Reverse Takeover, Corporate Governance, and Survivability

Khishigjargal Jambal

Korea Advanced Institute of Science and Technology (KAIST)
Seoul 130-722, Korea

Sang Whi Lee

Department of International Business and Trade, Kyung Hee University
Seoul 130-701, Korea

Kwangwoo Park*

Korea Advanced Institute of Science and Technology (KAIST)
Seoul 130-722, Korea

* Corresponding Author: Tel: +822-958-3540 ; Fax: (+) 822-958-3604 Email: kpark3@kaist.edu

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Abstract

A reverse takeover is an alternative method of going public which is less costly than an initial public offering (IPO). Using a sample of reverse takeovers that took place during the 1992–2002 period in the US, this paper investigates the survivability of reverse takeovers by taking their combined governance characteristics into account. We find that surviving firms tend to have greater after-merger cash liquidity, relatively larger acquirers, and longer tenure of boards with board stability. They also tend to have greater ownership by venture capitalists and smaller boards than the failed firms. We conclude that the survivability of reverse takeovers depends not only on the financial conditions of the merging firms, but also on their value-enhancing governance characteristics.

Keywords: Reverse Takeover; Going Public; Corporate Governance

JEL Classification: G21, G31, G34

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Ⅰ. Introduction

A reverse takeover is an alternative way of going public. Unlike IPOs, reverse takeovers are less costly in terms of processing time and regulatory requirements, and at the same time, there is almost no risk attached to withdrawing from the process. The reverse merger is a mechanism in which a private company acquires a public company to obtain its public listing and control. The public firm acquired by the private company is usually called the "shell," because these firms usually have no significant assets or operations but do have legitimate business labels.[1] Gleason, Rosenthal, and Wiggins (2005) confirm that there is a high mortality rate for firms engaging in reverse takeovers. They suggest that the performance of reverse takeover is driven by the pre-merger financial conditions of the public shell. Gleason et al. (2005) also argue that the most common reason for a public shell to agree to the reverse takeover is the solid financial position of the private firm.

In reverse takeovers, the control of the new entity is usually in the hands of the former private firm's management. Private firms are mostly owned by insiders. Through reverse takeovers, those private firms become public-owned, but the degree to which the management ownership is reduced is debatable according to their after-merger performance. If there is a low level of insider ownership, when management ownership increases firm performance will increase, but, if there are high levels of insider ownership, when management ownership increases firm performance will decrease (Morck, Shliefer and Vishny, 1988; McConnell and Servaes, 1990). Therefore, reverse takeover success can be explained not only by financials, but also by the characteristics of firm management and governance. Dong, Hirshleifer, Richardson, and Teoh (2006) claim that takeovers with overvalued acquirers and undervalued targets should perform at their best. From the point of view of a takeover transaction, the new public firms should be performing at their best in reverse takeovers. Information asymmetry

[1] In the reverse takeover process, the private firm management finds a public firm, which is usually a shell company, then negotiates the merger terms (bidding) and files the relevant paperwork with the SEC within 2 weeks. The private firm then obtains public listing through the merger with the shell, and usually takes over the control of the newly formed public entity. The managers of the shell company are usually retained on the board of directors or as "consultants" to the new entity.

in a private firm is likely to be higher and so the likelihood of the private acquirer being overvalued is greater. However, the public shell might be undervalued because the shareholders are ready to accept relatively lower bids so that they can recover at least some of their investments.

There arises the question that if the private firm was performing at its best prior to the merger, then why is the merged entity failing? Is it that the new company has inherited problems other than financial distress from the public shell, or are there problems with the private firm? Since control is transferred to the private firm management, the latter may have some problems such as their being still too much management ownership (even if it is diluted), large boards, or management's lack of experience in public firms, etc. Therefore, we want to focus on the governance effects on reverse takeover survival.

This paper investigates whether the terms of governance characteristics affect the reverse takeovers' survival. Although a few papers have examined the characteristics and wealth effects of reverse takeovers, there are no studies on the relationship between the governance of the new public firm through reverse takeover and its performance after going public. This is the first paper, to our knowledge, that examines the influence of governance characteristics on reverse takeover performance. We find that surviving firms tend to have greater after-merger cash liquidity, relatively larger acquirers, and longer tenure of boards with board stability. They also tend to have greater ownership by venture capitalists and smaller boards than the failed firms. Univariate tests suggest that those firms that survived for at least three years after merger had greater profitability and cash liquidity, larger expansion after the merger. This means that the private acquirers were relatively larger than the shells—a greater number of boards, longer tenure of boards, and consequently, a longer age of the firm, a more stable board, more venture owners, and highly ranked underwriters involved in the deals than did the failed firms. We conclude that the survivability of reverse takeovers depends not only on the financial conditions of the merging firms, but also on their value-enhancing governance characteristics.

The remainder of the paper is structured as follows. Section II provides a more detailed overview of related literature and Section III develops hypotheses. Section IV discusses the empirical results and Section V concludes.

Ⅱ. Extant Literature Review

The reason for a private firm to go public is usually discussed in terms of the benefits of being a public firm such as having better access to public capital markets, increased valuation and liquidity for the firm's shares, etc. Zingales (1995) and Brau, Francis and Kohers (2003) examine the decision of a private firm owner to go public. The decision is based on the owner's choice of retaining ownership or adopting an exit strategy and is determined by cash flow rights and control rights. If the owner decides to maximize his wealth, he would sell cash flow rights and retain the control rights. If he chooses to withdraw from the business, he would sell both cash flow and control rights. The owner who wants to sell shares while retaining some control may prefer using IPO (Zingales, 1995; Brau, Francis and Kohers, 2003). In reverse takeovers, the private management usually takes over the control of the new firm. So, it can be concluded that the private management is not pursuing an exit strategy, but pursuing growth.

For the public shells, Gleason, Rosenthal, and Wiggins (2005) suggest that the most significant reason for the public shell management to be involved in a reverse takeover is the solid financial position of the private firm. Therefore, it can be concluded that the public shell management is trying to salvage the shareholders' investment even at the cost of losing control of the firm.

There are several studies on governance characteristics and firm performance after an IPO. Carter, Dark, and Singh (1998) argue that firms with more reputable underwriters are associated with less short-run underpricing. Brav and Gompers (1997) report that IPO issues, backed by venture capitalists, show a strong performance. Howton, Howton, and Olson (2001) find that the ownership of inside directors on an IPO firm's board is positively related to long-term performance. Crutchley, Garner, and Marshall (2002) argue that the stability of the board of directors is associated with better performance after an IPO. Frye (2004) examines how different governance structure can ameliorate

the agency problem associated with going public. Jain and Kini (1999) find that riskier firms and smaller firms are more likely to fail and firms with strong pre-IPO operating performance are more likely to survive after an IPO. Howton (2006) extensively examines the effects of governance characteristics on the state of the firm after an IPO. She finds that firms after an IPO are more likely to survive when they are venture-backed, the CEO is the original founder, and an outside blockholder is present. Also, firms are likely to survive when they have a stable board (consistent with Crutchley et al., 2002), tend to be older firms, and operate in more concentrated industries.

These studies all refer to the traditional way of going public, that is, IPO; however, in some respects, such as governance characteristics, these findings may also be valid for reverse takeovers, since IPOs and reverse takeovers differ mainly in terms of processing times and costs, not in terms of firm-specific characteristics. In other words, in both cases, an initially private firm goes public. Only the consequences of these differences may matter for the firm-specific characteristics. Some recent studies refer to the reverse takeover performance in association with operational characteristics, motivation, and wealth effects. Gleason, Jain, and Rosenthal (2005) study the relationship between firm performance and the characteristics of firms that go public through a reverse takeover or self-underwritten IPO in comparison with a traditional IPO. Gleason et al. (2005) argue that the public shells' acceptance of reverse takeovers is conditional on the financial strength of the private firm. Gleason et al. (2005) also find that the public shell shareholders receive significant wealth gains upon announcement of the reverse takeover, but they fail to generate long-term wealth for the shareholders of the post-event firm. Gleason et al. (2005), however, mainly focused on the firms' financial characteristics and mentioned briefly the institutional ownership effect.

Interestingly, reverse takeover includes not only the process of going public, but also the takeover. Therefore, we need to examine the effects of public listing through reverse takeover on the firm-specific characteristics, as well as examining the effects of the merger itself. Gleason et al. (2005) conclude that the public shells are usually poor performers and rely on the financial strength of the acquiring private firms. In this sense, the public shells are underperforming and undervalued, whereas private firms could be overvalued because of information asymmetry. According to Shliefer and

Vishny (2003), overvalued firms might be able to make acquisitions, survive, and grow, while undervalued firms or relatively less overvalued firms become targets. Dong et al. (2006) claim that high quality bidders improve bad targets more than bad bidders improve good targets. In reverse takeovers, the private firms are acquiring the public shells, which means high quality bidders are acquiring bad targets. For that reason, the new public firm should be performing at its best.

Another motivation for mergers is diversification. Berger and Ofek (1995) find that unrelated diversification between different industries reduces value. Therefore, if the public shell and private firm are from unrelated industries, there may be less possibility to create positive synergy. However, unlike normal takeovers, a reverse takeover is more likely a strategic than a synergistic merger. Therefore, we do not account for the synergistic effects of mergers in this study, but consider the impact of segment relatedness on survivability.

Ⅲ. Hypotheses Development

On the basis of those previous studies, we next develop two hypotheses and consider the time window of survival and failure to be within three years after a reverse takeover. We define survival as the new public firm's continuing existence as a public entity or as its acquisition and retention of control over another firm; while we define failure as the takeover of the new public firm, its bankruptcy, or delisting. In view of the studies by Zingales (1995), Brau, Francis and Kohers (2003), and Gleason et al. (2005), we assume that the private management is pursuing growth through a reverse takeover since they take over the control of the new firm. Therefore, acquisitions made by the new public firm after the reverse takeover is assumed to signal survival. However, if the new public firm is acquired by another firm after the reverse takeover, this is assumed to indicate failure.

Hypothesis I: *Reverse takeover survivals mostly depend on the financial conditions of the public shell and the private firm.*

The public shell companies are usually poor performers who agree to a reverse takeover transaction, relying on the private firms' financial strength or the new management. Gleason et al. (2005) divide the public shell into two groups, distressed and functional, and they find that the driving influence behind post-takeover success is the public firm's pre-event financial condition.

Based on the arguments by Gleason et al. (2005), we assume that financially distressed shells are more likely to lead to failure than survival. Financial distress will be measured by the interest coverage ratio of the public firm [2]. This ratio is obtained from the accounting data of the public shells. If this ratio is below one for two or more fiscal years immediately prior to the reverse takeover (we assume quarters for short-lived firms), the firm is said to be financially distressed. If the ratio is not below one, we assume the firm is functional or not financially distressed. If the shell is distressed, it is assumed that there is less probability of survival.

In addition to this ratio, we include a dummy variable for distressed firms. Since the interest coverage ratio can have values that are negative and between zero to one, we define "distressed" as when the ratio is below one. To consider the distress effect in dichotomies, we add a non-distressed dummy. The interest coverage ratio is used to test the effect of the distress magnitude. Gleason et al. (2005) further suggest that if the public shell is distressed and the name of the public shell is used, then the chance of success is still lower. However, if the public shell is functional and the new firm uses the public firm's name, then survival is more likely. Therefore, we assume the choice of name for the new firm matters, but we do not estimate the name effect on the firm's survival. We include the new company (defined as "newco") name dummy variable to test this effect.

Jain and Kini (1999) propose that firm size is positively related to the probability of survival. Gleason et al. (2005) also used firm size as one of the influencing variables. We consider both the public shell size and the private acquirer size. It is not easy to find information about private firm accounting data; therefore, we use the newco firm size after the merger as a proxy for both firms' combined size and the ratio of newco firm size to public shell size as the proxy for private firm size. If this ratio is larger, it may imply that the private acquirer was bigger than the public shell. Thus, we

[2] Interest coverage ratio is defined as (EBIT+Depreciation)/Interest expenses.

use the total assets of the public shell and the newly combined firm as proxies for firm sizes. Further, the size ratio is used as a proxy for the size of the private acquirer relative to that of the public shell.

Following Gleason et al. (2005), we include cash liquidity and profitability of the public shell. The ratio of cash to total asset is used as a proxy for cash liquidity. Since the public shell's distress is a threat to the newco success, we also consider the newco cash liquidity as a proxy for the strength of the private acquirer's and the public shell's combined cash potential. Return on assets (ROA) of the public shell is used as a proxy for the public shell's profitability measure.[3] In addition to this, we use the leverage ratio of the public shell as a proxy for equity deficits. Since the test is based on the merger date, relevant information is available only for the public shell at that time. So, we refer to the public shell data for these variables.

Hypothesis II: Reverse takeover survivals mostly depend on the governance characteristics of the newly combined public firm.

We include dummy variables for governance characteristics that may influence the success of the new firm according to the reasons cited in previous researches. We mainly consider the governance variables for the new public firm.

We expect the presence of the CEO-founder to be positively related to the survival of the firm. A CEO-founder is likely to have a large stake in the firm in terms of enthusiasm, stock, and salary. Therefore, if the CEO is the founder of either firm, the survival of the newco is more likely and the CEO-founder dummy is equal to one.

Another variable is the CEO-target dummy. If the former public shell's CEO is appointed to the same position in the new public firm, this dummy is equal to one. The reasoning is that the public shell's CEO may have more experience in managing a public firm than the private firm's CEO. If the

[3] We use both ROA and ROE initially. However, if the public shell is highly distressed or lacks cash or other assets, significant equity-deficits are observed and those cases lead to misinterpretation of ROEs (some firms have positive ROE while the ROA is negative, because of their equity deficits). Therefore, we consider only ROA as a measure for profitability.

public shell was functional and the CEO of the shell is appointed again for the newco, the survival of the newco is more likely.

The major governance unit is the Board of Directors. If there are an appropriate number of board members, it can positively affect the survival of the firm. However, if there are too many board members, it may lead to loosened control; therefore, we do not predict the relationship as positive. Since the number of board members differs due to firm size, we use the size of the board relative to firm size. We take the log of this ratio as a measure of board size to avoid large coefficients.

Members of the Board of Directors (BOD) can be classified as inside, outside, and gray directors. Inside directors are current or former employees of the firm. Outside directors are completely independent of the firm and its operations. Jensen and Meckling (1976) argue that outsiders can better monitor managers to ensure that decisions are aligned with the shareholders' interests. Baysinger and Butler (1985) report a positive relation between outsiders on the board and firm performance. However, Howton (2006) finds that having an outside board is not important in determining the ultimate survival of the firm after an IPO. In reverse takeovers, the public firm managers are usually retained as the board of directors. We thus believe it less probable that the new firm's BOD will have a large portion of outside directors. Although there is no theory that predicts a specific relation between the percentage of outsiders on the board and the firm survival after reverse takeover, we will endeavor to use our data to show the relations between the two. Gray directors are not directly employed by the firm, but have ties to the firm beyond their directorship. We assume gray directors to be inside directors; therefore we do not count them as a separate variable.

Longer tenure enables stable boards and these are more likely to drive subsequent improved performance (Crutchley, Garner, and Marshall, 2002; Howton, 2006). Therefore, we follow previous findings and assume that the greater tenure of the BOD (stable BOD) implies the existence of continued success in performance. Average tenure can also be the proxies for age of the firm and the stability of the firm (Howton, 2006). Here, the average of the new public firm's BOD's tenure is considered. Greater tenure implies potential for successful performance.

Outside blockholders (large shareholders) are the investors with a strong interest in the firm's success, because they have a large stake in the firm. Therefore they are good monitors of management. Jensen and Meckling (1976) claim that when the ownership is spread over many small shareholders, there will be less monitoring and the managers will have a tendency to use perquisites at the expense of the shareholders. So, outside blockholders can control potential agency costs. If there exists such a shareholder who owns at least 5% or more in total outstanding shares and is not involved in management, the outside blockholder dummy is equal to one. [4]

It is assumed that highly ranked underwriters advise firms that are expected to be successful after going public, because the underwriters' business reputation is partially linked to the success of the issues they managed. Carter and Manaster rank the reputation of underwriters for the period 1980–2004 by assigning them points on a prestige scale from 1.1 to 9.1 points, on the basis of their previous successes in primary underwriting deals. We use the Carter-Manaster Reputation Rankings for the underwriters involved in reverse takeover deals, and expect that higher rankings will be positive signs for the survival of the newco.

Venture capitalists invest in a significant part of a firm's total assets. Therefore, they usually control the firm to make sure that their investment is profitable. Jain and Kini (1999) and Brav and Gompers (1997) find that venture-backed firms usually have better performance after an IPO. Brav and Gompers (1997) emphasize that a better performance is probable if the venture capitalist's representatives remain on the board. We assume that if there is a venture-owner in the new public firm, the firm will perform well and survive. The venture dummy is equal to one if there is a venture owner in the newco.

Control Variables:

Since unrelated diversification reduces value (Berger and Ofek, 1995), we need to consider the segment relatedness. Using two-digit SIC codes, we assume that firms with the same code are related. Mergers in which the firms are both of the same segment (scale) or of complementary segments are

[4] Inside blockholders are not included in our analysis. If there are none, the firm is less likely to be well controlled to ensure it survives; therefore, the outside blockholder dummy is equal to zero.

classified as related. For unrelated segment mergers, further attention is given to vertical integration. If the different segments are vertical, performance will be positive and these cases are therefore considered related segment mergers.

Since the sample is from 1992 to 2002, the Internet boom of the mid- to late 1990s might have exerted some influences. Together with this boom, the IPO activities increased in this period and they were known as the hot IPO wave. Therefore, if either or both the public shell and private firm are engaged in technology businesses, the performance can be affected by this phenomenon. So, we include a dummy variable if either firm's business is related to Internet technology and control for the time-trend effect with this dummy.

All variables are described in Table 1. The expected relationships of the independent variables with the dependent variable (survivals) are indicated under expected signs.

IV. Empirical results

1. Data source and Sample Selection

Our sample of mergers occurring in the US is obtained from the Securities Data Corporation (SDC) Mergers and Acquisitions database for the years 1992 through 2002. The reason we choose this period is that these years saw a rapid increase in reverse takeovers compared with previous years and also the hot IPO wave (Gleason et al., 2005). Data for each case is investigated through SEC filings, Bloomberg, Hoover's online news databases, and other websites. Information is verified from their proxy statements, 8-Ks, and other SEC filings such as 10Qs, 10-Ks, and press releases. If both firms are already public, or the merger is an ordinary acquisition (i.e., a public firm acquires a private firm), those cases are excluded from the sample. All utilities and financial firms are excluded because of their highly regulated nature.

To determine if the merger is ordinary or reverse, the cases for mergers of one public and one private firm are considered, and the change of control and the public status of the newly combined firm are the mandatory conditions. If the change of control happened to the private firm, those cases are excluded. Some cases are simply firms going private, while others are cases of the private firm

management selling their company to a public firm. Therefore, those cases are excluded and the control transfer is investigated carefully. The motivation for the takeovers, the information on new officers and directors, the listing status, and the financial condition are checked from the SEC filings (10-K, 10-Q, and 8-K) and proxy statements.

We use two different approaches to obtain the initial sample pool. The first approach is that of selecting all US merger cases with public-target and private-acquirer. By setting several restrictions, such as excluding asset acquisitions and including all stock swap and tender mergers, this approach yielded 83 cases. Further filtering by the mandatory conditions yields 21 reverse takeover cases between 1992 and 2002, on the basis of the available data. The second approach considers the reverse takeover cases with private-target and public-acquirer. Using the SDC M&A database, reverse takeover criteria are set for the cases in which the acquirer transfers its control to the target. The initial sample pool for this type of reverse takeover in the US between 1992 and 2002 comprised 128 cases. Applying the mandatory conditions and the data availability as filters, this approach yielded 54 reverse takeover cases where the private firm became public.

In total, the final sample consists of 75 reverse takeover cases for the period 1992–2002 in the US. We find that 44 of the 75 cases survived at least three years and 31 cases of this sample failed within three years after the reverse takeover.

2. Descriptive Statistics

Table 2 presents the descriptive statistics of the variables for the whole sample. A majority of the public firms are financially distressed (67%) and involve outside blockholders at the time of merger (65%). The interest coverage ratio of the shell firms ranges from -23,852 to 136 times of their interest expenses. This is because most of the shell firms face net losses, and some of them show a large amount of depreciation expenses. It is reasonable that the profitability measure (ROA) is negative on average (for both mean and median) in the whole sample. Of the firms, 37% in this sample are associated with CEO-founders and 21% are CEO-targets of the new firm's management. More than half of the sample involve outside blockholders (65%) and industry mergers. The average rank for the

underwriters' reputation in this sample is quite low according to the Carter-Manaster Reputation Rankings. This is because many of the deals involved no underwriters.

3. Methodology

The sample is grouped according to survivals and failures within three years after the firms' going public. We examine the sample characteristics and the existence of significant difference in all variables in both groups pair-wise. Univariate tests are used to compare the variables between survivals and failures. To test the significance of mean differences between the two groups for each variable, a t-test is used. To test the significance of median differences, the Mann-Whitney U test is applied, since the groups did not have equal variances.

Multivariate tests are used to test the effects of the financial and the governance variables on the state of the new firm after the reverse takeover. Since the dependent variable is given as a dummy variable that takes zero or one, we used binary logistic regressions. The explained variable in these models is the probability of survival. In other words, probability of survival *[p(S)]* is described by a binary variable **y**, where **y** is one when the new firm survives, and zero when it fails.

$$\textit{General model: } p(S) = \beta_o + \Sigma\beta_i X_i + \Sigma\beta_j D_j + \Sigma\beta_j D_j D_i + \varepsilon$$

$$\textit{Estimation model: } y = b_o + \Sigma b_i x_i + \Sigma b_j d_j + \Sigma b_j d_j d_i$$

Here: X_i —*independent continuous and ordinal variables considered in the hypotheses*

D_j —*independent dummy variables*

D_jD_i —*interactions of some consequential independent dummy variables*

4. Univariate Test Results

Results regarding mean differences between the two groups are summarized in Table 3. On average, both survival and failure groups are associated with financially distressed public firms and both groups are also overly leveraged. In comparison with the failure group, the survival group shows fewer distress cases, longer tenure, higher ranking of underwriters, and more venture involvements, on average. Almost all variables except the segment relatedness and technology dummies show a greater mean value for the survivals group than for the failures group. Significant differences in means are found for the following variables: shell-non-distress dummy, new firm size, new firm name dummy, board size, average tenure, segment relatedness dummy, and venture dummy. Regarding the new firm size and size multiple variables, the survival and failure groups show similar median values.

The results from Table 3 indicate that surviving firms have the tendency to enjoy greater profitability and cash liquidity. Their greater expansion after mergers means private acquirers are relatively larger than the shells (size multiple). Also, in comparison with the failed firms, surviving firms tend to show a greater number of boards, longer tenure of boards, and consequently, a longer age of the firm and the board. Finally, surviving firms involve more venture-owners and highly ranked underwriters in their deals.

5. Multivariate Test Results

For multivariate tests, we develop ten models and Table 4 presents the results of binary logistic regressions for those ten models. Model 1 is a full model that includes all independent variables. In model 1, seven variables show a significant effect on the dependent variable. Those are name dummy, venture dummy (highly significant), average tenure, new firm cash liquidity, and size multiple, which are all positively related to survival; new firm size and board size, which are negatively related to survival. Since shell interest coverage ratio showed no relation to the survival probability in this model, we exclude this variable because there is no harm in excluding it. The segment relatedness and technology dummies both show negative but not significant relation to survival. Here, the expected sign for the segment relatedness dummy is positive. Hence, it is assumed that mergers of related

segments have a better chance for survival. However, the test shows a negative relationship, indicating that the reverse takeovers may not really be synergistic mergers. Instead, reverse takeovers are more likely strategic tools for the firms. This issue can be studied in further detail.

In addition to the interest coverage ratio, we exclude the segment relatedness dummy and technology dummy in model 2, since these two variables are not essential to the main purpose of the test. The results from model 2 show that the outside blockholder dummy and the non-distress dummy are both positively related to survival. Those variables that were significant in model 1 remain fairly significant. The significance level for name dummy, venture dummy, average tenure, size multiple, and log of scaled board size is greater in model 2 than in model 1.

Since the purpose of this study is to test whether the governance variables have greater impact on the new firm survival, we exclude some financial variables which show non-significance in any of the previous models. Although not statistically significant, the leverage ratio shows a negative relation to survival; and both shell cash liquidity and shell profitability are positively related to survival. We retain all the governance variables, even if they were not significant in previous models, to confirm whether they have any effect on the test or not. Therefore, model 3 includes all variables that were significant in previous models and all other governance variables. This regression yields the same nine significant variables from the previous models. The results indicate that the financial variables (leverage ratio, shell cash liquidity, and shell profitability) do not have a significant effect on the probability of survival in this case.

Models 4 and 5 of Table 4 include some interaction terms. The effect of name selection may vary depending on the shell distress condition. If the shell is highly distressed, the private firm name for the new firm can be a better choice than retaining the public firm name for the new firm. We test the effect of this combined relation of name and distress dummy in model 4. The interaction term "non-distress dummy and name dummy" does not have much impact on the model and it reduces the significance levels for the name dummy and the non-distress dummy. Therefore, this interaction term can be excluded in later models. In model 5, we test the interaction term for CEO-target and the non-distress dummy. If the public shell is not distressed and the new firm's CEO is the former public

firm's CEO, this implies a good performance by the CEO and can be assumed to have a strong impact on survival. Again, this interaction term does not affect the variable selection in model 5. Therefore, we drop this term in the later models.

Up to model 5, we keep all the governance variables in the model; however, some of the governance variables have not shown any significance so far. Thus, we try to test their effects one by one. In model 6, we drop the CEO-founder dummy. The CEO-founder dummy shows a positive but non-significant relation to survival in previous models. Dropping this variable does not greatly affect the empirical results. So, we exclude the CEO-founder dummy in later models.

We drop the CEO-target dummy in model 7 of Table 4. The CEO-target dummy has shown a positive but not significant relation. This model results in less significant variables than the previous models. Name dummy, venture dummy, average tenure, new firm cash liquidity, and the size multiples are still significant. However, log of new firm size, log of scaled board size, outside blockholder, and non-distress dummy variables lose their significance. Since the CEO-target dummy affects the other variables' significance, we re-add this variable to the model.

The outside director variable also shows a positive but not significant relation. In model 8, we drop the outside director variable and again end up with the same five significant variables, whereas the others are not significant. So, we re-add this variable. In model 9, we drop underwriter rank and again are left with the same significant five variables (name dummy, venture dummy, average tenure, new firm cash liquidity, and the size multiples). The underwriter rank has shown a negative but not significant relation. This negative relation is the opposite of what we expected regarding this variable.

Since variables, such as CEO-target dummy, outside director, and underwriter rank, have some impact on the previous models, they may all be included in the final model. In model 10, we test all nine variables that were significant in the previous models. Those are new firm name dummy, venture dummy, average tenure, new firm cash liquidity, size multiples, log of new firm size, log of scaled board size, outside blockholder dummy, and non-distress dummy variables. Again, the same five variables are still significant; the name dummy, venture dummy, and average tenure variables are positively related and highly significant at the 0.01 level. New firm cash liquidity and the size

multiple variables are also positively related and significant at the 0.1 level. If CEO-target, outside directors, and underwriter rank variables are included in the model, in addition to those five significant variables, log of the new firm size and the scaled board size, outside blockholder, and non-distress dummies also become significant at the 0.1 levels.

The new firm name dummy is found to be very significant in this study. This means that choosing the private firm's name or choosing a name similar to the private acquirer's name positively affects the survival probability. However, we suggest that this finding be investigated in more detail, because the sample contains mostly distressed public shells, and therefore choosing the public shell name would obviously have negative effects. The findings of the positive relationship between venture backing and survival are consistent with the findings of Brav and Gompers (1997), Jain and Kini (2000)**,** and Howton (2006).

The findings of a positive relation between average tenure and survival are also consistent with Crutchley, Garner and Marshall (2002) and Howton (2006). The surviving firms tend to have boards with longer tenure, which can also be inferred to mean they have a stable board with consistent success, or that they are older firms. This study shows that the average tenure positively and significantly affects firm survival.

In all models, the new firm cash liquidity has a positive relationship with survival at the 0.1 level of significance. This can be interpreted as meaning that those firms survive if the public shells had strong cash liquidity or the private acquirers had solid financial health; or, even if the public shells had poor cash liquidity or were distressed, the solid financial position of private acquirers could support such costs and eventually could assure better cash liquidity and, thus, the survival of the new firms.

The ratio of new firm total assets to shell total assets implies the size of the private acquirer relative to the public shell's size. Since this variable is significantly and positively related to survival in all models, it can be interpreted as meaning that if the private firm is larger than the public shell, the survival of the new firm is more likely. In addition to this relative size, the combined firm size is also found to be significant in most of the models. We use log of the new firm total assets as a proxy

for the new firm size and this variable shows a negative relationship with survival and significance at the 0.1 level.

Board size is the log of the ratio of board size to total assets. This measure also shows 0.1~0.5 levels of significance and a negative relationship in most of the models. Therefore, we can conclude that if the board size gets larger relative to the firm size, then survival is less likely. The outside blockholder dummy shows a positive and significant relationship with survival in most of the models too. This finding is consistent with the findings of Howton (2006). Firms with outside blockholders tend to survive rather than fail.

Another variable found to be significant is the shell non-distress dummy. This dummy variable shows a significantly positive relationship with survival. This means that if the public shell is not financially distressed, the new firm survival is more likely. This is consistent with the conclusion of Gleason et al. (2005).

Howton (2006) finds that the CEO-founder is positively related to survival. However, our study shows this variable having no effect whatsoever on any of the models. Rather, the CEO-target dummy variable shows a positive but insignificant effect on the models. If the new firm's CEO is the former public shell's CEO, it may be interpreted that the public shell is not distressed and is performing functionally, and, therefore, the CEO is retained on the new firm's management to make better use of the CEO's experience in public firm management. However, this study does not significantly explain this case, though this variable's positive relation to survival is considerable.

Having outside directors on the board is also positively related to survival but insignificant in all models. Underwriter ranking is also found not to be significant but is negatively related to survival, contradicting our hypothesis. We interpret this negative relation between the underwriter rank and survival as not a sign of failure, but rather a sign of choosing to be private again after going public. We assume this result is case-specific and, in this sample, those firms that employ highly ranked underwriters but are acquired or delisted within three years after a reverse takeover may decide to remain private or to be part of better firms pursuing their next growth stage.

In all ten models, the Chi-squares are very significant at the 0.01 levels and the Chi-square values range from 45.92 to 37.27. Therefore, we see that those interpretations of the variables, which are significant in the models, are all valid for their related models.

Ⅴ. Conclusion

There are several reasons for firms to go public. The main reason is the access to public capital. A reverse takeover is an alternative to an IPO for going public, and is less costly in terms of money and time. The reverse takeover occurs when a private firm acquires a public firm and takes control of the new firm by retaining the public listing. This is a combination of merger and going-public issues; therefore, the success of the reverse takeovers can be affected by many conditions and factors.

In this paper, we investigate the reverse takeovers' survival in terms of their governance characteristics. We examine the governance effects for 75 cases of reverse takeovers that took place during the period 1992–2002 in the US. Among these 75 cases, 44 survived at least three years and 31 failed within three years after the reverse takeovers. Univariate tests suggest that those firms that survived for at least three years after merger had greater profitability and cash liquidity, larger expansion after the merger—which means the private acquirers were relatively larger than the shells. In addition, survivals after merger show a greater number of boards, longer tenure of boards, and consequently, a longer age of the firm, a more stable board, more venture owners, and highly ranked underwriters involved in the deals than did the failed firms. Also survivals more often used the private firm's name as the new firm name than did the failures.

Logistic regression results indicate that using the private acquirer's name for the new public firm, having a venture shareholder, longer board tenure, greater cash liquidity in the new firm, and the private acquirers' being larger in size than the public shell, all led to more survivals than failures. Existence of an outside blockholder can ensure better management control and thus leads to more survival. When the public shell is not distressed, it is more likely for the new firm to survive. Also, if the new firm's CEO is the former public target's CEO, the new firm's survival is more likely. If the portion of outside directors on the board increases, so does the survival probability.

However, survival is less likely when either the new firm size or the relative board size increases. The relation between the new firm size and survivability can be interpreted in a different light such as some big firms may choose to be private or may be acquired after experiencing public trading. Further research on this relation can be done to investigate the motivations of the management after the firm size increases. The point here is that failed reverse takeovers do not necessarily imply bankruptcy; they can also mean further growth through going private again after raising capital from a public listing at a certain stage or time in a firm's life cycle. This issue can also be further studied.

Overall, surviving firms have greater after-merger cash liquidity, relatively larger acquirers, longer tenure of boards—which implies stable boards and a longer age of the firm— venture owners, and smaller boards than the failed firms. Therefore, the survivability of reverse takeovers depends not only on the financial conditions of the merging firms, but also their governance characteristics. Especially, venture-owned or older firms with a stable board are more likely to survive than firms with shorter tenure or that have no venture owners or outside blockholders. Further, the name of the new firm is highly effective in relation to the distress level of the public shell. An outside blockholder can increase the efficiency of the firm's control and lead to greater likelihood of survival. However, a too large board may lead the newly merged public firm to failure.

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Appendix: An example of successful reverse takeover case

Advance Auto Parts (AAP) acquired Discount Auto Parts(DAP):

1971~ 1992 : Discount Auto Parts was founded in 1971 with a single store in Eloise, Florida by Herman Fontaine; his son, Denis L. Fontaine; and other members of the Fontaine family. Herman Fontaine served as President from 1972 until 1978 and as the Chairman of the Board from 1972 until 1986. Denis L. Fontaine assumed the roles of CEO and President in 1978 until his death in June 1994.

August 1992: Discount Auto Parts became a publicly traded company, completing an initial public offering in which it raised approximately $64 million in net proceeds. (NYSE: DAP)

1994 ~ 1996: Peter J. Fontaine was elected as President and Chief Executive.
Discount Auto Parts, Inc., had become one of the Southeast's leading specialty retailers of automotive replacement parts, maintenance items and accessories for the *"Do-It-Yourself"* (*"DIY"*) consumer with a chain of 314 stores, in Florida mostly, and in Georgia, Alabama, and South Carolina.

Aug. 7, 2001: Advance Auto Parts and Discount Auto Parts, Inc., (NYSE: DAP) announced that they have signed a definitive agreement for Advance to acquire Discount in a merger transaction. As a result of the merger, Discount shareholders would own approximately 13% (~ 4.3 million shares) of the total shares outstanding of the combined company. Advance Holding Corporation became a public company and renamed Advance Auto Parts, Inc. Larry Castellani remained as CEO of Advance. Peter Fontaine, Chairman and CEO of Discount, became a member of the Board of Directors of Advance.

1929~ 1980s: Advance was formed in 1929 and operated as a retailer of general merchandise until the 1980s. In the 1980s, Advance targeted *"DIY"* customers and accelerated its growth strategy.

1980s ~ 2001: Advance had grown significantly through new store openings and strategic acquisitions. In 1996, Advance began to expand its sales to *"do-it-for-me* "or *"DIFM"* customers. In 2001, Advance had 1,765 stores in 38 states, primarily located in the eastern and mid-western regions of the United States and in Puerto Rico and the Virgin Islands. It is based in Roanoke, Va., and is the second largest auto parts chain in the nation.

Nov.29, 2001: Advance Auto Parts, Inc., completed its acquisition of Discount Auto Parts, Inc., and began trading on NYSE under the symbol AAP. The CEO, Larry Castellani, emphasized this merger as being both strategic and synergistic in that it facilitated the public listing of DAP and also combined the sales lines of *"DIY"* and "*DIFM"*customers.

2002 ~ 2007: In 2005, Advance Auto Parts, Inc., acquired Autopart International, Inc., or AI. Throughout these years, Advance Auto Parts, Inc., retained its position as the second largest specialty retailer of automotive parts, accessories, and maintenance items to DIY and DIFM customers in the United States, based on store count and sales.

*** As of December 31, 2008, the stock price of Advance Auto Parts was $33.65, and the trading volume was 920,663 on NYSE.

Table 1. Variable descriptions

Dependent Variable	y = 1	If the new firm survives for three (3) years after the reverse takeover
	y = 0	If the new firm fails within three (3) years after the reverse takeover

	Independent Variables	Exp sign	Description
1	Shell interest coverage ratio	-	This is the ratio of EBITDA to Interest expenses. If this ratio < 1, it is financially distressed; therefore, it is assumed that there is less probability of survival.
2	Shell leverage ratio	-	Leverage ratio = Total Debt / Total Assets. If this ratio > 1, then a firm has equity deficit.
3	Shell cash liquidity	+	Shell Cash liquidity=Shell Cash /Shell TA.
4	Shell profitability	+	Return on Assets is used as a proxy for profitability. ROA = Net Income / Total Assets
5	Shell non-distress dummy	+	Non-distress dummy = 1, if the interest coverage ratio > = 1, if not, this dummy = 0.
6	New firm size	+	Log of Newco Total Assets is used as a proxy for newco size.
7	New firm cash liquidity	+	Newco Cash Liquidity = Newco Cash / Newco Total Assets (TA)
8	Size multiple	+	Size multiple = Newco TA/Shell TA. This implies the relative size of the private acquirer to the public shell.
9	Name of the new firm	?	If the new firm's name is similar to the private firm's name, this dummy = 1, otherwise = 0
10	CEO-Founder dummy	+	If the current CEO is the original founder of either of the firms, this dummy = 1.
11	CEO-Target dummy	+	If the newco CEO is the public target CEO, this dummy = 1, otherwise = 0.
12	Log of scaled Board size	-	As a measure for Board size, Log (Board number / newco Total Assets) is used.
13	Average tenure	+	Average tenure is the average of new BOD's tenure. Greater tenure implies potential for successful performance.
14	Outside directors (%)	?	Outside directors = (number of outside directors / number of board members) used as percentage
15	Outside blockholder dummy	+	If there is any shareholder who owns more than 5% of total shares, and not involved in management, this dummy = 1, otherwise = 0.
16	Venture dummy	+	If there is a venture owner in the newco, this dummy = 1, if not, this dummy = 0.
17	Underwriter rank	+	The ranks for the underwriters are obtained from Carter-Manaster Reputation Rankings for IPO underwriters: 1980–2004. Higher ranks imply a positive relation to survivals.

18	Segment relatedness dummy	+	If the business lines are from the same two-digit SIC codes, or different but vertical alliances, this dummy = 1.
19	Technology dummy	-	If the firm is an Internet or technology-related firm (based on four-digit SIC codes), this dummy = 1.

Table 2. Descriptive statistics for 75 reverse takeovers during 1992–2002 in the USA

Mean, median, standard deviation, and minimum and maximum values for the whole sample are shown in columns. All variables are described in Table1.

Independent Variables	Mean	Median	SD	Min	Max
Shell interest coverage ratio	-415.50	-4.15	2,793.06	-23,852.40	135.84
Shell leverage ratio	3.82	0.69	18.80	0.01	161.21
Shell cash liquidity	0.21	0.08	0.28	0.00	1.00
Shell profitability (ROA)	-0.06	-0.26	38.27	-169.93	278.74
Shell non-distress dummy	0.33	0.00	0.47	0.00	1.00
Log of Newco TA	16.42	16.59	2.77	9.24	22.12
Newco cash liquidity	0.14	0.07	0.21	0.00	0.99
Size multiple	11.21	2.83	25.09	0.00	127.51
Newco name dummy	0.64	1.00	0.48	0.00	1.00
CEO-founder dummy	0.37	0.00	0.49	0.00	1.00
CEO-target dummy	0.21	0.00	0.41	0.00	1.00
Log of (Board size/NewTA)	-14.73	-15.10	2.52	-19.41	-7.63
Average tenure	3.58	3.00	2.67	0.40	12.43
Outside director (%)	0.50	0.50	0.22	0.00	0.90
Outside blockholder dummy	0.65	1.00	0.48	0.00	1.00
Venture dummy	0.16	0.00	0.37	0.00	1.00
Underwriter rank	2.67	0.00	3.80	0.00	9.10
Segment relatedness dummy	0.61	1.00	0.49	0.00	1.00
Technology dummy	0.35	0.00	0.48	0.00	1.00

Table 3. Characteristics by state of the firms 3 years after reverse takeover

The 2nd and 3rd columns report means and medians for the survival group; the 4th and 5th columns are means and medians for the failure group. The last columns report t-test statistics for differences in means and Mann-Whitney U test statistics for differences in medians between the two groups. Variables are described in Table 1.

	Survived		**Failed**		**Survived vs Failed**			
Independent Variables	Mean	Median	Mean	Median	T-test for means		Mann-Whitney U test	
Shell interest coverage ratio	-136.44	-0.61	-811.58	-11.48	-0.87		-1.13	
Shell leverage ratio	1.89	0.70	6.56	0.53	0.89		-0.73	
Shell cash liquidity	0.20	0.12	0.21	0.06	0.02		-0.38	
Shell profitability (ROA)	4.38	-0.02	-6.35	-0.39	-1.20		-1.08	
Shell non-distress dummy	0.41	0.00	0.23	0.00	-1.71	*	-1.65	*
Log of Newco total assets	16.90	16.82	15.74	16.37	-1.82	*	-1.50	
Newco cash Liquidity	0.16	0.07	0.11	0.05	-0.97		-0.81	
Size multiple (NewTA/ShellTA)	12.33	2.84	9.61	2.83	-0.46		-1.09	
Newco name dummy	0.73	1.00	0.52	1.00	-1.86	*	-1.86	*
CEO-founder dummy	0.43	0.00	0.29	0.00	-1.26		-1.24	
CEO-target dummy	0.27	0.00	0.13	0.00	-1.57		-1.49	
Log of (Board size/NewTA)	-15.20	-15.17	-14.06	-15.10	1.96	*	-1.71	*
Average tenure	4.16	3.31	2.75	2.43	-2.57	**	-1.87	*
Outside director (%)	0.50	0.57	0.50	0.50	0.05		-0.19	
Outside blockholder dummy	0.70	1.00	0.58	1.00	-1.09		-1.10	
Venture dummy	0.25	0.00	0.03	0.00	-2.96	***	-2.52	**
Underwriter rank	3.04	0.00	2.16	0.00	-1.01		-1.08	
Segment relatedness dummy	0.52	1.00	0.74	1.00	1.99	**	-1.91	*
Technology dummy	0.30	0.00	0.42	0.00	1.09		-1.10	

***Significant at the 0.01 level

**Significant at the 0.05 level

*Significant at the 0.10 level

Table 4. Logistic regressions modeling the probability of survival of reverse takeovers in 3 years

	Model 1		Model 2		Model 3		Model 4		Model 5	
Intercept	-8.14	(4.73)**	-8.41	(5.53)**	-7.79	(5.35)**	-8.41	(5.73)**	-7.34	(4.56)**
Shell interest coverage ratio	0.00	(0.04)								
Shell leverage ratio	-0.03	(0.47)	-0.03	(0.55)						
Shell cash liquidity	0.83	(0.24)	0.50	(0.09)						
Shell profitability (ROA)	0.00	(0.01)	0.00	(0.02)						
Shell non-distress dummy	1.75	(1.70)	2.10	(2.65)*	2.03	(3.12)*	2.99	(2.81)*	1.95	(2.79)*
Log of Newco total assets	-2.23	(2.80)*	-2.45	(3.36)*	-1.96	(2.70)*	-2.10	(2.95)*	-2.38	(3.46)*
Newco cash liquidity	3.57	(2.94)*	3.41	(2.96)*	3.26	(3.35)*	3.09	(3.05)*	3.56	(3.64)*
Size multiple	0.04	(3.01)*	0.04	(3.91)**	0.03	(3.70)**	0.04	(3.93)**	0.03	(3.66)*
Newco name dummy	2.58	(6.00)**	2.68	(6.60)***	2.52	(7.50)***	3.13	(5.82)**	2.71	(7.77)***
CEO-founder dummy	0.25	(0.10)	0.26	(0.11)	0.51	(0.49)	0.51	(0.47)	0.59	(0.62)
CEO-target dummy	1.45	(1.60)	1.56	(1.88)	1.49	(2.02)	1.56	(2.17)	1.12	(1.07)
Log of (BoD size/NewcoTA)	-2.58	(3.43)*	-2.77	(3.88)**	-2.25	(3.18)*	-2.39	(3.40)*	-2.64	(3.88)**
Average tenure	0.67	(5.81)**	0.69	(6.57)***	0.53	(5.93)**	0.55	(5.66)**	0.51	(5.70)**
Outside director (%)	2.26	(1.01)	2.67	(1.45)	2.17	(1.07)	2.52	(1.32)	3.00	(1.71)
Outside blockholder dummy	1.26	(2.29)	1.35	(3.08)*	1.24	(2.84)*	1.25	(2.82)*	1.15	(2.41)
Venture dummy	5.19	(9.07)***	5.62	(10.31)***	5.21	(10.31)***	5.74	(9.24)***	5.61	(10.41)***
Underwriter rank	-0.21	(2.13)	-0.21	(2.33)	-0.18	(1.88)	-0.19	(2.00)	-0.19	(2.00)
Segment relatedness	-0.62	(0.61)								
Technology dummy	-0.53	(0.45)								
Non-distress x Name d. *interact.*							-1.32	(0.54)		
CEOtarget x Non-distress *interact.*									20.46	(0.00)
Model Chi-square	45.92	***	44.71	***	41.02	***	41.57	***	43.51	***
Number of observations	75		75		75		75		75	

Table 4. ***(cont'd)*** **Logistic regressions modeling the probability of survival of reverse takeovers in 3 years**

	Model 6		Model 7		Model 8		Model 9		Model 10	
Intercept	-7.61	(5.12)**	-7.66	(5.16)**	-6.85	(4.54)**	-5.35	(3.56)*	-5.76	(4.41)**
Shell non-distress dummy	1.95	(2.98)*	1.28	(1.75)	1.51	(2.20)	1.45	(1.98)	0.97	(1.16)
Log of Newco TA	-1.88	(2.65)*	-1.42	(1.76)	-1.24	(1.72)	-1.64	(2.16)	-1.15	(1.58)
Newco cash liquidity	3.05	(3.11)*	3.29	(3.78)**	2.80	(2.60)	2.73	(2.76)*	2.83	(3.10)*
Size multiple	0.03	(3.81)**	0.03	(3.55)*	0.03	(3.36)*	0.03	(3.62)*	0.03	(3.37)*
Newco name dummy	2.68	(8.81)***	2.48	(8.46)***	2.63	(8.66)***	2.64	(9.05)***	2.51	(8.74)***
CEO-founder dummy										
CEO-target dummy	1.43	(1.88)			1.13	(1.27)	0.92	(0.96)		
Log of (Board size/NewcoTA)	-2.15	(3.14)*	-1.72	(2.31)	-1.49	(2.23)	-1.77	(2.34)	-1.33	(1.87)
Average tenure	0.55	(6.61)***	0.57	(7.38)***	0.52	(6.49)***	0.55	(6.94)***	0.55	(7.54)***
Outside director (%)	2.10	(1.05)	1.25	(0.42)			1.22	(0.42)		
Outside blockholder dummy	1.24	(2.81)*	0.97	(1.88)	1.10	(2.29)	1.00	(2.03)	0.82	(1.47)
Venture dummy	5.15	(10.52)***	5.11	(10.90)***	4.83	(10.41)***	4.96	(10.06)***	4.85	(10.73)***
Underwriter rank	-0.19	(1.98)	-0.12	(1.05)	-0.15	(1.37)				
Model Chi-square	40.52	***	38.53	***	39.44	***	38.45	***	37.27	***
Number of observations	75		75		75		75		75	

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

The dependent variable is a dummy variable equal to 1 if the new firm survives for 3 years and 0 if it fails. The independent variables are continuous and dummy variables which are described in the variable description table (Table 1). Wald statistics are shown in parentheses.