout deals. In addition, the PSM method addresses selection bias concerns with regard to the endogeneity of the decision of financial institutions to use earnout contracts. The least biased estimation of propensities in the PSM is further confirmed using the Rosenbaum-bounds (RB) approach.

In the second stage, we conduct a multiple regression analysis of the impact of the use of earnout contracts on acquirer short- and long-run abnormal returns, while controlling for several transaction- and merging institution-specific features simultaneously. For the investigation of the long-run gains of acquirers we employ the buy-and-hold abnormal returns (BHAR) methodology in which the benchmark portfolio is either a control portfolio to earnout deals from the non-earnout group of deals (as identified via the PSM and RB methods) or a stock market index.

The main findings of our analysis indicate that the use of earnout contracts in acquisitions involving financial institutions leads to significantly higher acquirer abnormal (short- and long-run) returns, compared to counterpart acquisitions (control deals) which do not use earnout contracts. Earnout contracts along with several transaction- and merging institution-specific characteristics (such as target listing status, the relative size of the transaction, and the mid-industry segments of merging institutions) are important in determining the short- and long-run abnormal returns of acquirers. We also find that the higher the size of the deferred

(earnout) payment, as a fraction of the total transaction value, the higher the acquirers' gains in the short- and long-run. This provides strong evidence that the use of earnout contracts leads to higher acquirer value gains. We also find that both the acquirer short- and long-run gains increase when the management team of the target institution is retained in the post-acquisition period.

Our paper contributes to the literature in the following three ways. First, this paper is the first to explore the effects of earnout contracts on the returns of acquirers when both entities operate in the financial services industry. Second, we assess the impact of the retained management team of the target on the abnormal returns gained by acquirers in the post-acquisition period. Third, we address selection bias concerns with regard to the endogeneity of the decision of financial institutions to use earnout contracts. In order to do so we employ PSM and RB methods to identify the benchmark portfolio when assessing long-run returns of acquirers.

Overall, the results presented in this paper show that investors react more favourably to the use of earnout contracts in acquisitions involving financial institutions, relative to conventional payment methods. We find this is driven by deals in which the management team of the target institution is retained in the post-merger period, and when the value of the earnout contract to total deal value is high.

The rest of the paper is structured as follows. In Section 2, we review salient literature. Section 3 outlines the methods used to conduct the empirical analysis. In Section 4, we describe the data and present the findings of the paper. Section 5 concludes.

2. Literature

The method of payment in M&A signals information regarding the merging institutions valuations during the pre-announcement period, the value of the deal (including the M&A bid premium), as well as the value of the newly formed institution. For the acquirer in cash-financed deals, and for both the acquirer and target in stock-exchanged deals, information asymmetry creates valuation uncertainty and leads them to demand a discount to the apparent value of the acquiring or the target institution (Travlos, 1987; Eckbo, Giammarino and Henkel, 1990). As a result, announcement period abnormal returns are significantly higher in cash-financed than in stock-financed M&A, for both the acquiring and the target institutions shareholders (Hagendorff, Collins and Keasey, 2008).[3] A cash offer is made by acquirers who attach a high value to the

target institution under their control, and by so doing signal their confidence that the target will be of high-value during the post-merger period (Fishman, 1989). Less confident acquirers, instead, prefer to use stock as a medium of payment or an earnout contract.

Evidence relating to the impact of earnout contracts on the short-run gains of acquiring firms is limited. A small number of studies utilise samples of non-financial firms to investigate the impact of earnout contract usage on the gains of acquirers in the short- and the long-run. Kohers and Ang (2000) show that earnout financed deals yield positive short- and long-run abnormal returns for acquiring firms' shareholders. These abnormal returns are superior to those realised in transactions financed by cash or stock. Datar, Frankel, and Wolfson (2001) show that foreign acquirers use earnout less frequently than domestic acquirers. The managers of foreign target institutions appear to be unwilling to accept deferred payments owing to possible future conflicts arising from: the discrepancies in calculations of the payment amount and performance goals, and differences in accounting practices and other corporate governance mechanisms. Barbopoulos and Sudarsanam (2012) show that UK acquirers of non-financial firms using earnout contracts enjoy higher short- and long-run abnormal 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 the value to acquirers. Cain, Denis, and Denis (2011) examine the determinants of earnout use in deals involving US non-financial firms, and show that the size and the length of the earnout contract are greater when the uncertainty surrounding the value of the target is higher.

Overall, previous literature suggests that the use of earnout contracts leads to significantly higher short- and long-run abnormal acquirer returns compared to non-earnout payment methods. Higher gains are attributed to the expected ability of earnout to enhance the extent of information sharing between merging institutions. This is reflected on the short- and the long-run abnormal returns of the acquirer.

Earnout contracts often stipulate the retention of the target institution's management team during the post-acquisition period. As such the retention of valuable human capital can reduce problems associated with integrating the merged entities in the post-acquisition period. As a result, the earnout may significantly contribute to value creation in both the immediate and post-acquisition period. Similarly, the post-acquisition performance of acquirers involved in deals of financial institutions using earnout contracts and retaining the

target's management is expected to yield higher returns compared with deals that employ other financing methods.

3. Methods

Measurement of announcement period abnormal returns

We follow previous studies (including Fuller, Netter, Stegemoller, 2002; Faccio, McConnell, Stolin, 2006) with similar sample characteristics to calculate short-run excess returns of acquirers using the market-adjusted model as follows:[4]

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

Where: $AR_{i,t}$ is the excess return of acquirer i on day t; $R_{i,t}$ is the return of acquirer i on day t measured as the percentage change in price index of acquirer i; and $R_{m,t}$ is the market return defined as the percentage change of the corresponding Datastream value-weighted market index for the United States on day t. The short-run cumulative abnormal 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 acquisition, t, which is day 0, as outlined in Equation 2 as follows:

$$CAR_i = \sum_{s=t-2}^{t+2} AR_{i,s} \quad (2)$$

The mean short-run abnormal return (mean of CAR_i) of acquirers is analyzed by the method of payment used to finance the deals (non-earnout and earnout). We then compare the mean CAR_i of the portfolio comprising deals financed with earnout to a control portfolio of deals using non-earnout methods of payment. The appropriate control deals are identified using the PSM method, based on a logistic regression. This is validated using the Rosenbaum-bounds method. A standard univariate analysis on the short-run abnormal returns of deals that are financed with earnout and non-earnout payments (cash, stock, and mixed) is also performed.

Bias can arise if there is an endogenous relationship between the choice to use an earnout contract and other covariates used in our empirical analysis. To address such concerns, we identify a group of acquisitions which share similar characteristics to our sampled acquisitions using an earnout contract from the non-earnout group. Matching directly on individual covariates is likely to be infeasible if the number of

covariates is large. Consequently, we use Propensity Score Matching (PSM), which allows us to aggregate all covariates to derive a single score using a likelihood function. In the current setting, PSM permits us to assess whether earnout (treated) deals influence acquirers' short-run abnormal returns differently than control deals obtained through the PSM from the non-earnout (untreated) group of transactions, after ensuring the absence of any selection-concerns/bias. We select control acquisitions from the non-earnout group, and assess whether the short-run and long-run abnormal returns arising from these deals differ from deals where earnout contracts are used.

The effect of earnout financing is assessed by investigating what the announcement period and long-run returns of acquirers that used earnout contracts would have been if they had not used earnout. The conditional probability of earnout contract use, $p(x)$, is estimated in a logistic regression based on several ex-ante institution- and transaction-specific characteristics 'x' as follows:

$$\begin{aligned} p(x) &= pr(EA = 1 \mid x) \\ 0 &\le pr(EA = 1 \mid x) \le 1 \end{aligned} \tag{3}$$

Where *EA* the event dummy is assigned a value of 1 where earnout contracts are used, and 0 otherwise (non-earnout). The conditional probability is computed from a discrete choice model such as logit (Rosenbaum and Rubin, 1983; Rosenbaum and Rubin, 1985; Heckman, Ichimura, and Todd, 1997).

We choose variables ('x') that are likely to affect the decision of merging institutions to use earnout contracts (Cain, Denis and Denis, 2011). These include the: age of the acquirer; size of the acquirer; target size (or transaction value of the deal); listing status of the target; target domicile; mid-industry segments of the merging institutions; and acquirer capital-to-assets ratio. The propensity score estimator is validated with the Rosenbaum-bounds (RB) method.[5] Using the RB method allows us to examine the sensitivity of our results derived from matching on the effect of an omitted/unobserved covariate from our propensity score estimator (Rosenbaum, 2002). The RB method relies on the sensitivity parameter Γ, which, in the context of our analysis can be represented as a measure of the relative odds of earnout (treated) and non-earnout (control) as in Equation 4:

$$\frac{1}{\Gamma} \leq \frac{\frac{P_i(EA=1|X)}{1-P_i(EA=1|X)}}{\frac{P_J(EA=1|X)}{1-P_J(EA=1|X)}} \leq \Gamma \qquad (4)$$

P_i (P_j) refers to the treated probability of the treated (control) unit. Overall, the RB method measures how influential a missing covariate needs to be in order to invalidate the treatment effect in the observational study.[6]

Measurement of post-acquisition period abnormal returns

The post-acquisition period excess returns of acquirers are analyzed based on the buy-and-hold-abnormal-returns (BHAR) approach. This approach represents the most commonly used method to determine long-run abnormal returns in event time (Barber and Lyon, 1997). BHAR are derived as the difference between the buy-and-hold-return of an investor in the acquiring 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 5). To ensure that the estimation of the BHAR is robust, the benchmark portfolio is also identified based on PSM (augmented with RB) (shown in Equation 6):

$$BHAR_{i,t} = \prod_{t=s}^{s+T}(1+R_{i,t}) - \prod_{t=s}^{s+T}(1+R_{m,t}) \qquad (5)$$

$$BHAR_{i,t} = \prod_{t=s}^{s+T}(1+R_{i,t}) - \prod_{t=s}^{s+T}(1+R_{control\_firm,t}) \qquad (6)$$

Equations (5) and (6) calculate the BHAR for a period of 12, 24, and 36 months following the month of the acquisition announcement.

Multiple regression cross-sectional analysis

We further examine the impact of earnout contracts on returns using multiple regression analysis, where the effects of other factors shaping the short- and long-run acquirers' returns are analyzed simultaneously. These factors include the: acquiring institution's age; acquiring institution's size; transaction value of the deal; relative size of the transaction; acquiring institution's growth opportunities; target institution's listing status; mid-industry segments of the merging institutions; target institution's domicile; size of the earnout contract

as a proportion of the total deal value (relative earnout value); length of the earnout contract; and common equity as percentage of total assets. A variable that represents a sub-group of deals using earnout contracts in which the target institution's management team is retained during the integration period; a dummy variable that denotes control deals from the non-earnout group (as identified via PSM and RB); and a dummy variable representing the merger wave or the timing of the acquisition announcement are also included. Appendix A provides a full definition of the variables used and their respective sources. The estimable models are:

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

$$BHAR_i = \alpha + \sum_{i=1}^{N} X_i + \varepsilon_i \quad (8)$$

Where: CAR_i denotes short-run cumulative abnormal return of acquirers, as estimated in Equations 1 and 2; 'α' measures the short-run excess returns to acquirers' shareholders after controlling for the effects of all the other covariates, 'X'. BHAR denotes buy-and-hold-abnormal-returns of acquirers as estimated in Equation 5. 'α' measures the long-run excess returns to acquirers' shareholders after controlling for the effects of all the other covariates that have been used in previous literature, denoted 'X', in addition to the ones that are specific to this study.

4. Data and Results

Data

The sample comprises acquisitions announced by US acquirers between 1st of January 1986 and 31st December 2009, which are recorded by the Security Data Corporation (SDC) database. The sample period ends at 31st of December of 2009. The SDC database records 230,067 acquisitions involving US acquirers of any listing status over the sample period. For a deal to remain in the sample, the acquirer must be a listed US financial institution with a market value of at least $1 million (four weeks prior to 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 minimum deal value is set at $1 million. We consider completed deals only. To ensure that the acquirer enjoys control over the target institution's assets, we consider only acquisitions in which at least 50 percent

of a target institution's equity is acquired. Cases where more than one deal is announced by the same acquirer within a 5-day window (window analyzed) are excluded in order to avoid the confounding effects of multiple acquisitions. For an acquisition to be included in the sample, the daily stock return index, inclusive of dividends, and the market value of the acquirer should be available from Datastream. Once all the aforementioned criteria have been satisfied, 2,973 acquisitions remain.[7] Data relating to whether the target's management team is retained post-acquisition is collected from Factiva and SEC filings. The length of the earnout contract is collected form LexisNexis and InvestEgate.

The annual distribution of acquisitions of financial institutions in our sample covers three major merger waves since the mid-1980s (Table 1). The first merger wave was in the late-1980s, while the second and largest wave was observed in the late-1990s. The most recent merger wave commenced in 2003 and stopped abruptly with the onset of the financial crisis.[8]

(Insert Table 1 about here)

Table 1 records the frequency of earnout contract use. Similar to other payment methods, the use of earnout contracts is correlated with overall acquisition activity. Clearly, stock offers represent the preferred medium of acquisition financing, while cash offers are relatively scarce by comparison. Almost 3% of transactions use earnout contracts, while the remainder (≈97%) are financed with non-earnout methods of payment. The rate of earnout contract use in our study is slightly below the 3.9% reported by Cain, Denis and Denis (2011), the 4.1% reported by Datar, Frankel and Wolfson (2001) and the 5.6% reported by Kohers and Ang (2000) in previous studies of US non-financial firms. Finally, Table 1 shows that the use of earnout contracts is more prevalent in acquisitions involving targets (such as asset management companies) where the retention of management teams with specialized skills is of importance in the post-acquisition period (Bengtsson and Delbecque, 2011).

Table 2 provides a description of type 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). This is confirmed in Table 3 (Panel A) where acquisitions involving financial institutions are more common where merging institutions share the same mid-industry segment (SMIS). Panel C (Table 2) further depicts the mid-industry relatedness of merging institutions involved in acquisitions of financial institutions that use earnout

contracts. In our sample, deals involving insurance companies[1], banks and asset management firms more often use earnout contracts. Deals of domestic target institutions are more common than those of foreign targets. Table 3 (Panel A) also reveals that the majority of acquisition transactions in our sample involve unlisted targets.

(Insert Tables 2 and 3 about here)

Average transaction value varies significantly between: (a) non-earnout and earnout financed acquisitions, (b) acquisitions involving listed and unlisted target institutions, (c) domestic and foreign acquisitions, and (d) SMIS and different mid-industry segments (DMIS deals). On average, cash financed deals are significantly smaller compared to those financed with stock or mixed or where earnout contracts are used. Within stock financed deals, acquisitions of listed target institutions represent the higher average transaction values. The average transaction value for DMIS deals is much higher than SMIS counterparts, irrespective of the 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.

Acquirers in deals using earnout contracts are larger than counterpart deals where earnout contracts are not used. Panel B shows that acquirers of listed target institutions are much larger than those acquiring unlisted targets. Finally, the average deal value for unlisted target deals using earnout contracts is much higher than that of listed counterparts.

Table 3, Panel B also highlights that the value of the earnout contract (earnout size) is much larger in acquisitions involving financial institutions in DMIS compared to same mid-industry segment (SMIS) counterparts, further indicating the risk exposure of the DMIS acquirer to ex-ante target valuation risk and possibly integration risk ex-post. The average length of the earnout contract in acquisition transactions of financial institutions is approximately three years, which is similar to that reported by previous studies analyzing non-financial firms.

[1] Staikouras (2009) finds significant abnormal returns surrounding the announcement of mergers between banks and insurers. By bidder type, banks earn significant positive returns, while insurance counterparts experience losses.

Propensity Score Matching estimates on announcement period abnormal returns

To ensure that the comparative analysis between acquirers' abnormal returns from earnout and non-earnout financed acquisitions is likely to be free of sample-selection bias, we employ the PSM method to identify similar (in terms of covariates and/or level of a deal's valuation riskiness) deals to those that have been financed with earnout, yet have been financed with a non-earnout.

We estimate the propensity scores for 87 earnout and 2,886 non-earnout financed acquisitions. The results are reported in Table 4, Panel A. Our findings demonstrate that earnout financing occurs more frequently in acquisitions involving privately held targets and in deals involving better capitalised acquiring financial institutions. The results reported in Panel A also show that earnout contracts are used most frequently in deals involving asset management companies, and less frequently in deals involving banks and foreign targets.[9]

(Insert Table 4 about here)

We select acquisitions 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 acquisitions based on the 2:1, 3:1, 5:1, and 10:1 MRs for the same APDs. Results based on our various matching exercises are reported in Table 4, panels C to E.[10]

Panel B reports the results of the RB sensitivity analysis that is based on the 1:1 MR and 1% APD (which offers the most precise matching exercise).

In Panel B, $\Gamma = 1$ indicates that the odds of receiving the treatment are equal between two matched units (the case of randomised experiment). However, if the earnout group yields higher CAR due to an unobserved covariate that allows the treated observations to behave differently than the control ones ($CAR_{earnout} \neq CAR_{non\text{-}earnout}$), which may also exert a significant impact on the choice of earnout, then only the conclusions derived from an accurate matching exercise (insensitive to the impact of a missing covariate) will allow an unbiased estimation of CAR difference, or treatment effect. Our results suggest that doubts over the strength of the treatment effect (the strength of the impact of earnout financing on acquirer returns), or the statistical significant difference in estimated CAR means (2.52%), would emerge if an unobserved covariate would cause an increase in the odds of assignment of earnout by about 1.35 or 35%. Specifically, an unobserved

covariate needs to influence the odds of receiving the treatment (earnout) by 35% in order to invalidate the treatment effect (at 5% level).[11] Therefore, our matching exercise and also our propensity score estimator (logit model) offer considerably consistent estimates of the effect of the treatment resulting from matching (provided the low sensitivity of our derived conclusions to the presence of a missing/unobserved covariate).

As highlighted previously PSM identifies control deals conditioned on the propensity score $p(x)$. It is therefore important to ensure whether the matching procedure is able to balance the distribution of all the relevant covariates across both the earnout (treated) and non-earnout (control) groups. We conduct the two-sample *t*-test for comparing the distributions of the covariates' means (Rosenbaum and Rubin, 1985). The results (reported in Table 4, Panel C) suggest that the distributions of covariates between earnout and non-earnout groups are not statistically different.[12]

Our evidence suggests that the earnout group (treated) yields higher acquirer short-run abnormal returns compared to the control group based on the PSM method, but such differences are sensitive to the MRs and the APDs (Panels D and E). More specifically, the 1:1 MR exercise 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, significant at 5% and 10% level).[13] These results confirm that earnout financed deals significantly outperform the control (non-earnout) ones.[14] Overall, these findings find higher acquirer abnormal returns when earnout contracts are used in acquisitions.

Univariate analysis of announcement period abnormal returns

The results from the standard univariate analysis of acquirer short-run gains are reported in Appendix B. These are organized according to the: method of payment; listing status of the target institution (unlisted (which involve private and subsidiary) and listed); domicile of merging institutions; and mid-industry segment of the merging institutions.

Acquisitions involving financial institutions yield significantly higher announcement period abnormal returns to the acquiring institution's shareholders in the presence of earnout financing, relative to financing on single up-front payments (diff = 2.56%). We also obtain a highly significant differential (=2.94%) in acquirer abnormal returns between stock financed and portfolios of deals where earnout contracts are used. Deals financed with earnout also outperform their counterparts using cash offers by a differential of 1.88%.

We next compare the short-run acquirer abnormal returns between earnout and non-earnout (as a group and by different methods of payment) deals that involve unlisted (private and subsidiary, together and individually) and listed targets and find that earnout acquisitions of unlisted target institutions outperform their counterparts using other forms of payment. The portfolio of acquisitions financed with earnout yields significantly higher returns compared to deals financed with cash or stock. These results hold for domestic deals (Panel B), as well as for same-mid-industry segments deals (Panel D). For example, Panel C shows that earnout is not used in foreign acquisitions. On average, foreign deals involving listed target institutions that are financed with single up-front payments destroy value for US acquirers.

Overall, the standard univariate analysis shows that the use of earnout contracts in acquisitions involving financial institutions generates significant gains to acquirers' shareholders compared to gains when cash, stock, and mixed single up-front payments are used. The gains accrued to the shareholders of acquiring institutions 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.

Multiple regression analysis of announcement period abnormal returns

Table 5 reports the findings of our multiple regression analysis, controlling for the impact of several factors that could affect acquirers' abnormal returns at the 5-day announcement period. To avoid possible multi-collinearity between different sets of covariates, Equation 7 is estimated in a nested (reduced) form with various combinations of covariates. The results obtained corroborate the significant impact of the use of earnout in the determination of acquirers' returns in the short-run. Specifically, the EA coefficient is positive and statistically significant different across Models 1 to 3 and 7 to 9. This pattern again supports the finding of higher short-run returns to acquirers' shareholders when earnout contracts are used.

(Insert Table 5 about here)

We further examine whether earnout financed deals announced during the merger wave of 1998-2000 had a significant impact on acquirers' returns compared to counterparts announced outside this merger wave. Results based on Models 7 and 8 (that include EA and MWD, merger wave dummy) confirm the insignificant contribution of earnout contract usage on acquirers' returns (Model 8). This result is consistent with the view that the earnout method of payment is less likely to be used during mergers waves or periods

of optimism where merger valuation risk arising from information asymmetry is downplayed. Moreover, we test whether the distribution of non-earnout (control) deals (identified via the PSM and RB methods and representing the counterfactual or comparable group) generate acquirer losses. We find these results accord with our unreported-univariate findings. Models 9 to 11 confirm the results from the PSM method discussed earlier in the paper. Specifically, the EA coefficient is positive and significant (Model 9), while the CODM (control deals dummy) coefficient is negative. This supports the view that the group of deals where earnout contracts are used tends to significantly outperform the control group.[15]

We now turn our focus to the wealth effects of the relative size of earnout payment. Therefore, we divide our earnout sample based on the proportion of the payment that is contingent on future performance in order to examine whether merger valuation risk considerations dictate the earnout method of payment. 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, as Cain, Denis and Denis (2011) suggest, the REAV increases with the uncertainty of target institution's value, or disagreement between the merging institutions regarding the precise value of the deal. 'REAV' is positive and significant (Model 4) indicating that the larger the deferred payment, the higher the short-run acquirer abnormal returns. This may stem from the reduction of merger valuation risk and the potential synergy gains as a result of the strong target incentives to meet certain and pre-agreed performance related goals in the integration period. The size of the 'REAV' coefficient (0.058) appears significantly larger than the coefficient of the earnout dummy variable (the EA coefficient ranges from 0.019 to 0.024). Further analysis suggests that the size and strength of the 'REAV' coefficient is driven by the 'high REAV' deals (Model 5). These results are not affected by the stage of the merger wave during which the acquisition is announced (Models 7 and 8).

Other variables appear important in explaining acquirers' short-run abnormal returns. Among others, the size of the acquiring institution, measured by the MV of the acquirer 20 days prior to the announcement of the deal, is negative and significant in Models 1 to 8 and 12 (albeit the significance level varies across model specifications). Prior evidence suggests that larger acquirers are more likely to have exhausted growth opportunities and have more overconfident management teams (which are more incentivised to maximise their own private benefits by creating large organisations) leading to no synergy gains upon acquisition of

rivals (Moeller, Schlingemann and Stulz, 2004). The (insignificantly) 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 in large value deals (Brewer and Jagtiani, 2013). PRV, SBS, and UNL appear positive and significant across all models, implying that deals involving private and subsidiary (or unlisted) targets yield higher acquirer abnormal returns than deals involving listed targets. CPTL appears as positive and statistically significant across Models 3 to 11. This suggests that the market views stronger capitalised financial institutions to be in a better position to reap the benefits arising from acquisition.[16]

Evidence presented in Table 5, Model 11, suggests that the observed retention of target institution's management team during the post-acquisition period has a significantly positive impact on the returns of acquirers during the announcement period. The coefficient TMGT_RTN (target management retention) appears positive and highly statistically significant in Model 11. When 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 the market reacts positively to earnout financed deals that are expected to retain the target's management team in the post-acquisition period.

Overall, our regression analysis demonstrates that the use of earnout financing in acquisitions involving financial institutions yields significant higher short-run returns to acquiring institutions, compared to similar deals using non-earnout payment methods. Furthermore, earnout financed acquisitions are associated with higher (lower) announcement period abnormal returns when the target's management team is (is not) expected to be retained in the post-acquisition period.

Analysis of long-run abnormal returns

Our second hypothesis, predicts that acquirers using earnout contracts experience higher long-run abnormal returns than their counterparts using non-earnout methods of payment. In order to address this, we replicate the previous analysis based on PSM (and univariate) and multivariate analyses with acquirers' long-run abnormal returns (BHAR) and report the results in Tables 6 and 7. Table 6 (Panel A) shows the univariate analysis results. Consistent with our previous findings, the pattern of these results shows that deals that make use of earnout contracts enjoy higher long-run abnormal returns than their counterparts using non-earnout payment methods. This is evident during the analysis of BHAR over the period of 24 months following the

acquisition announcement. Specifically, the BHAR differentials representing the 2-year period examined are statistically significant, especially in earnout versus stock financed deals (15.05%). This result is consistent with findings from the earlier non-financial firm M&A literature. Furthermore, Panel B shows that when the benchmark portfolio using the PSM method (accompanied with RB), the portfolio of acquisitions where earnout contracts are used outperforms counterpart portfolios where earnout contracts are not used. Specifically, results reported in Panel B confirm the higher abnormal returns of the earnout portfolio in the post-acquisition period (especially in the two years following the acquisition announcement). These findings suggest that in financial firm M&A deals where earnout contracts are used the returns to acquirers outperform counterparts using non-contingent methods of payment. The long-term returns associated with the use of earnout contracts in M&A appear to be rooted in lower merger valuation risk and superior performance of the target during the integration period as a result of the retention of management.

(Insert Table 6 about here)

Table 7 presents the results of our regression analysis of the determinants of acquirers' long-run abnormal returns (based on Equation 5). To avoid possible multi-collinearity between different sets of covariates, Equation 8 is estimated in nested (reduced) form with various combinations of covariates. The results obtained from the cross-sectional analysis show the positive impact of the use of earnout contracts on the post-acquisition returns of acquirers. The EA coefficient is positive and significant in Model 5, consistent with the univariate analysis. Over the same period, our findings indicate that high-REAV earnout financed deals yield positive and significant abnormal returns (Model 8). This is consistent with the view that the earnout contributes in delivering superior long-run returns in risky-deals.

(Insert Table 7 about here)

One of the most important findings discussed in this section is related to the impact of the target institution's retained management team in the post-acquisition period on acquirers' long-run abnormal returns. Models 2, 6 and 10 show that in deals where the target institution's management team are retained acquirers' long-run returns are significantly higher. 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's management retention during the post-acquisition period on the long-run abnormal returns

of acquirers using earnout contracts. These results reflect the likely impact of earnout financing in reducing potential moral hazard issues in the post-acquisition period.

5. Conclusion

We present new evidence on the short- and long-run abnormal returns of acquirers for a large sample of acquisitions involving US financial institutions financed with earnout (contingent) versus non-earnout (non-contingent) payments. Using propensity score matching (PSM) to deal with selection bias concerns we find that acquirers enjoy higher short-run abnormal returns where earnout contract are used compared to conventional methods of payment (such as full-in-cash, or full-in-stock, or a combination of cash and stock payments). These returns are larger in acquisitions of unlisted targets, domestic targets, and where both merging financial institutions are based in the same mid-industry segment.

Our results also show that the size of the earnout contract (size of the deferred payment as a fraction of the total transaction value) has a positive and significant impact on the short-run returns of acquirers. In addition, acquirers enjoy higher short-run abnormal returns when the management team of the target is retained after the acquisition.

The results of the long-run analysis suggest that acquirers employing earnout financing enjoy significantly higher returns in the post-acquisition period. While these returns are sensitive to several firm- and transaction-specific characteristics, the retention of the target's management plays an important role in enhancing the returns of acquirers during the three-year post-acquisition period, which is approximately the average length of earnout contracts in deals involving financial firms. Overall, the higher acquirer abnormal returns associated with earnout contracts in acquisitions involving financial institutions appear to be associated with the size of the deferred payment of the earnout contract and the retention of target management.

References

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.

Beccalli, E., and P. Frantz, 2013. The Determinants of Mergers and Acquisitions in Banking, *Journal of Financial Services Research* 43, 265-291.

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.

Casu, B., A. Clare, A. Sarkisyan, and S. Thomas, 2013. Securitization and bank performance, *Journal of Money, Credit and* Banking, 45, 1617-1658.

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.

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.

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. Pre-emptive bidding and the role of the medium of exchange in acquisitions, *Journal of Finance* 44, 41-57.

Flannery, M. J., Kwan, S. H. and Nimalendran, M. 2013. The 2007–2009 financial crisis and bank opaqueness, *Journal of Financial Intermediation*, 22, 55-84.

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.

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.

Hosmer, W.D., and S. Lemeshow, 2000. *Applied logistic regression*, 2nd edition. John Wiley & Sons, New York.

Jones, J.S., Lee, W.Y., Yeager, T.H. 2012. Opaque banks, price discovery, and financial instability, *Journal of Financial Intermediation*, 21, 383-408.

Karampatsas, N., Petmezas, D. and Travlos, N. G. 2014. Credit ratings and the choice of payment method in mergers and acquisitions. *Journal of Corporate Finance*, 25, 474-493.

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

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.

Moeller, S.B., Schlingemann, F.P. and R.M. Stulz, 2004. Firm size and the gains from acquisitions, *Journal of Financial Economics* 73, 201-228.

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

Rosenbaum, P.R. 2009. *Observational Studies*. 2nd edition. New York: Springer.

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.

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

Staikouras, S. 2009. An event study analysis of international ventures between banks and insurance firms, Journal of International Financial Markets, Institutions and Money, 19, 675-691.

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.

Table 1
Acquisition Activity by Location of Target and Method of Payment

The table presents the activity of acquisitions 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
Acquisitions Activity by Mid-Industry Segment

The table presents the mid-industry segments (where the macro-industry for all acquisitions is 'Financial') for both acquirers (vertically) and targets (horizontally). The table is divided into three panels. Panel A presents the full sample. Panel B presents only acquisitions financed with non-earnout payment methods. Panel C presents only acquisitions financed with earnout payment methods. The diagonal in each panel presents the number of acquisition in the same mid-industry segment (SMIS). Other than the diagonal represents acquisitions 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 acquisitions									
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) acquisitions									
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) acquisitions									
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

This table reports summary statistics. Panel A presents the acquisition 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 acquisitions announced by US acquiring 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 acquisitions in this group with respect to all acquisitions. 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 Abnormal Returns of Acquirers (offering Earnout vs. NEA (Control) Acquisitions based on the PSM Method)

This table reports announcement period abnormal returns.

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). 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 acquiring institution's announcement period abnormal 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 acquirers. 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 acquisitions 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 Control (NEA) Samples Statistics					
	EA (Treated Group)	NEA (Control Group) APD = 1% MR = 1:1	NEA (Control Group) APD = 1% MR = 3:1	NEA (Control Group) APD = 1% MR = 5:1	NEA (Control 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 Control (NEA) Samples Announcement period Abnormal Normal					
Earnout (**Treated**) Group Mean	2.54***	-	-	-	-
Earnout (**Treated**) Group *t*-stat	(3.38)	-	-	-	-
Earnout (**Treated**) Group *N*	87	-	-	-	-
Non-Earnout (**Control**) Group Mean	-	0.02	1.02***	0.82***	0.78***
Non-Earnout (**Control**) Group *t*-stat	-	(0.03)	(2.81)	(2.71)	(3.20)
Non-Earnout (**Control**) Group *N*	-	83	240	360	550
Panel E: Differentials: Treated (EA) versus Control (NEA) Acquisitions					
Mean Difference (**Treated** vs. **Control**)	-	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 Abnormal Returns of Acquirers: A Cross Sectional Analysis

This table reports announcement period (5-days) excess returns of acquirers are regressed against a set of explanatory variables. Equation (7) 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 acquirers after accounting for the effects of all explanatory variables. 'X' represents the vector of explanatory variables (see Section 3.4 for more details with respect the impact of each variable on acquirers' abnormal 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			
CODM									-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 Abnormal Returns (Buy-and-Hold-Abnormal-Returns - BHARs) of Acquirers (Earnout vs. Control Non-Earnout)

This table reports acquirers' post-acquisition 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 acquisition 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 5 (Panel A) or derived via the PSM method in Equation 6 (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 5

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

Panel B: BHARs (Earnout only) - based on Equation 6

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

Table 7

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

This table reports regression results of long-run abnormal returns to acquirers on explanatory variables. Acquirers' post-acquisition buy-and-hold abnormal returns for 12 months, 24 months and 36 months following the month of the acquisition announcement are regressed on a set of explanatory variables using Equation 8 (see Section 3 for more details with respect the impact of each variable on acquirers' abnormal 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 (8) is estimated using ordinary least squares.

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

The intercept (α) measures the excess returns to acquirers after accounting for the effects of all explanatory variables. 'X' represents the vector of explanatory variables (see Section 3.4 for more details with respect the impact of each variable on acquirers' 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-acquisition window				2 years post-acquisition window				3 years post-acquisition 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
CODM			-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

This table defines the variables used in the empirical analysis, and indicates the data source used. SDC denotes Thomson-Reuters SDC M&A database. With a 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 acquirer is first recorded on Datastream and acquisition's announcement day.	Datastream
Market Value (**MV**)	Acquirer's market value of equity at four weeks prior to acquisition's announcement, in millions dollars.	Datastream
Deal Value (**DV**)	Acquisition'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 acquirer equity at four weeks, and book value of equity from the most recent accounting statement, prior to acquisition's announcement day.	Datastream
EA length (**EALGTH**)	The log of the earnout period is following the acquisition'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 acquirer and non-US target, and = 0 when both acquirer and target are US institutions (= **DOM**).	SDC
Diversifying (**DVRSFN**)	Dummy = 1 when acquirer 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
Control Acquisitions Dummy (**CODM**)	Dummy = 1 if the acquisition form the non-earnout group is matched with an acquisition from the earnout group, based on the PSM method, and = 0 otherwise.	Defined *via* Table 6 Bellow
Merger Wave Dummy (**MWD**)	Equals 1 if the acquisition 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 acquisition announcement, and = 0 otherwise.	Factiva and SEC Fillings

Appendix B

Announcement Period Abnormal Returns of US Acquirers (Offering Earnout vs. Non-Earnout Payments)

This table reports announcement period, 5-day (*t*-2, *t*+2), abnormal returns (in percent) of all sample acquirers (**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 acquiring 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 Deals											
	Mean	0.06	2.54***	-0.02	0.66***	-0.40***	0.08	2.56***	1.88***	2.94***	2.46***
All Deals	*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 Deals 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 Deals	*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 Deals 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 Deals	*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 Deals 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 Deals	*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 Deals 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 Deals	*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.

Endnotes

[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] In recent years, earnout contracts have been used in acquisitions of private targets. Fewer shareholders make the use of earnout contracts more straightforward. Earnout contracts have also been used more often in intangible rich industries (hi-tech and other service-based industries) where information asymmetry between merging companies is high and the value of the target is often dependent on the knowledge, skill, creativity, efforts, and flair of key personnel.

[3] DeYoung et al (2009) provide a comprehensive review of the accounting and market based evidence in relation to M&A involving financial institutions. More recent evidence is summarised in Beccalli and Frantz (2013).

[4] 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.

[5] Although PSM has become a popular method in estimating casual effects in policy impact research, it has been only recently used in the finance literature (Saunders and Steffen, 2011; Casu et al, 2013; Karampatsas et al, 2014).

[6] Rosenbaum (2009) provides a detailed discussion of PSM and RB methods.

[7] Our final sample comprises 13 'multiple' acquirers using earnout. These acquirers announce 30 deals in total. There are also 57 'unique' acquirers that announce only one deal during the sample period. On average, unique acquirers are larger, younger, and have lower MTBV-ratios than multiple acquiring counterparts. Furthermore, unique acquirers 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) acquirers in our sample involved in acquisitions using earnout are also involved in 181 acquisitions 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 acquisitions.

[8] The (observed) rapid increase of merger activity 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.

[9] 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).

[10] 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.

[11] The statistical significant difference in CAR means between the earnout (treated) and non-earnout (control or untreated) groups becomes negligible at 10% level when a confounding covariate is likely to influence the odds of receiving the treatment by 53%.

[12] 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 (acquisitions) from the non-earnout (untreated) group enter the matching space. When compared to the earnout group (a very concentrated group of acquisitions), 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.

[13] The lower performance of the control portfolio, compared to earnout financed portfolio, is likely to be driven by the inclusion of several acquisitions in the control portfolio that financed with all-in-stock. This reflects well-documented evidence that all-stock offers, which are included in our non-earnout group, generate negative short-run returns to acquirers' shareholders.

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

[15] As in the case of univariate analysis, the negative performance of the control-acquisitions group (CODM) compared to the earnout group (EA), is likely to be driven from the inclusion of several deals in the control portfolio that financed with all-in-stock.

[16] 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, they show that shareholder value is positively related with cost-efficiency changes.