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Finance Working Paper N° 486/2016
October 2017

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We are extremely grateful to Joseph Blasi and Doug Kruse for sharing their survey data on individual employees. We thank Kenneth Ahern (discussant), Jonathan Berk, Andrew Ellul (discussant), Eliezer Fich, Shane Heitzman (discussant), Kathleen Kahle (discussant), Jonathan Karpoff, Hyunseob Kim (discussant), Ron Masulis, Kevin Murphy, Paige Ouimet, Joshua Rauh, Ed Van Wesep, and the seminar participants at the 2017 American Finance Association Meeting, Arizona State University, BEROC, 2017 Beyster Compensation Symposium, 2016 Labor and Finance Conference in Capri, 2016 Labor and Finance Group Meeting at University of Colorado, 2016 Tel Aviv Finance Conference, 2017 FSU SunTrust Beach Conference, 2017 Drexel Corporate Governance Conference, University of New South Wales, and University of Rome III for valuable comments.

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Abstract

We analyze how employee compensation contracts of target firms affect merger terms and outcomes. Using unique data from merger agreements, we document that in 79.9% of all deals at least some of the target's employee stock options are canceled by the acquirer and not replaced by new grants. The offer premium is larger when the target has many employee stock options and when they are canceled. Further, the acquiring companies that cancel options earn on average 1.4% higher announcement return. Employees who hold many unvested options report they would vote against a merger even if a significant premium is offered.

Keywords: Mergers and acquisitions, labor contracts, employee stock options, takeover premium, target selection, takeover defenses

JEL Classifications: G30, G34, J33

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ABSTRACT

We analyze how employee compensation contracts of target firms affect merger terms and outcomes. Using unique data from merger agreements, we document that in 79.9% of all deals at least some of the target's employee stock options are canceled by the acquirer and not replaced by new grants. The offer premium is larger when the target has many employee stock options and when they are canceled. Further, the acquiring companies that cancel options earn on average 1.4% higher announcement return. Employees who hold many unvested options report they would vote against a merger even if a significant premium is offered.

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Employee stock options (ESOs) are an integral component of compensation packages, particularly for firms in the high-tech industry (see, e.g., Core and Guay (2001), Ittner, Lambert, and Larcker (2003), and Chang et al. (2015)).[1] Because of the nature of competition for employee talent and because financing constraints can make it difficult to pay high wages to employees, the small highly innovative firms, that are attractive acquisition targets (Bena and Li (2014), Hoberg and Phillips (2010), and Phillips and Zhdanov (2013)), have an especially high concentration of ESOs in their compensation plans. In this study, we analyze how acquirers treat the broad-based option plans of target firms, document the financial implications for employees, and examine how ESOs affect the merger terms and outcomes. We focus on the option part of compensation for two reasons: their popularity and the discretion with which they can be treated by new owners.

Using unique data from merger agreements on 1,277 deals announced over the period of 2006 to 2014, we document that ESO compensation is typically reduced or modified by acquirers in a way that does not benefit employees. In 79.9% of all completed M&A deals, some of the target's outstanding employee stock options are terminated by the acquirer. While the most common scenario is canceling all out-of-the-money stock options of the target firm, sometimes even in-the-money stock options are terminated without any payment to employees, and vested and unvested stock options can all be fair game.[2] Further, employees are often forced to accept the intrinsic value of their vested in-the-money stock options in lieu of the Black-Scholes value; we find that this handling happens in 76.4% of all deals. Finally, even in cases when acquirers assume the target option plans, the Black-Scholes value of options typically drops because the newly converted options are written on the acquirer's stock, which tends to be less volatile than the target's stock (stock return volatility of 34.4% vs. 53.8%) and have a higher dividend yield. Overall, we estimate that contract modifications in the average M&A deal reduce the value of stock options by approximately 48.3%, which is equivalent to 2.4% of the market capitalization of the target firm prior to the merger. In addition, we find no evidence that these options are replaced by new stock option grants or by

[1] According to the National Center for Employee Ownership, options were the most common form of individual equity compensation in 2014. For example, the General Social Survey estimates that 7.2 million employees held stock options in 2014. Furthermore, more than 80% of all options are offered to rank-and-file employees rather than firm executives (see Core and Guay (2001)).

[2] For example, when Microsoft was buying Skype in 2011, employees were not even able to keep the vested portion of their stock options.

other equity-based compensation after the acquisition.

Why do acquirers cancel option compensation? A possible explanation is that they are attempting to control labor-related costs as the value of ESOs can increase manyfold in the M&A transaction if these contracts are left unchanged. This is because an offer from the bidder features a premium over the current market price and moves options deeper in the money. More important, because an option is a levered claim, its value grows much faster in the premium than does the value of the underlying stock.[3] Therefore, if not modified or canceled, employee stock options can become a large financial burden on the acquirer.

A related potential explanation for canceling and modifying options is that employees of target firms can become entrenched and overpaid, so the new owners use an M&A event as an opportunity to abrogate old contracts and reset employee compensation at competitive levels. Several theoretical papers show how employee entrenchment can arise under the optimal contract (see, e.g., Harris and Holmstrom (1982) and Berk, Stanton, and Zechner (2010)), with the intuition being that such contracts insure risk-averse employees from the idiosyncratic risk in their human capital. Although such contracts are optimal from an ex ante perspective, they can become suboptimal ex post and create an opportunity for the acquirer to reduce excess employee compensation.

Given the prospect of having their ESOs taken away upon a change in control, employees can be expected to actively participate in deal negotiations or even resist the merger. There are several levers available to employees to influence the outcome and the probability of the merger. For example they can refuse to sell their stock and vote against the merger, exert pressure on management, lobby against the merger, or threaten to go on strike (Rauh (2006) and Pagano and Volpin (2005)).[4] The financial incentives of employees to oppose a merger vary across firms and deals and are determined by two effects. First, the premium on a stock offered by the bidder benefits all employees to the extent of their stock ownership. The positive runup in the stock price triggered by the news of the merger increases the value of all components of employee compensation; these

[3] For example, an option with a strike price of \$100 and a current market price of \$110 yields the intrinsic value of \$10 upon the exercise. With a 40% premium put forth by the acquirer, the intrinsic value of the option jumps to \$54, a 440% increase.

[4] Cronqvist et al. (2009) also find empirical evidence consistent with the view that managers value good social relations with their employees and are willing to pay them more to improve such relations. Thus it is possible that managers are reluctant to approve deals that reduce employee pay.

include stock holdings, options, and stock held through ESPPs, 401(k) plans, and ESOPs.[5] Second, the employee stock option contracts can be modified and canceled by acquirers. Although the net monetary effect of the acquisition on employees can be positive or negative, we estimate that in deals in which at least some stock options are canceled by the acquirer, the value of employee stock options declines after an M&A, indicating that employees may have an incentive to resist these deals. We also find that the value of unvested stock options is more negatively affected by M&As than the value of vested stock options.

To gain a deeper insight into employee attitudes towards mergers and acquisitions, we use individual data from the survey by Kruse, Freeman, and Blasi (2010). Employees were asked the following question about a potential merger: "If an outside investor offered to buy your company for 50% more than the current value of the stock, would you vote to sell the company?" Out of all respondents, 57.9% answered "no." More important, the negative attitude towards a merger was more pronounced among respondents who held many unvested and newly granted stock options and less pronounced among respondents who held many shares of company stock.[6] Individuals with many stock options were also more likely to report that they would vote against a merger because "the company is worth more." Finally, employees who classified themselves as overpaid in their current job functions had a more negative attitude towards the merger and were more worried about their unvested stock options. Overall, the survey results suggest that employees were concerned about preserving the value of their option compensation in a merger.

Ultimately, what incentives ESOs create for the bidders is an empirical question. On one hand, an additional cost of assuming employee stock options reduces the attractiveness of a firm to the prospective acquirer, implying a lower willingness to bid for the firm and a lower offer premium. On the other hand, if it is possible to cancel or reduce the value of outstanding stock options and transfer the gains from this transaction to shareholders, the premium may be positively related to the presence of ESOs. Finally, if employees tend to lobby against those mergers where more of their

[5] It is possible that M&A announcements do not cause an increase in price but simply speed up the discovery of the true firm value. Indeed, Malmendier, Opp, and Saidi (2016) find that targets of cash-financed acquisitions are revalued by the market on average by +15% after the failure of a deal (relative to their market value before the merger announcement). Furthermore, it is likely that the employees evaluate the potential loss of their compensation at the effective merger date and ignore the effect of the preceding stock runup altogether.

[6] From our reading of company filings, stock held by employees (as opposed to stock options) is never taken away in M&As.

compensation is at stake or if managers use ESOs to obtain a better deal from the acquirer, we may expect ESOs to shift the bargaining power in merger negotiations to the target. We expect, all else equal, the offer premium to be larger in this case.

We find that after we control for deal and target firm characteristics, the takeover premium is approximately 4.8% higher for deals in which the acquirer cancels some employee stock options. In raw data, the difference in premium is even greater at 8.6%. Interestingly, in deals with option cancellations the acquirers earn on average a statistically positive announcement return of 0.6%, whereas it is negative -1.6% in deals in which acquirers assume the compensation obligations of the target. Correspondingly, the total market value of the acquirer's stock over the three-day announcement window drops by $329 million less in deals with option cancellations than in other deals. These results are consistent with the view that canceling stock options allows the bidder to reduce liabilities, eliminate inefficient compensation practices, and realize gains at the expense of employees. We estimate that about a quarter of the bidder's return differential can be explained by pure wealth transfers from employees to shareholders.

We also document that the takeover premium is larger when the target firm has many outstanding stock options, particularly when these options are out-of-the money and unvested. These results suggest that because employees are concerned about the value of their stock options, the managers may be reluctant to approve the deal unless the acquirer pays a substantially higher price than the market value or ESOs help to strengthen the target's bargaining power in negotiations. However, outstanding options can also proxy for some unobservable characteristics of the target firm. For example, employee stock options could be correlated with employee entrenchment or the high mobility of the firm's labor force. To address this concern, we rely on geography-based instrument used for employee stock options in the compensation literature (Hochberg and Lindsey (2010), Chang et al. (2015)). The instrument builds on the idea that the compensation of employees has a significant geographical component because of knowledge spillovers among administrators adopting such plans, local labor market conditions, and social interactions among employees of neighboring firms (see Kedia and Rajgopal (2009)). When we use the instrument, we still observe a positive relation between the outstanding options and the offer premium. Further, using the econometric

test developed by Altonji, Elder, and Taber (2005) and Oster (2016), we find that the positive relation between stock options and the offer premium is unlikely to be driven by omitted variables. The results are more likely to be explained by the acquirers reducing excess compensation to the benefit of shareholders.

Our study contributes to the literature on the effects of mergers and acquisitions on employee labor contracts in which takeovers breach implicit contracts between managers and employees (Shleifer and Summers (1988)). For example, Rosett (1990) documents that wealth transfers from employees to acquirers as a result of cutting workers' wages account for approximately 10% of the takeover premium in hostile takeovers. Lichtenberg and Siegel (1990) and Davis et al. (2014) show that there are modest cuts in the labor force, and Pontiff, Shleifer, and Weisbach (1990) find that pension funds are reduced by almost 15% after hostile takeovers. Similarly, Li (2013) finds that wages-per-worker and employment at target firms' plants decline after takeovers, although output remains constant. In contrast, Ma, Ouimet, and Simintzi (2016) argue that mergers and acquisitions accelerate technological change and displace occupations involved in routine-tasks, resulting in wage polarization within industry. We contribute to this literature by documenting how the ESO compensation is treated in M&As and how it affects the merger terms and outcomes.

We do not focus on the compensation contracts for the CEOs. Previous studies conclude that top executives often receive special treatment in M&A deals. For example, Bliss and Rosen (2001) find that CEO compensation increases following bank mergers, whereas Hartzell, Ofek, and Yermack (2004) and Fich, Cai, and Tran (2011) document that target firms' CEOs often negotiate large special bonuses, golden parachutes, and unscheduled stock option grants in M&A deals. Heitzman (2011) also finds that CEOs are likely to receive unscheduled equity grants during M&A negotiations.[7]

Also related to our work are several recent studies that analyze how labor protection laws, unionization, and the composition of the target firm labor force affect the takeover activity and gains to shareholders. For example, John, Knyazeva, and Knyazeva (2015) show that the bid-

[7] As for CEOs of acquiring firms, Grinstein and Hribar (2004) document that they too receive lucrative compensation packages for completing M&A deals, and such packages appear to be unrelated to deal performance or managerial effort. Similarly, Harford and Li (2007) document that following a merger, a CEO's pay becomes insensitive to negative stock performance, but increases with positive performance. They argue that acquiring firms' CEOs are better off most of the time after an M&A deal.

ding firms from states with greater employee protection experience lower announcements returns. Tian and Wang (2016) use close-call union elections to show that target firms that narrowly pass unionization ballots have a lower probability of being taken over, as well as a lower offer premium and announcement return. Using a cross-country analysis of labor protection laws, Dessaint, Golubov, and Volpin (2017) show that increases in employment protection reduce takeover activity by approximately 15% and result in smaller combined gains from takeovers. Finally, Ouimet and Zarutskie (2016) argue that some firms pursue M&A activity with the objective of obtaining a larger number of employees, and that target firms that are more likely to be acquired for their large labor force experience a greater increase in wages per employee.

The remainder of this paper is organized as follows. The next section provides institutional details relevant to ESOs and develops the empirical hypotheses. Section II discusses our data sources and sample selection. Section III summarizes how acquirers treat stock options in the M&A deals, evaluates the implications of mergers for target firm employees, and summarizes employee survey results. Section IV examines the relation between employee stock options in the target firm and the M&A offer price premium and presents the results on the acquirer's cumulative abnormal returns (CARs). The last section concludes.

I. Background

A. Institutional Details

How the employee stock options of a target firm are treated in the event of a change in control is generally determined by two legal documents: a company's compensation plan that outlines the terms and conditions governing ESOs and a merger agreement signed by the target firm and the acquirer. Typically, a compensation plan specifies the *possible ways and circumstances* in which ESOs can be adjusted, as well as whether the board of directors has discretion to amend the terms of the plan. In contrast, the merger agreement provides information on how ESOs of the target firm are actually treated in a given M&A deal. Our formal analysis relies on data from merger agreements. Here we briefly describe what provisions are contained in compensation plans.

Most compensation plans allow for a range of possible ESO treatments in connection with merg-

ers and acquisitions, with the exception of the vesting acceleration rules, which are often precisely defined. In Appendix A, we provide the summary statistics for possible ESO treatment as outlined in company compensation plans; we give examples of legal language in the Internet Appendix. To understand what restrictions on treatment of options are specified in the compensation plans, we collect information on the compensation plans that cover the last year of our sample. In particular, we obtain information on 105 most recently adopted compensation plans from the SEC filings (8-K, 10-K, 10-Q, and proxy statements) for the M&A deals from our sample that were announced between January 1, 2014 and December 31, 2014. In each compensation plan, we search for the keywords *control*, *merger*, *event*, and *corporate transaction*.[8]

Approximately 67.6% of the compensation plans specify that vesting will be accelerated after the change in control. More than 35.2% mention that "vesting may be accelerated," and only 11.4% of plans do not mention vesting in relation to a change in control.[9] When vesting treatment is specified, vesting is either automatically accelerated ("single trigger," 26.7%), accelerated conditional on the termination of employment ("double trigger," 21.9%), or accelerated if options are not assumed by the bidder (31.4%). We further observe that the boards of directors prefer to preserve the maximum flexibility in compensation plans, perhaps because they do not want to miss out on potentially valuable takeover offers. In particular, 61.9% of company stock option plans give the board of directors discretion to adjust awards under the plan, replace them with other instruments, allow for cancellations, or allow the exchange of options for a payment equal to the difference between the exercise price of the option and the price per share. Nevertheless, even if the acquirer chooses one of the explicitly allowed ESO modifications as outlined in the compensation plan, it still could be successfully sued for damages by the target firm's employees.[10] Another 36.2% of

[8] We do not collect the information on compensation plans for the full sample of firms because companies typically have multiple outstanding compensation plans, the information on older plans is rarely available, and it is difficult to estimate what fraction of options is covered by a particular plan.

[9] Note that some categories in Table A1 are not mutually exclusive, so the percentages may sum to more than 100%. For example, the compensation plan may specify that vesting will be accelerated if options are not assumed or if employees are fired shortly after the merger.

[10] One such case was AT&T's acquisition of MediaOne Group in 2000. MediaOne had an option plan that allowed for canceling all out-of-the-money stock options, but it also contained an "anti-destruction" provision that required options to be appropriately adjusted in M&A transactions so as not to decrease option holders' economic positions. At the time of the acquisition, AT&T asked to cancel all underwater options and cash out others, but MediaOne refused and demanded that all options be converted into AT&T options. Even though the acquisition ultimately went through after many rounds of negotiations, the question whether the acquiring firm could legally cash out the target employees' stock options despite the existence of an "anti-destruction" provision in the option plan was not

plans do not specify how ESOs should be treated by the acquirer. We were able to find only two instances of plans that required a specific ESO treatment–one plan required that all outstanding options be cashed out for their intrinsic value and the other one required to assume all options.

B. Effects of ESOs on Merger Terms and Outcomes

There are several channels through which previously granted employee stock options can affect the attractiveness of a firm to potential bidders, the terms of merger negotiations, and the outcomes for the acquirer, target firm, and employees.

First, employee stock options present a significant cost to the acquirer. Assuming all ESOs of the target is expensive for the bidder because it dilutes shareholder value, creates an administration burden, and results in unfavorable accounting treatment. The costs are higher with stock options than with other types of compensation plans (e.g., 401(k) plans, ESOPs, or restricted stock) because options represent levered claims on a stock that increase in value exponentially with the price paid for target's shares. The assumption of target compensation plans may also present integration issues if the terms or depth of target employee stock options are inconsistent with the acquirer's compensation culture. Further, the acquirers are often reluctant to assume employee stock options because of the concern that this will create the incentive for a target firm to make new extraordinary large grants of stock options immediately before a merger. Cashing out and/or canceling employee stock options may also require substantial cash resources, create discord among employees (e.g., low productivity, high employee turnover and absenteeism, negative effects on morale and teamwork),[11] and increase the probability of lawsuits brought by the target's employees. If these costs are indeed significant, we would expect a negative relation between ESOs of the target firm and the takeover premium paid by the bidder, as well as between ESOs and the acquirer announcement return.

Second, to the extent that stock options of the target firm are not essential for motivation or retention of workers in the new company, the acquirer can cancel or modify ESOs in a way that

answered until a 2007 decision by the Delaware Court of Chancery. The Court stated that the ability to cancel out-of-the-money employee stock options without consideration depends entirely on the provisions of the governing stock option plan, and that less-than-clear language in such plans will not be interpreted against the interests of option holders.

[11] For example, Oyer (2004) provides a theoretical justification for why options can be effective in retaining employees, and Aldatmaz, Ouimet, and Van Wesep (2014) find that employee turnover falls after a firm makes large broad-based employee stock option grants. Additionally, Oyer and Schaefer (2005) conclude that firms grant options for retention and sorting reasons.

significantly reduces their value. Therefore, options can present an opportunity to improve the overall efficiency of compensation structure by eliminating excess pay and to transfer wealth from the target firm employees to shareholders. For example, in option plans that do not explicitly contain an "anti-destruction" provision, the acquirer can cancel all out-of-the-money options without providing any payment to employees. In some cases, particularly when option plans do not contain the "change-of-control" provisions that accelerate vesting, unvested in-the-money stock options can also be canceled. The acquirer typically cannot completely take away vested in-the-money stock options as employees can choose to exercise them before the merger close. However, even in these cases, the acquirer can significantly shorten the maturity of options or force employees to accept the intrinsic option value instead of the Black-Scholes value. Overall, we expect that the possibility of canceling some of the outstanding options makes an acquisition more attractive, increases the willingness of the bidder to pay more for the target, and may increase the bidder's announcement return.

Third, given that the value of employee compensation contracts is at stake, it is natural for employees to view the merger unfavorably and to resist it. For example, by exercising some of their stock options, employees can acquire shares in the target firm and refuse to sell them to the bidder. Pagano and Volpin (2005) argue that employees can also lobby against a merger and take political actions to oppose the deal. Further, employees can try to dissuade the management from accepting a deal, and in cases in which the bidder's main objective is to acquire valuable human capital (so-called "acqui-hire" mergers), employees could also threaten to quit if their compensation value is not preserved. Importantly, the magnitude of wealth transfers between employees and shareholders is directly related to the offer premium, as options move deeper in-the-money with a higher takeover premium. Thus we expect employee resistance to the deal to decrease when a higher premium is paid. As a consequence, deals in which the target firm has many outstanding stock options may require a higher premium to close.

The relation between options and merger negotiations can become more complicated if options are issued to employees for strategic reasons in anticipation of a future merger. Theory predicts that in many situations the interests of managers and employees are aligned and make them natural allies

against takeovers (see, e.g., Garvey and Gaston (1997), Chemla (2005), and Pagano and Volpin (2005)). It is therefore conceivable that a manager anticipating a future takeover attempt could preemptively put the stock in friendly hands by granting more stock options to the firm's employees. Previous literature suggests that firms may adopt ESOPs and increase employee ownership in 401(k) plans as a takeover defense (see, e.g., Gordon and Pound (1990), Beatty (1995), Brown, Liang, and Weisbenner (2006), and Rauh (2006)).[12] Finally, a manager who is not self-serving but is acting in the interest of shareholders may believe that option grants will help the target firm to secure a better bargaining position and to obtain a higher premium.

In the next section we describe the main data sources used in our study.

II. Data Description and Summary Statistics

A. Acquisition Sample

The initial sample of mergers and acquisitions comes from the Thomson Financial SDC Platinum database and includes all M&A deals announced between January 1, 2006 and December 31, 2014. We require the target to be a publicly listed company in the United States and exclude spin-offs, self-tenders, exchange offers, repurchases, recapitalizations, acquisitions of assets, remaining interest or partial interest, and transactions for which the deal value is not available. Our choice of the starting date is motivated by the availability of stock option data in Compustat. In December 2004, the FASB issued a new rule (SFAS 123R) that requires employee stock options to be expensed in accounting statements using the fair value method. This rule became effective for firms' fiscal years beginning June 15, 2005. As a result of the new regulation, firms started to disclose more details on their outstanding options and new grants in financial statements, and these data became recorded in the Compustat database.[13] We further restrict our attention to completed deals with non-missing information on the number of stock options and the offer premium (1,277 deals). We obtain data on the offer price premium and other deal characteristics from the SDC Platinum

[12] However, it is not clear whether options are as effective at preventing takeovers as ESOPs and 401(k) plans. On one hand, option value may grow more quickly with the premium than the value of stock, making it more effective as a poison pill. On the other hand, the acquirer may significantly curb this cost by canceling the stock option plans and expropriating employees. Furthermore, if the option holders do not exercise their options, they have no voting power on a stock and cannot directly influence the outcome of the takeover attempt by voting.

[13] If instead of January 1, 2006, we choose June 15, 2005, as the starting date, our sample increases by 12 observations and all results are very similar.

database. The reported offer premium is calculated as 100 multiplied by the ratio of the initial offer price to the target's stock price four weeks before the merger announcement date minus one.[14]

To obtain the detailed information on the treatment of employee stock options in each deal, we perform a manual search of SEC filings for the sample of 1,277 deals. The data on option treatment are typically contained in merger agreements, tender offer statements, and asset purchase agreements filed with the SEC as a part of 8-K, 425, DEFA, or DEFM forms. We were unable to find the details on option treatment for 32 deals, which reduced the size of our sample to 1,245 deals. Internet Appendix provides several examples of text in merger agreements that describes how employee stock options are to be treated.

The data on employee stock options are from Compustat. We calculate the value of outstanding, granted, vested, and unvested stock options using the Black-Scholes formula. Since 2005, firms have been required to disclose their assumptions in the calculation of fair option values, including the assumed dividend yield, risk-free rate, and stock return volatility. Johnston (2006) and Aboody, Barth, and Kasznik (2006) argue that firms have some latitude in determining the inputs for option expense calculation and find that firms tend to manipulate the estimate of the volatility downward, which may reduce their option expense.[15] In contrast, Johnston (2006) finds no manipulation of the risk free rate or the dividend yield estimates. We therefore do not rely on the firms' disclosed information for the estimates of volatility, and for all firms calculate the annual volatility from the daily data on stock returns over the previous fiscal year. We assume the life of outstanding options to be the same as the term of granted options and the life of vested options to be one half of the term of granted options.[16] All stock option values are normalized by the market value of their firm's equity at the most recent fiscal year-end before the acquisition. The value of unvested options is defined as the difference between the value of outstanding stock options and the value of vested options.

Panel A of Table 1 reports the summary statistics on deal characteristics, target firm character-

[14] Following Officer (2003), we remove from the sample 17 observations where the offer premium is either below 0% or above 200%.

[15] Carpenter, Stanton, and Wallace (2010) examine how the option cost to shareholders is affected by volatility and conclude that in general the relation is ambiguous.

[16] If we assume that both vested and unvested stock options have the same time-to-maturity, our estimates for employee losses in Table 3 will increase.

istics, and option variables. The average (median) offer premium is 41.6% (33.3%) over the target's stock price four weeks prior to the deal announcement. The presence of a significant positive premium for the average deal implies that if the acquirer were to fully assume all of the target's equity compensation the target's employees would realize significant financial gains. As we will see later, however, the acquirers are reluctant to assume the target firm's compensation obligations. Most of the acquisitions (87.7%) are at least partially financed with cash, and we classify 67.2% of the deals as diversifying—i.e., deals in which the acquirer and the target belong to different industries as defined by their four-digit Standard Industrial Classification (SIC) codes. In our sample, 58.1% of all deals are done by a tender offer, and in 60.0% the acquirer is a public firm.

The average target firm employs more than 4,000 people and has assets of $1.2 billion. The size of the average target in our sample is comparable to that reported by Bates and Lemmon (2003), who study merger bids during the period 1989-1998 and report average assets of the target firms of $1.7 billion. Consistent with Bena and Li (2014), we also find that the average target firm has higher R&D expenses than the average firm in Compustat. In general, our sample is representative and consistent with those used in prior studies.

As is evident from the table, target firms also tend to have many employee stock options, with the average ratio of the number of outstanding options to the firm's outstanding shares equal to 9.6%. These options have substantial Black-Scholes value. Specifically, target firms have outstanding options valued at 4.9% of the firm's market capitalization on average (2.3% unvested options and 2.6% vested). The outstanding options are on average 39.8% in-the-money four weeks prior to the M&A announcement, but the moneyness is highly skewed. For example, in 41.8% of the target firms the outstanding options are out-of-the-money. Naturally, the moneyness of vested options is greater than the moneyness of the unvested options (58.1% vs. 31.0%).

In Panel B of Table 1, we compare the average characteristics of target firms and control firms. Following Bena and Li (2014), we create a control sample as a pool of potential targets. For each target firm in a given year, we find matching firms in the Compustat/CRSP universe that were neither acquirers nor targets in the three-year period prior to the deal, are from the same industry (Fama-French 17-Industries (FF17) classification), and have similar firm size in the prior

year (measured by sales).[17] Consistent with empirical evidence in Edmans, Goldstein, and Jiang (2012), we observe that target firms tend to be discounted prior to the acquisition. In particular, they have significantly lower market-to-book ratios than control firms. In line with the argument by Bena and Li (2014), target firms also do more R&D than control firms. Finally, target firms offer substantially more employee stock options than the control firms, both in terms of the number of options and their value.

III. Treatment of Employee Stock Options by Acquirers

In Table 2, we summarize the key statistics on treatment of target employee stock options by acquirers. Because the actual treatment often depends on whether options are exercisable and whether they are out-of-the-money or in-the-money, we present statistics for four separate categories. As can be seen from the table, most often acquirers choose to cash out vested in-the-money options (76.4%), which means that employees are forced to accept the intrinsic value of the options in lieu of their Black-Scholes value. Vested in-the-money options are never canceled, which is not surprising given that employees can freely exercise their options after the announcement but before the consummation of the merger. We do see that in 3.0% of deals, the vested in-the-money options are made to expire upon the merger close, which significantly shortens their time to maturity and reduces their value. Finally, in 17.9% of the deals the acquirer chooses to assume or convert the target's vested in-the-money stock options on essentially the same terms that they had before.[18]

The treatment of unvested in-the-money options is somewhat similar. They are cashed out in 70.2% of the deals and assumed or converted in 22.1% of the cases. Yet it is possible for the unvested in-the-money stock options to be canceled by the acquirer without any payment to employees; this happens in 45 deals or 3.6% of sample. Further, in some deals unvested in-the-money stock options expire when the merger closes, which in most cases precludes employees from retaining any value.

In contrast to in-the-money options, the out-of-the-money options are very frequently canceled by acquirers. Cancellation takes place in 79.0% of all deals for vested out-of-the-money options and

[17] Specifically, the control firms must have sales within a range of 95% to 105% of the sales of the target firm.

[18] In some of these cases, option vesting is accelerated. We do not focus on the acquirer's choice whether to accelerate vesting because, in many cases, option plans already have a built-in change-of-control provision that automatically accelerates vesting upon the change of control.

in 75.9% for unvested options. Some acquirers assume or convert even out-of-the-money options (18.3% for vested and 21.4% for unvested). Overall, in many M&A deals there are cancellations of at least some of the outstanding options, payout of intrinsic value instead of Black-Scholes value, and/or shortening of the time to option maturity.

A. Financial Implications of M&A for Target Firm Employees

Here we evaluate how employee option-based compensation is affected by a merger. There are several effects at play. First, employees may gain financially because of the premium paid by the acquirer. Note however, that the premium may simply reflect the true value of the targets. If targets are significantly undervalued prior to the acquisition, the stock price will eventually increase when the misvaluation is corrected, even if the acquirer did not approach the target. For example, Malmendier, Opp, and Saidi (2016) find that firms that are targets of cash-financed acquisitions are revalued on average by +15% after a deal failure. Second, the value of employee compensation may be adversely affected by a merger if the acquirers cancel outstanding employee stock options, shorten their maturity, and force employees to accept the intrinsic value instead of the Black-Scholes value. Third, when acquirers do assume a target's stock options by converting them to options written on the acquirer's stock, the value of stock options may be affected by the differences in volatility of stock returns and/or by the differences in dividend yield.[19]

In Panel A of Table 3, we present summary statistics on the implications of option contract modifications for the value of employee compensation. We first calculate how much value is lost by employees on their options given the treatment of options by the acquirer. For few firms that do not have any outstanding employee stock options, we set losses to zero. We find that because of option cancellations and modifications, employees lose on average 48.3% of the Black-Scholes value of their outstanding stock options, which is equivalent to 2.4% of the target's market capitalization.[20] The

[19] When an acquisition is stock-financed, there is also a potential concern that the acquirer's stock is overvalued (Shleifer and Vishny (2003)). For example, Ahern and Sosyura (2014) find that bidders in stock mergers try to manipulate media coverage during the period when the stock exchange ratio is determined, and that this strategy generates a short-lived runup in bidders' stock prices. Thus it is possible that when the target's options are assumed by the acquirer using the stock exchange ratio, the value of the options is not preserved. In our evaluation of the financial implications of M&A for the value of the target's stock options, we do not, however, take into account the possibility that the acquirer's stock is overvalued, because it is difficult to reliably estimate the degree of any overvaluation.

[20] We find similar results if we focus on the M&A deals involving only public acquirers. In such deals, employees lose on average 42.5% of the Black-Scholes value of their stock options, which translates to 2.2% of the target's market

last number is a useful metric of how much money the acquirer saves by canceling stock options. Unvested outstanding stock options contribute more to employee losses than do vested stock options (28.6% vs 19.7%). Further, when at least some options are canceled in the deal, employees of a target firm experience a 58.0% reduction in the value of their option compensation. When no options are canceled, the corresponding reduction is 8.8%, most of which is due to converting the old options into the new options with a less volatile underlying stock price.

The last row in Panel A gives the estimate for the value loss under the assumption that the maturity of the outstanding options is twice shorter.[21] Our main results implicitly assume that employees exercise their stock options at maturity. However, it is well known that risk-averse and undiversified employees may find it optimal to exercise options well before their expiration dates (see, e.g., Huddart (1994), Hall and Murphy (2003)).[22] Since our goal is to gauge how much value can be transferred from employees to shareholders, we do not need to estimate the certainty equivalent of ESOs to employees, which requires, among other things, assumptions on the utility function of employees, their risk aversion, and outside wealth. We observe that shortening maturity negatively affects the value of outstanding options and reduces the effect of compensation plan modifications at the time of the merger. However, the results do not change in a significant way. We find that employees lose an estimated 43.8% of the value of their outstanding stock options, compared to 48.3% we obtained previously without the maturity adjustment.

If, however, we compare the value of the target's stock options four weeks before the merger announcement with the value of their remaining options right after the merger announcement, we observe that employees gain on average 5.0% in value (Panel B). This is not surprising given that acquirers in our sample pay a significant premium, which increases the value of all equity-based compensation. Nevertheless, if all acquirers did nothing to change the option contracts, the effect of the offer premium would be to increase the value of outstanding stock options by approximately 73.8% on average. Thus modification of option contracts allows for significant cost savings for the

capitalization.

[21] We thank Eli Fich for this suggestion.

[22] Empirical evidence indicates that employees are likely to exercise their options approximately half way through their contractual life. For example, Huddart and Lang (1996) document that by month 60 since the option grant approximately 40% of all options are exercised. Further, Bettis, Bizjak, and Lemmon (2005) suggest that simply adjusting the maturity of an American option produces option values that are similar to the values obtained from the utility model calibrations.

acquirers. Interestingly, even after we account for the offer premium, the value of unvested employee stock options decreases on average in M&A deals. This is mainly explained by the fact that unvested options are more likely to be canceled (e.g., they are more likely to be out-of-the-money) and have a longer time left to maturity.

We also summarize the effect of stock price runup net of loss due to contract modifications in subsamples of data sorted by whether the acquirer cancels at least some options. We see that in a sample of firms that assume or convert all of the target's employee stock options—i.e., where there are no outright cancellations—the employees on average gain 48.0% in value. In contrast, in deals where the acquirer cancels at least some of the target's options (the majority of all deals), the value of employee option compensation decreases on average by 5.7% as a result of the merger despite the positive effect of the pre-merger stock runup. Finally, we separately present results for samples of deals in which the offer premium is below and above the sample median. It is easy to see that in deals with a modest offer premium, employees lose on average 10.6% of value of their options, and they gain 20.5% if the premium is above sample median.

To value the assumed options, the next panel of the table reports the average annual volatility and dividend yield of the target and the acquirer. In practice, when the acquirer assumes options "on essentially the same terms as before," it implies that the intrinsic value of the options is preserved, whereas the Black-Scholes value can in general be affected positively or negatively.[23] However, acquirers tend to be substantially larger and more mature, and tend to have fewer growth options than targets. As a result they typically pay higher dividends and have less volatile stock returns. Specifically, we find that the average annual volatility of the target firms' stock returns is 53.8%, whereas for acquirers it is only 34.4%. Similarly, the average dividend yield for acquirers is 1.4%, but for targets it is 0.9%; the volatilities and dividend yields are statistically different in these two samples. These results suggest that even when acquirers fully convert and/or assume the employee stock options, the market value of these options tends to decrease after the conversion.

Finally, we see that acquirers do not reinstate option incentives after the acquisition (see Panel D). First, note that approximately 40% of all bidders in the sample are private firms. These firms

[23] When options are assumed, the number of target firm stock options is divided by the option coverage ratio, and the strike price is multiplied by the same ratio. If the deal is financed by stock, the option coverage ratio is typically the same as the stock exchange ratio.

are unlikely to issue stock options, especially if they have no definite plans to go public.[24] Second, for public acquirers that did not assume any of the target firm's stock options, we compare the value of option grants in the year prior to, the year of, and the year after the acquisition. Despite the fact that the number of employees increases, we do not see that the overall value of option grants increases. If anything, the opposite is true.

Overall, we conclude that employees of most target firms experience significant negative change to their option compensation. A related interesting question is whether the potential for option cancellation is priced into the original employment contracts, long before the merger becomes a possibility. For example, it may be argued that rational employees anticipate the possibility of a merger when joining their firms and demand a larger total compensation ex ante. However, this is unlikely to be the case. First, the unconditional probability of becoming a target is quite low in any given year, and it is difficult to predict which firms will make actual targets. Second, the actual treatment of option compensation is typically unknown to employees until the M&A announcement. For example, as indicated in Section I.A, only 2 out of 105 compensation plans specify how ESOs will be treated in case of an M&A.

B. Survey Evidence on Employee Attitudes Towards M&A

Overall, the evidence suggests that in many deals the estimated value of employees' option compensation drops. Of course, this evidence alone is insufficient to determine whether employees are made worse off by an M&A deal. First, many components of an employee compensation package can be affected, including fixed wages, non-option equity-based compensation, and pensions. Second, employee job security can be at stake as well, as many mergers are followed by significant layoffs.[25] Third, employees of different rank and skill are likely to be affected by M&As in different ways; their workloads and job functions may also change, and there could be more or less room for advancement and promotion in a new organization.

Even more difficult question is how employees actually *feel* about the changes in their com-

[24] The data on stock option grants by private firms are not available. In our sample, only 3 out of 511 private acquirers go public by 2016.

[25] Some M&As result in production redundancies and overcapacity and may call for significant employee layoffs (see, e.g., Lichtenberg and Siegel (1990) and Davis et al. (2014)). If laid-off employees are less productive and/or have outdated skill sets that prevent them from quickly reentering the labor force, their financial welfare will be negatively affected by the merger.

pensation. First, employees are risk-averse and undiversified, and therefore their valuations may significantly diverge from the Black-Scholes or other risk-neutral valuation. Second, a large literature in behavioral economics shows that employees are not financially savvy and not particularly good at valuing complex financial securities (see, e.g., van Rooij, Lusardi, and Alessie (2011), Lusardi and Mitchell (2011)). For example, Babenko and Sen (2014) show that approximately 15% of employees believe that a stock option is worth more than a share of the underlying stock. Third, it is unclear what beliefs and expectations employees have about the future stock performance in the absence of a merger. For example, Benartzi (2001) shows that employees often extrapolate from past firm performance. Thus it is likely that individuals who see a positive stock price runup prior to a merger would expect this trend to continue in the future.

We therefore next investigate employee attitudes toward a hypothetical merger and relate those to the value and structure of their equity-based compensation. We use survey data on individual employees of four public firms that participated in the NBER survey conducted by Kruse, Freeman, and Blasi (2010) in 2004/2005. The surveys contained the following question about a merger: "If an outside investor offered to buy your company for 50% more than the current value of the stock, would you vote to sell the company?"[26] Employees who answered "no" to the question, were asked to choose their reasons for doing so. With respect to equity-based compensation of employees, the surveys gathered information on the dollar value of company stock held by employees (purchased on the open market and obtained through 401(k), ESPP, and ESOP), the intrinsic value of vested and unvested stock options, the total number of stock options, and the number of stock options that were granted to employees in the previous year.

The summary statistics on individual employees are reported in Table 4. More than 15% of employees report that they are part of firm management, which includes department heads, mid-level managers, and executive management; 31.3% are female, and 63.3% have a college degree. The average employee in the sample is 39 years old and makes $77,649 in annual income. Interestingly, most employees (57.9%) would vote not sell the company to an outsider for 50% above the current value of the stock. This is consistent with a generally held view in the literature that employees

[26] The question was also repeated with 100% instead of 50%.

may be good allies of management against mergers and acquisitions. Approximately 66.4% of employees, however, would vote to sell the firm at 100% above the market value. Almost 70% of employees who would vote not to sell the company say they are worried about potential layoffs by an outsider, and more than 40% say they think the company stock is worth more.

The table also shows that employees hold large amounts of stock options and stock, with median values of $50,000 and $25,000, respectively. Both variables are highly skewed, so the averages are considerably higher. Most stock options (59.2%) are unvested. Finally, employees were asked if their annual wages last year were higher or lower than those of employees with similar experience and job descriptions in other companies in their region, and their responses were coded from -2 (much lower) to 2 (much higher). According to this measure, an average employee is slightly underpaid in his current job function.

We next relate employee willingness to sell the company to an outsider to their equity-based compensation. Table 5 presents the results of a probit model estimation (marginal effects are reported), where the dependent variable is equal to one if an employee says he would sell the company to an outsider at a 50% premium. The variables of interest are the total value of stock options, the fraction of unvested options, the number of options held and recently granted, and the value of company stock held. In the model, we control for many employee characteristics, including gender, age, education, income, rank, risk tolerance, and the measure by how much the employee is overpaid. Most control variables enter with expected signs. For example, employees who are overpaid, more risk-averse, female, and middle-aged are unwilling to have an outsider take control, and therefore they vote against the merger.

Employees who hold more company stock are more likely to vote for a merger (column 1), which is not surprising since the value of their stock would then increase by 50%. Employees with more unvested stock options, however, are more likely to look negatively on an offer by an outsider. This may be because employees are not certain whether the acquiring firm would allow them to keep their unvested options. Similarly, employees who were recently granted many options (which are more likely to be out-of-the money and unvested) prefer to vote against the merger (column 2). In columns 3 and 4, we repeat the analysis but drop those employees who report to be part of firm

management. Based on prior research by Hartzell, Ofek, and Yermack (2004) and Fich, Cai, and Tran (2011), we reason that management is likely to obtain special perks and bonuses in a merger and should not be as concerned about the value of their stock options. Consistent with this view, we find that results become stronger for the non-executive employees.

In the last two columns of the table, we provide indirect evidence that change of control may help to reduce compensation inefficiencies and employee entrenchment. Berk, Stanton, and Zechner (2010) suggest that over time employees become entrenched and overpaid in their jobs, particularly those employees who have long tenure and low ability. This situation may change if an outsider takes control of the firm (e.g., when the firm goes bankrupt).[27] Mergers and acquisitions are often associated with changes in firm management, and hence, like bankruptcies, they present an opportunity for an outsider to abrogate previous employee contracts and reset the pay at competitive levels. Those employees with short tenure at the firm or not overpaid because their ability turned out to be high have relatively good outside employment opportunities, and hence they are unlikely to be affected much by a change of control. We therefore limit our sample to only those employees who: (i) say their annual wages in the previous year were higher or much higher than those of employees with similar experience and job descriptions in other companies in their region and (ii) have tenure at the firm that is longer than the sample median. Consistent with theory, our results show that employees with long tenure, and especially those who classify themselves as overpaid, are substantially more worried about their unvested stock options in relation to a potential merger.

In Table 6, we study the stated reasons by employees for voting against M&As. Among the list of possible choices, two often-given reasons are particularly interesting: "I would think the investor's offer means the company is probably worth more than its current market value" and "I would be concerned about an outside investor taking control and laying off employees."[28] From the estimation results in Table 6, we observe that employees who hold many stock options are more likely to say that the company stock is worth more when declining to vote for a merger, and they

[27] In the model of Berk, Stanton, and Zechner (2010), employees initially do not know their ability, and an optimal contract insures employees from risk in their human capital. Under the optimal contract, wages never go down unless an outsider takes control of the firm (e.g., after the firm files for bankruptcy). Therefore, in equilibrium, employees with low ability and long tenure are entrenched and overpaid, and they have the highest costs associated with a change of control in bankruptcy.

[28] Other offered reasons were "I like owning company stock" and "I like the sense of community with co-workers that employee ownership provides." Employees could choose multiple reasons.

are less likely to be concerned about potential layoffs.

Next, we analyze how option compensation affects the terms of the deal and whether expropriation of employees by removing their stock options can be a source of takeover gains.

IV. M&A Offer Price Premium

A. Univariate Results

Here we present univariate comparisons on the relation between the treatment of option compensation by the acquirer and the target firm's compensation obligations, as well as various deal characteristics. Figure 1 plots the average offer premium for target firms as a function of the number of options outstanding and the treatment of these options in the M&A deal. For each quintile of options outstanding, the light grey (dark grey) bars display the average offer premium for targets where at least some (none) of the outstanding options are canceled by the acquirer. It is evident from the figure that the offer premium is higher when options are canceled, particularly when the target firm has many outstanding ESOs. Similarly, Panel A of Table 7 shows that the offer premium is 8.6 percentage points higher for deals in which the acquirer chooses to cancel options. Further, we observe that in these deals the acquirers increase the initial offer price by a larger percentage. Specifically, in the sample where the acquirer cancels options and the initial and final offer prices differ, the offer price is increased on average by 10.7% relative to the initial offer, while it is increased by only 4.6% in deals where the acquirer assumes target compensation obligations. It also follows from the table that the average acquirer stock price reaction to the M&A announcement is significantly negative in deals with assumed and converted options, at -1.6%. Correspondingly, the total market value of the acquirer's stock over the three-day announcement window drops by $358 million in such deals. In contrast, the acquirers that are able to cancel option compensation tend to earn positive announcement returns, which average 0.6% over the three-day window. The dollar value losses are also smaller for these acquirers at $29 million.[29] This result suggests that not canceling the option compensation is costly to the acquirer.

[29] It is well known that bidders may on average experience dollar losses on the announcement of M&A deals even if the average CAR to the announcement is positive (see Moeller, Schlingemann, and Stulz (2005)). This is driven by a fact that negative CARs are more likely to be observed for firms with extremely large market capitalizations.

For comparison, we also provide the estimated bidder return from canceling or modifying employee stock options of the target firm, which is calculated as the dollar value change in the target employees' option compensation divided by the market capitalization of the bidder prior to the deal. We estimate that, on average, of the 2.2% additional announcement return for bidders that cancel options, approximately 0.5% can be directly explained by the cost savings arising from option cancellations and modifications.

In Panel B, we compare deal, acquirer, and target firm characteristics across deals with option cancellations and without. It is interesting to observe that acquirers are more likely to cancel employee stock options for deals financed with cash, as well as when the targets are smaller in size, have more option compensation obligations, or when the acquirer and the target are from different industries. The fact that options are less likely to be canceled in larger target firms could reflect that some firms pursue M&A activity with the objective of obtaining a larger workforce and prefer to minimize post-merger employee turnover. For example, Ouimet and Zarutskie (2016) find that in M&A deals involving target firms with larger workforce, there are greater post-merger wage increases. Naturally, we also see a higher propensity by private acquirers to cancel ESOs. In addition, we find that in deals with option cancellations, employee layoffs during the first year after the merger seem to be greater in magnitude. These results could indicate greater reluctance by acquirers to cancel options in situations where they would like to retain the newly acquired valuable and talented employees. Alternatively, it is possible that acquirers have an easier time reducing employee compensation in situations in which employees are worried about keeping their job.

An important observation from Panel B is that acquirers that cancel the option obligations of the target are not more likely to reinstate incentives through new option grants after the merger. In fact, the number of new grants in the merged company is smaller if options were canceled. One possibility, of course, is that during the post-expensing period we study there is an overall downward trend in the use of stock option compensation and the increased tendency by firms to substitute options with restricted stock and long-term incentive awards (see, e.g., Hayes, Lemmon, and Qiu (2012) for evidence on executives). We therefore also check whether firms increase the total equity-based grants to employees. Although the data on restricted stock grants to all employees

are not readily available, starting in 2006 firms have to report the total stock-based compensation expense (STCKO), which reflects the fair value of all equity-based grants made to employees during the year, including stock options, restricted stock, deferred stock bonuses, long-term incentive awards, and other types of stock-based compensation. As is evident from the table, the stock-based compensation grants are not higher for acquirers that cancel stock options during M&As.[30] We also check whether wages tend to increase more in firms that cancel employee stock option compensation. We do not find this to be the case; if anything, we observe the opposite pattern. We do not present these results because wage data reporting is voluntary and wage data (XLR) are available for only 32 deals in our sample.

Finally, the last two rows in Panel B help us link the treatment of a target firm's compensation to share ownership of the management. We observe that in mergers which result in the cancellation of employee stock options, the target's CEO and the top five executives hold significantly more shares prior to the merger.[31] We attribute this fact to the greater willingness of the target firm's management to negotiate a higher premium and seal the deal by any means when they hold more shares and stand to benefit more from the merger.[32]

B. OLS Results

In this section, we analyze how the takeover premium is affected by the presence and treatment of ESOs. The dependent variable is the offer price premium, defined as the initial offer price divided by the target's stock price four weeks before the merger announcement.[33] In the regressions, we control for various deal characteristics: whether the acquirer is a public firm, whether the deal is cash- or stock-financed, tender offers, a diversifying deal dummy, and toeholds. These control

[30] Another observation from Panel B is that most of the stock-based compensation expense during the 2006-2014 period is attributed to stock option grants rather than to restricted stock grants or other equity-based compensation.

[31] Note that the data on executive and CEO share ownership come from the Execucomp database and are available for less than one-third of the firms in our sample. We therefore do not include the executive ownership variables in our multivariate tests.

[32] The positive relation between the executive stock ownership and the probability that ESO compensation is canceled can also be explained based on the theoretical argument by Pagano and Volpin (2005). In their theory, managers with a low equity stake may wish protect themselves against hostile takeovers by transforming employees into a "shark repellent" through long-term labor contracts. In our context, such managers could design the employee option compensation plans in such a way that canceling or modifying them is difficult for the acquirer from a legal perspective.

[33] Following the M&A literature, we analyze the four-week premium to mitigate concerns that rumors and news leaks can affect the target stock price before the announcement.

variables are motivated by the prior literature. For example, Offenberg and Pirinsky (2015) find that structuring deals as tender offers allows for faster completion but typically requires a higher acquisition premium. Bargeron, Schlingemann, Stulz, and Zutter (2008) document that private acquirers pay significantly less than public acquirers. We also include firm characteristics that can capture target firm attractiveness, such as the target size, profitability, market-to-book ratio, prior year stock return, and the amount of investment in R&D. Finally, we include industry (Fama-French 17) and year fixed effects to capture the differences in takeover premiums across different industries and business conditions.

Table 8 presents the results of our estimation. Most of the control variables have the expected signs. Like Offenberg and Pirinsky (2015) and Bargeron et al. (2008), we find that offers by public acquirers and deals structured as tender offers are associated with a significantly higher premium. Acquirers that have a toehold prior to the bid pay a higher premium perhaps because these acquirers have a greater interest in the target,[34] whereas larger targets and firms that are less likely to be undervalued, as indicated by their high market-to-book ratios, collect a lower takeover premium.

We first examine how the offer premium is related to the treatment and the number of outstanding employee stock options (column 1). The estimates reveal that deals with option cancellations by the acquirer are associated with an approximately 4.8% higher takeover premium, when the median premium is 33.3%. This result is consistent with several (not necessarily mutually exclusive) hypotheses. First, it could reflect the possibility that options represent a significant cost to the acquirer, so their cancellation reduces the cost. Second, it is consistent with the hypothesis that canceling stock options allows the bidder to transfer wealth from employees to shareholders, so their willingness to secure the deal increases. Third, it may underscore resistance to the deal by discontented employees. Fourth, it could indicate that managers use option treatment as a credible way to increase bargaining power with the acquirer.

Likewise, we find that target firms with more stock options are acquired at a significantly higher premium, although the economic magnitude of this effect is somewhat smaller than that of the ESO treatment. For example, a one standard deviation increase in the number of outstanding

[34] Betton and Eckbo (2000) also find an insignificant positive relation between toehold and offer premium in a single-equation estimation. They furher show that this relation can change if the joint nature of the toehold-premium decision is taken into account.

stock options is associated with a 2.9% increase in the offer premium. These results do not support the view that options create a significant financial burden for the acquirer, but they lend support to the hypothesis that options present an opportunity for the acquirer to transfer wealth from employees to shareholders and/or are associated with greater employee resistance to the bid.[35] Next, we include the indicator for the average outstanding option being out-of-the-money four weeks prior to the deal. We observe that firms with out-of-the-money stock options obtain on average an 11.9% higher premium (column 2). Because it is much easier and common for acquirers to cancel out-of-the money stock options, these results provide further support for the employee expropriation and resistance hypothesis. We obtain similar results when we look at the value rather than the number of stock options.

In column 3, we analyze separately whether the premium paid is more strongly related to the value of vested or unvested employee stock options prior to the deal. As we saw in Table 2, acquirers never cancel in-the-money vested stock options, since employees can exercise them prior to the merger close; but they occasionally cancel in-the-money unvested stock options, which could be a cause of concern for employees. Further, in cases where all options are cashed out, employees tend to lose substantially more money on their unvested options because these options are more likely to be out-of-the-money and have a longer time left to maturity. Hence, employees may look more unfavorably upon the merger and be more resistant to the deal if they hold unvested options. Indeed, we find that the offer price premium is higher when more stock options in the target firm are unvested. This result suggests that because employees are concerned with preserving the value of their stock options, managers are reluctant to approve a deal unless the acquirer offers a high premium.

In column 4, we regress the offer premium directly on the expected loss to employees from option cancellations and modifications. To ensure that the regression is well specified, we do not use the offer premium in the construction of the right-hand-side variables. Therefore, the expected loss is calculated four weeks before the deal announcement and captures how the value of ESOs would be affected if the bidder implemented the treatment of stock options laid out in the merger

[35] Consistent with prior literature (Fich, Cai, and Tran (2011)), we also find that the offer premium is negatively (although not significantly) related to stock options held by the top five executive officers. We do not report these results because the use of Execucomp database decreases our sample size by more than two-thirds.

agreement and offered no premium on the stock. Indeed, we see that the more employees stand to lose, the greater the premium the acquirer chooses to pay on the stock. For example, a one standard deviation increase in loss to employees is associated with an approximately 4.2% higher takeover premium.

Finally in columns 5 and 6, we include the interaction terms between the number or value of options outstanding and the dummy variable for option cancellations. Presumably, canceling ESOs is more valuable for an acquirer when the target firm has many valuable stock options. Similarly, employee resistance should be greater if more of their compensation is affected by the merger. Consistent with these explanations, we find that the offer premium is higher when employees have a large number of stock options and the acquirer calls for canceling options.

Overall, Table 8 provides evidence consistent with expropriation by acquirers and employee resistance. Nevertheless, the results of OLS estimation cannot be interpreted in a causal way since it is possible that employee stock options proxy for some omitted target firm characteristics, which could confound our inferences.

To assess the potential omitted variable bias in our sample, we conduct the test proposed by Altonji, Elder, and Taber (2005) and developed by Oster (2016). In particular, Oster (2016) shows that, under reasonable assumptions, it is possible to determine how large the selection on unobservables must be in order to explain away the coefficient of interest. The test gauges how much the regression coefficients and the model R-squared change with the inclusion of additional control variables. We use her suggested input of $R_{max} = 1.3\widetilde{R}$, where $\widetilde{R}$ is the largest empirically observed R-squared (20.29% in our case). The results in Panel B report Oster's δ for each variable of interest and correspond to linear models 1-4 estimated in Panel A. Oster (2016) proposes to use $\delta = 1$ as a reasonable cutoff, as $\delta = 1$ implies that the selection on unobservable variable must be exactly as large as the selection on observable variables in order for results to be explained by the omitted variable bias. We find that with exception of unvested stock options in specification 3, deltas for all variables of interest are greater than one, which satisfies the robustness reporting standard suggested by Oster (2016). For example, in order for the higher premium with option cancellations to be explained away by selection on unobservables, selection on unobservables must

be approximately 1.57 times greater than selection on observables, which seems unlikely given that we control for the known determinants of the offer premium. In the next section, we further examine the possibility of omitted variable bias using the instrumental variables approach.

C. Endogeneity of ESOs and Instrumental Variables Estimation

We next explore the alternative hypothesis that employee stock options proxy for unobservable target firm characteristics. For example, Hoberg and Phillips (2010) argue that takeover gains are greater when targets have unique products, and it could be the case that stock options are correlated with product uniqueness. Similarly, employee stock options could be correlated with firm characteristics such as the quality of the labor force, employee entrepreneurship, productivity, and firm innovativeness. Bena and Li (2014) and Phillips and Zhdanov (2013) present arguments why acquirers may choose targets with a record of successful innovation. If indeed stock options proxy for some unobservable target firm characteristics that acquirers find valuable, the OLS estimates will be inconsistent and we will overestimate the effect of stock options on the takeover premium ("affirmative endogeneity" in terminology of Jiang (2017)) . However, it is also possible that ESOs are correlated with undesirable characteristics of the target firm, in which case OLS estimates can be biased downward ("corrective endogeneity"). For example, ESOs can be correlated with the difficulty of the target firm in attracting talent, high employee mobility, inefficiencies at the firm level, and with employee entrenchment. Finally, it is possible that options are granted strategically in anticipation of the merger and this introduces a positive or negative bias in our results.

To understand whether an omitted variable that is correlated with option use drives our results, we use an instrumental variables approach to examine whether target firms with more stock options are able to negotiate better terms in a deal. Ideally, we need to find economic variables that are strongly correlated with the option use but are unrelated to a firm's attractiveness as a target. We rely on one such geography-based instrument used in the compensation literature. Kedia and Rajgopal (2009) find evidence that the location of firms' headquarters explains a significant part of the variation in broad-based option grants. They argue that location of a firm's headquarters matters because of knowledge spillovers among directors and executives adopting such plans, local labor market conditions, and social interactions among employees of neighboring firms. Specifically,

our instrument is the *neighbor firms option use*, calculated as the ratio of the number of the firm's outstanding options to the firm's outstanding shares, averaged over all Compustat firms in the year of the M&A announcement that have headquarters located in the same three-digit zip code as the target firm (but excluding the target itself). It is unlikely that all firms in a given region (e.g., in Silicon Valley) become attractive targets and/or face higher takeover probabilities. A potential concern for using this instrument, however, is the existence of technological spillovers within industry clusters, which might be problematic if firms are more likely to be acquired for their technology and innovation. We therefore also present the results by constructing the instrument using local other-industry firms only. Specifically, we define the *neighbor firms option use outside firm industry* as the ratio of the number of the firm's outstanding options to the firm's outstanding shares, averaged over all Compustat firms in the year of the M&A announcement that have headquarters located in the same three-digit zip code as the target firm, but do not belong to the same 1-digit SIC industry. A similar type of instruments have also been used by Hochberg and Lindsey (2010) and Chang, Fu, Low, and Zhang (2015).

Our model is identified by exclusion restrictions and estimated by the limited information maximum likelihood. The results are presented in Table 9. Odd columns present the estimates of the first-stage regression, where the dependent variable is the number of outstanding options divided by the number of shares outstanding or the value of outstanding options divided by the market capitalization. We first employ the instrument that uses all firm local neighbors and then the one which uses only neighbors outside of industry. When the neighbor firms option use is employed as the instrument, we see that it positively predicts the target firms' number of outstanding options (t-stat = 6.37). The instrument is fairly strong because the first-stage R-squared is 26.3% (partial R-squared of excluded instrument is 3.4%) and the F-test of excluded instruments rejects the null hypothesis of weak identification (p-value< 0.001), which is important for establishing the relevance condition. The first-stage F-statistic of 43.4 also exceeds the critical value of 16.4 tabulated by Stock and Yogo (2002) to test whether given instruments are weak in finite samples. In the second stage, as in our OLS results, we observe a positive relation between the quasi-exogenous variation in outstanding options and the offer premium. Depending on the instrument used, the IV estimates

are 3.7 to 3.9 larger in magnitude than their corresponding OLS counterparts. These may indicate that stock options are more strongly correlated with characteristics that bidders find undesirable, such as firm inefficiencies and employee entrenchment. Finally, we find similar results when we use the value rather than the number of outstanding options.

Overall, our results do not fit the story that stock options proxy for valuable unobservable target firm characteristic. Instead, the positive relation between stock options and the offer premium is more likely to be explained by the acquirers transferring wealth from employees to shareholders through stock option cancellations and modifications and by the greater resistance of firm employees to such bids.

V. Acquirers' CARs

We next address an important question whether reducing employee compensation liability is value-creating for the acquirers. On one hand, by canceling and modifying options the acquirer may be able to transfer value from employees to shareholders. On the other hand, options may be necessary to motivate and retain the target firm's employees, and their cancellation may negatively affect future firm productivity. Further, given that acquirers pay a higher offer premium for targets with more canceled stock options, we might expect that acquirers earn a lower announcement return in such deals.

We therefore investigate how the market reacts to the announcements of deals in which the target firm has many options and also to the selected treatment of these options by the acquirer. The results of the estimation are presented in Table 10. The dependent variable is the cumulative abnormal return (CAR), calculated over the window (-1,+1) around the deal announcement date using the market model.[36] Columns 1 and 2 show the results of the regression of the acquirer CAR on several control variables and the dummy for whether the acquirer cancels the stock options of the target firm's employees. Consistent with the univariate results, it follows from the table that the market reacts more favorably to the deals in which stock options are canceled. Such deals have on average from 1.4% to 1.6% higher announcement returns. In contrast, we find that the greater number of stock options is associated with a lower announcement return, perhaps because of the

[36] Some acquirers in our sample are private firms, and we cannot calculate the CARs for them.

effect of options on the offer premium and/or the costs associated with their assumption.

An interesting unanswered question then is why all acquirers do not choose to cancel employee stock options if this action is value-creating for shareholders. We believe that in some cases preserving the target firm's employee stock options is necessary to retain and motivate the target firm's employees. Moreover, some stock option plans are designed in such a way that it is impossible for the acquirer to cancel them legally without triggering an avalanche of lawsuits (e.g., when the plan has an explicit anti-destruction provision).

VI. Conclusion

Using unique data from merger agreements, we analyze how acquirers treat the employee compensation obligations of the target firm and what implications it has for the negotiation of merger terms and merger outcomes. In 79.9% of all deals, the acquirers choose to cancel some employee stock options, with a high propensity to cancel all out-of-the-money stock options of the target firm. In cases when options are not explicitly canceled, their value is often significantly reduced because the acquirer stock is less volatile and has a higher dividend yield than the target stock, and employees are often forced to accept the intrinsic value instead of the Black-Scholes value. We find that in deals with option cancellations, employees are worse off after the deal even if we account for the significant offer premium paid by the bidder.

Given the importance of employee compensation treatment for the wealth transfers that take place between target employees, and shareholders of the bidder and target firms, we analyze how the offer premium and the acquirer's CARs are affected by compensation of the target. Using the sample of 1,277 M&A deals announced by U.S. firms during the period 2006 to 2014, we find that the offer price premium is larger when the target firm has more stock options, particularly when options are out-of-the-money and unvested, and when the acquirer cancels options. We employ geography-based instrument for option use and conclude that options do not proxy for an omitted valuable firm characteristic and that they have a causal effect on the offer premium. Our results can be taken to imply that acquirers pay a higher price to obtain their preferred treatment of option compensation and/or to mitigate employee resistance to the deal. In addition, we find that deals

with option cancellations are greeted by more positive market reaction (+0.6%), whereas deals in which acquirer assumes the existing options tend to destroy value as judged by lower CARs (-1.6%). Overall, our empirical results show that the equity-based compensation of employees plays an important part in the negotiation and outcomes of mergers and acquisitions.

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VII. Appendices

A. Target Compensation Plan Provisions Governing ESO Treatment in M&As

Table A1. Change of Control Provisions from ESO Plans.

The sample consists of 111 firms that were targets of an acquisition announced between January 1, 2014 and December 31, 2014. For each target firm, we search for all company compensation plans that cover outstanding employee stock options. We are unable find any option plan information for four target firms, and two firms do not have any employee stock options, leaving us with information on 105 compensation plans. For firms with multiple ESO plans, we collect information from the most recently adopted compensation plan. We search for keywords "control," "merger," "event," and "corporate transaction." Note that some vesting provision categories are not mutually exclusive, so the percentages may sum to more than 100%.

	Variable	Mean
Vesting	1. Plan does not specify how vesting will be adjusted in change of control	11.4%
	2. Plan specifies that vesting *may be* accelerated in change of control	35.2%
	3. Plan specifies that vesting *will be* accelerated in change of control	67.6%
	a. Unconditionally (single trigger)	26.7%
	b. If employment is terminated (double trigger)	21.9%
	c. If options are not assumed	31.4%
ESO treatment	1. Plan does not specify how ESOs can be treated by acquirer	36.2%
(other than	2. Plan allows for flexible ESO treatment by acquirer	61.9%
vesting)	3. Plan requires a particular ESO treatment by acquirer	1.9%

B. Variable Definitions

All continuous variables are winsorized at the 1% tails.

Panel A: Deal and Firm Characteristics	
Variable	Description
Offer premium	The ratio of the initial price offered by the acquirer to the target's stock price four weeks before the announcement minus 1, all multiplied by 100.
Tender offer	A dummy variable equal to one if the deal is structured as a tender offer.
Cash payment	A dummy variable equal to one if any part of the deal is paid with cash.
Diversifying deal	A dummy variable equal to one if the acquirer and target are from different industries (four-digit SIC code).
Public acquirer	A dummy variable equal to one if the acquirer is a public company.
Toehold	A dummy variable equal to one if the acquirer has a toehold in the target.
Initial to final offer price increase	The ratio of the final to initial offer price minus one in %. The variable is defined only for those deals in which the initial and final offer prices are not the same.
Bidder CAR	CAR for the acquirer over the three-day window centered on the M&A announcement date; the market model is estimated over one year of daily returns ending four weeks before the M&A announcement.
Bidder value increase	Bidder CAR, multiplied by the market capitalization of the acquirer four weeks before the M&A deal ($M).
Target size	Logarithm of the book value of the target firm's assets.
M/B	Market value of target firm's assets divided by the book value of assets.
ROA	The target firm's EBIT plus depreciation divided by the book value of assets.
R&D	The target firm's R&D expenses divided by the book value of assets.
Leverage	The sum of long-term and short-term debt divided by the book assets.
Top five ownership	The number of shares (excl. options) held by the top five executives as reported in Execucomp divided by the number of shares outstanding.
Stock return volatility	The annualized standard deviation of log-returns, estimated using daily data over one year prior to the M&A announcement.
Dividend yield	The value of common dividends per share of stock divided by the market price at the end of the fiscal year prior to the M&A announcement.
Cancel options	A dummy variable equal to one if any of the employee stock options are canceled by the acquirer without any payment to employees.

Panel B: Employee Stock Option Variables	
Outstanding options/ shares	The number of the target firm's outstanding stock options divided by the number of outstanding shares at the fiscal year-end prior to the M&A announcement.
Moneyness of outstand. options	The stock price four weeks prior to the M&A announcement divided by the weighted average strike price of outstanding options at the fiscal year-end, minus 1.
Out-of-the money	A dummy variable equal to one if the moneyness of outstanding options is negative.
Value of outstanding options/mktcap	The B-S value of outstanding options four weeks before the M&A announcement divided by the target firm market capitalization.
Value of vested options/mktcap	The B-S value of vested options four weeks before the M&A announcement divided by the target firm market capitalization.
Value of unvested options/mktcap	The B-S value of unvested options four weeks before the M&A announcement divided by the target firm market capitalization, calculated as the difference between *value of outstanding options/mktcap* and *value of vested options/mktcap*.
Loss from canceled/ modified options as % of mktcap	The difference between the B-S value of outstanding options four weeks before the M&A announcement and the value of options given the proposed acquirer's treatment, all divided by the target firm market capitalization.
Loss from canceled/ modified options as % of outstand. options	The difference between the B-S value of outstanding options four weeks before the M&A announcement and the value of options given the proposed acquirer's treatment, all divided by the B-S value of outstanding options before the announcement.
Loss from canceled/ modified options adjusted for early exercise as % of outstanding options	The difference between the B-S value of outstanding options four weeks before the M&A announcement (assuming maturity equal to 50% of option life) and the value of options given the proposed acquirer's treatment, all divided by the B-S value of outstanding options four weeks before the M&A announcement (assuming maturity equal to 50% of option life).
Effect of price runup on options net of losses due to contract modifications	The difference between the value of outstanding options evaluated at the offer price and given the acquirer's proposed treatment and the B-S value of options four weeks before the M&A announcement, all divided by the B-S value of outstanding options four weeks before the announcement.
Bidder CAR attributed to modified/canceled options	Loss from canceled/modified options by target employees, divided by the market capitalization of the acquirer before the M&A deal.

Figure 1. Offer Premium, Ability to Cancel Options, and the Number of Options Outstanding.

The figure plots the average offer premium for target firms as a function of the number of options outstanding/shares outstanding prior to an M&A. Bin 1 is the lowest quintile of options outstanding, and Bin 5 is the highest quintile of options outstanding. In each bin, light grey (dark grey) bars display the average offer premium for targets where at least some (none) of the outstanding options are canceled by the acquirer.

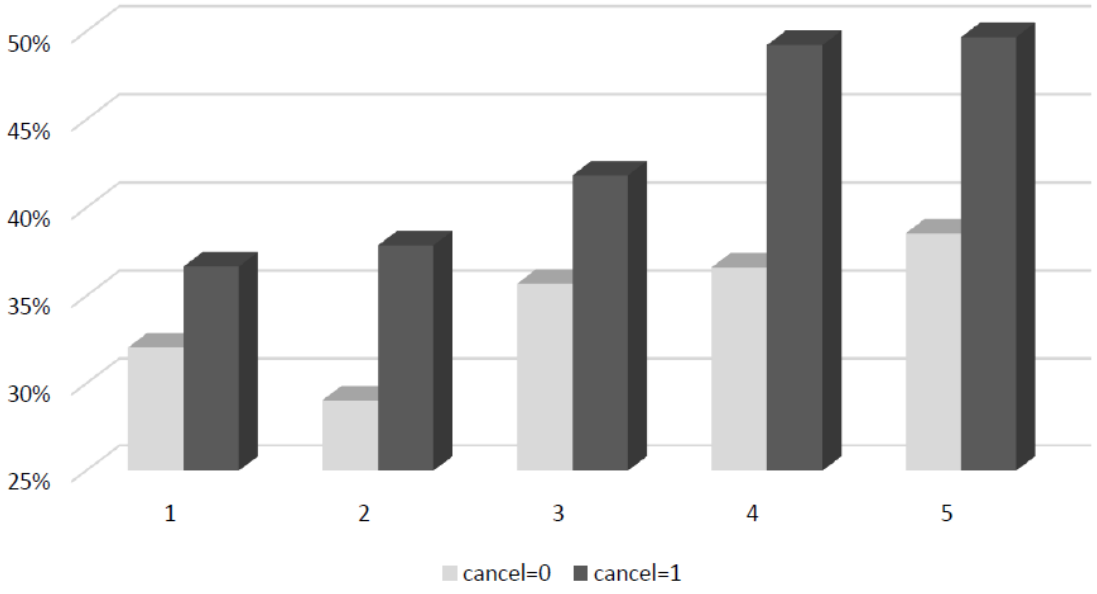

Table 1. Summary Statistics.

Panel A presents the summary statistics for firm characteristics, deal characteristics, and stock option variables for the sample of completed M&A deals announced between January 2006 and December 2014 in which target firms are public firms in the United States with non-missing data on the number and value of outstanding stock options and the offer premium. Panel B presents the means of main variables for the sample of actual targets and a control sample of potential targets. All variable definitions are provided in Appendix B.

Panel A: Completed M&A Deals (1,277 deals)						
Variable	Obs.	Mean	SD	25th	Median	75th
Deal characteristics:						
Offer premium	1,277	41.59%	31.72%	20.83%	33.28%	52.10%
Tender offer	1,277	0.581	0.494	0	1	1
Cash payment	1,277	0.877	0.328	1	1	1
Diversifiying deal	1,277	0.672	0.470	0	1	1
Public acquirer	1,277	0.600	0.490	0	1	1
Toehold	1,277	0.044	0.205	0	0	0
Target firm characteristics:						
Assets ($M)	1,277	1,225	3,460	94	297	978
Employees	1,258	4,203	11,274	277	802	3,100
M/B	1,277	1.527	1.193	0.801	1.204	1.866
ROA	1,277	0.059	0.204	0.024	0.101	0.154
R&D	1,277	0.071	0.128	0	0.012	0.098
CEO ownership (%)	405	1.664	3.557	0.158	0.397	1.147
Top five ownership (%)	408	2.895	5.286	0.351	0.831	2.637
Option variables:						
Outstanding options/shares	1,277	0.096	0.070	0.044	0.085	0.134
Moneyness of outstanding options	1,265	0.398	1.219	-0.282	0.155	0.675
Out-of-the money	1,265	0.418	0.493	0	0	1
Value of outstanding options/mktcap	1,277	0.049	0.043	0.019	0.039	0.068
Value of vested options/mktcap	1,249	0.026	0.026	0.007	0.018	0.035
Moneyness of vested options	1,233	0.581	1.603	-0.329	0.179	0.868
Value of unvested options/mktcap	1,249	0.023	0.022	0.007	0.018	0.032
Moneyness of unvested options	1,115	0.310	1.036	-0.218	0.131	0.504

Panel B: Target Selection					
	Actual targets		*Control sample*		*Diff. in means*
Variable	Obs.	Mean	Obs.	Mean	t-test
M/B	1,304	1.487	57,053	1.650	-5.77***
ROA	1,304	0.083	57,053	0.099	-4.43***
R&D	1,304	0.062	57,053	0.044	7.64***
Leverage	1,304	0.189	57,053	0.191	-0.28
Outstanding options/shares	1,304	0.096	57,053	0.083	8.03***
Out-of-the money	1,292	0.444	55,214	0.409	2.66***
Value of outstanding options/mktcap	1,303	0.047	56,373	0.041	6.39***
Value of vested options/mktcap	1,283	0.023	54,824	0.021	3.59***
Value of unvested options/mktcap	1,283	0.023	54,697	0.020	7.23***

Table 2. Treatment of Target Employee Stock Options by Acquirers.

The sample is hand collected from merger agreements, tender offers, and asset purchase agreements filed with the SEC as a part of 8-K, 425, DEFA, or DEFM forms for completed M&A deals announced between January 2006 and December 2014 that have non-missing offer premium, number and value of outstanding options, and are public firms in the United States. *Cashout (intrinsic value)* is equal to one if for each option an employee receives the merger consideration price, offer price, or the stock price prior to the merger minus the exercise price. *Payout* is equal to one if for each option an employee receives a fixed amount specified by the company that is different from the option intrinsic value. *Assume or convert* is equal to one if each option is either assumed by the acquirer on essentially the same terms or converted into a similar financial instrument, with the original vesting schedule being either kept or accelerated. *Expire on close* is equal to one if an option expires upon the merger close and is worthless if left unexercised. *Cancel without a payment* is equal to one if each option is canceled by the acquirer without any payment to employees, other than to directors. *Other treatment* is equal to one if any combination of the above treatments is used.

	Vested stock options				Unvested stock options			
Treatement	In-the-money		Out-of-the-money		In-the-money		Out-of-the-money	
	Number	%	Number	%	Number	%	Number	%
Cashout (intrinsic value)	951	76.4%			874	70.2%		
Cancel without a payment	0	0.0%	983	79.0%	45	3.6%	945	75.9%
Assume or convert	224	17.9%	228	18.3%	276	22.1%	266	21.4%
Expire on close	37	3.0%	0	0.0%	15	1.2%	0	0.0%
Payout	5	0.4%	8	0.6%	6	0.5%	8	0.6%
Other treatement	14	1.1%	12	1.0%	15	1.2%	12	1.0%
Target has no options	14	1.1%	14	1.1%	14	1.1%	14	1.1%
Total deals with data	1,245	100%	1,245	100%	1,245	100%	1,245	100%
Data not available	32		32		32		32	
Total deals searched	1,277		1,277		1,277		1,277	

Table 3. Effect of Mergers and Acquisitions on Employee Compensation.

The sample consists of completed M&A deals announced between January 2006 and December 2014, in which target firms are public firms in the United States with non-missing data on the number and value of outstanding stock options and the offer premium. The stock option treatment data are hand collected from merger agreements, tender offers, and asset purchase agreements filed with the SEC as a part of 8-K, 425, DEFA, or DEFM forms. All variables are described in Appendix B.

Panel A: Estimated Losses from Option Contract Modifications

Variable	Obs.	Mean	Std. dev.	25th	Median	75th
Cancel options	1,245	0.799	0.401	1	1	1
Loss from canceled/modified options as % of value of outstanding options	1,189	48.26	38.69	12.12	42.00	93.53
Loss from canceled/modified options as % of mktcap	1,189	2.40	3.21	0.30	1.28	3.35
Loss from canceled/modified vested options as % of value of outstanding options	1,189	19.67	18.57	3.14	14.67	33.15
Loss from canceled/modified unvested options as % of value of outstanding options	1,189	28.61	27.07	3.04	21.21	48.93
Loss as % of value of outstand. options (cancel=1)	953	58.02	35.62	24.44	55.44	100.00
Loss as % of value of outstand. options (cancel=0)	236	8.81	21.91	0.00	0.00	13.25
Loss from canceled/modified options adjusted for early option exercise as % of value of outstanding options	1,189	43.82	39.31	6.62	31.75	90.50

Panel B: Combined Effect of Stock Price Runup and Option Contract Modifications

Variable	Obs.	Mean	Std. dev.	25th	Median	75th
Effect of stock price runup on options net of losses due to contract modifications	1,189	4.98	66.54	-41.32	12.11	42.96
Effect of stock price runup on vested options net of losses due to contract modifications	1,189	14.10	38.82	-14.20	13.98	33.61
Effect of stock price runup on unvested options net of losses due to contract modifications	1,189	-9.30	36.37	-28.78	-3.25	8.91
Effect of stock price runup on options net of losses due to contract modifications (cancel=1)	953	-5.69	64.79	-60.32	2.76	34.79
Effect of stock price runup on options net of losses due to contract modifications (cancel=0)	236	48.04	55.29	15.89	40.60	68.16
Effect of stock price runup on options net of losses due to contract modificatio (premium<median)	594	-10.55	49.21	-43.56	0.41	24.11
Effect of stock price runup on options net of losses due to contract modifications (premium>median)	595	20.47	77.18	-37.08	35.00	68.00

Panel C: Differences Between Target and Acquirer

Variable	Target (Mean)	Acquirer (Mean)	Difference	t-test
Stock return volatility	53.75%	34.42%	19.33%	11.89***
Dividend yield	0.85%	1.39%	-0.55%	-2.93***

Panel D: Option Grants by Bidders That Cancel Options Before and After Acquisition

Variable	Mean	Median	Variable	Mean	Median
Value of options granted t-1 ($M)	75.83	18.30	Value of options granted t-1/ mktcap	1.14%	0.38%
Value of options granted t ($M)	64.47	18.13	Value of options granted t/ mktcap	1.13%	0.34%
Value of options granted t+1 ($M)	60.48	18.70	Value of options granted t+1/ mktcap	0.47%	0.27%

Table 4. Summary Statistics on Employee Attitudes Toward M&As.

The sample consists of surveys by individual employees of four public firms conducted by Kruse, Freeman, and Blasi (2010). *Vote to sell at 50% (100%)* is 1 if employee answers "yes" to "If an outside investor offered to buy your company for 50% (100%) more than the current value of the stock, would you vote to sell the company?" and is 0 otherwise. *Value of options* is the intrinsic value of all options. *Fraction of unvested options* is the intrinsic value of unvested options divided by the intrinsic value of all options. *Number of options* is the number of options held by the employee. *Number of granted options* is the number of options granted to the employee last year. *Value of stock held* is the dollar value of all stock held (401(k), ESPP, ESOP, kept after option exercises, bought on the open market). *Management* is 1 if employee is part of management (department heads, mid-level managers, and executive management). *Risk tolerance* is the logarithm of 1 plus the maximum price an employee would pay for a 10% chance to win $1,000. *Employee is overpaid* is coded by answers to "Do you believe your fixed annual wages last year were higher or lower than those of employees with similar experience and job descriptions in other companies in your region?" *Vote against because fear layoffs* is 1 if an employee gives "I would be concerned about an outside investor taking control and laying off employees" as a reason for voting not to sell the company at the 50% premium. *Vote against because worth more* is 1 if an employee gives "I would think the investor's offer means the company is probably worth more than its current market value" as a reason for voting not to sell the company at a 50% premium.

Variable	Obs.	Mean	Std. dev.	25th	Median	75th
Vote to sell at 50% premium	9,404	0.421	0.494	0	0	1
Vote to sell at 100% premium	9,225	0.664	0.472	0	1	1
Value of options ($000's)	9,404	209.531	620.088	1.000	50.000	175.000
Fraction of unvested options	6,925	0.592	0.238	0.500	0.625	0.786
Number of options (000's)	7,006	37.206	70.292	6.500	17.500	37.500
Number of granted options (000's)	9,318	3.327	5.504	0	1.500	4.500
Value of stock held ($000's)	9,404	95.136	336.849	12.500	25.000	75.000
Management	9,404	0.155	0.362	0	0	0
Hourly worker	9,404	0.234	0.423	0	0	0
Female	9,404	0.313	0.464	0	0	1
BA degree	9,404	0.633	0.482	0	1	1
Graduate degree	9,404	0.255	0.436	0	0	1
Age	9,404	39.326	8.853	33	39	45
Tenure	9,306	5.306	4.913	1.313	4.333	7.600
Annual income ($000's)	9,404	77.649	50.173	37.500	70.000	100.000
Risk tolerance (0 to 5)	9,404	2.595	1.401	2.398	3.045	3.932
Employee is overpaid (-2 to 2)	9,404	-0.223	0.988	-1	0	0
Vote against because fear layoffs	5,449	0.696	0.460	0	1	1
Vote against because worth more	5,449	0.428	0.495	0	0	1

Table 5. Stock Options and Employee Attitudes Toward M&As.

The table reports the marginal effects from the probit model estimation, where the dependent variable is *vote to sell at a 50% premium.* The sample consists of all employees in columns 1-2, only non-managerial employees in columns 3-4, employees who say their wages were higher or much higher than those of employees with similar experience and job descriptions in other companies in their region in column 5, and employees with tenure above the sample median in column 6. Variable definitions are provided in Table 4. Specifications include firm fixed effects. T-statistics are based on standard errors clustered by the firm. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	All employees	All employees	Exclude managers	Exclude managers	Overpaid employees	Long-tenure employees
	(1)	(2)	(3)	(4)	(5)	(6)
Value of options ($M)	0.003		0.002		0.030***	-0.001
	(0.35)		(0.52)		(6.99)	(-0.08)
Fraction of unvested options	-0.052***		-0.060***		-0.104***	-0.075***
	(-2.96)		(-3.82)		(-5.65)	(-2.70)
Number of options (M)		0.018		0.090***		
		(0.47)		(5.26)		
Number of granted options (M)		-1.120***		-2.996***		
		(-2.67)		(-9.32)		
Value of stock held ($M)	0.013***	0.023***	0.028***	0.033***	0.011***	0.022**
	(3.15)	(19.83)	(37.56)	(18.54)	(17.86)	(2.52)
Management	0.049***	0.058***			0.070***	0.023**
	(7.89)	(4.96)			(4.84)	(2.17)
Hourly worker	-0.084***	-0.070***	-0.084***	-0.066*	-0.139**	-0.073*
	(-3.93)	(-2.78)	(-2.86)	(-1.89)	(-2.31)	(-1.94)
Female	-0.086***	-0.082***	-0.088***	-0.090***	-0.036***	-0.074***
	(-5.23)	(-4.79)	(-7.84)	(-5.90)	(-3.95)	(-2.82)
BA degree	0.022	0.022	0.022	0.022	0.008	0.016
	(0.94)	(1.05)	(1.17)	(1.32)	(0.47)	(0.68)
Graduate degree	0.037***	0.034***	0.027**	0.025*	0.084**	0.036***
	(4.03)	(2.94)	(2.28)	(1.71)	(13.76)	(3.53)
Age	-0.018***	-0.018***	-0.014***	-0.014***	-0.027***	-0.020***
	(-5.61)	(-7.47)	(-5.69)	(-6.38)	(-6.30)	(-3.57)
Age squared/100	0.022***	0.022***	0.018***	0.017***	0.032***	0.025***
	(5.32)	(6.94)	(5.74)	(6.38)	(5.47)	(4.30)
Log(annual income)	0.029	0.034**	0.017	0.024	0.030**	0.059
	(1.49)	(1.96)	(0.88)	(1.53)	(2.25)	(1.58)
Preference for risk	0.013***	0.013***	0.010***	0.011***	0.006*	0.018***
	(4.38)	(3.73)	(4.24)	(3.28)	(1.90)	(5.23)
Employee is overpaid	-0.016***	-0.021***	-0.020***	-0.022***		-0.007
	(-3.07)	(-2.61)	(-2.98)	(-2.61)		(-0.71)
Observations	6,925	6,974	5,750	5,808	1,653	3,513
Log-likelihood	-4639.52	-4654.82	-3844.92	-3864.98	-1090.46	-2325.03

Table 6. Reasons for Voting Against a Hypothetical Merger.

The table reports the marginal effects from the probit model estimation, where the dependent variable is *vote against because stock is worth more* in columns 1-2 and *vote against because fear layoffs* in columns 3-4. The sample consists of employees who answer "no" to the question: "If an outside investor offered to buy your company for 50% more than the current value of the stock, would you vote to sell the company?" Variable definitions are in Table 4. Specifications include firm fixed effects; t-statistics are based on standard errors clustered by the firm. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1) Worth more	(2) Worth more	(3) Fear layoffs	(4) Fear layoffs
Value of options ($M)	0.035***		-0.026***	
	(8.94)		(-3.87)	
Fraction of unvested options	0.023		-0.036**	
	(0.36)		(-2.14)	
Number of options (M)		0.055***		-0.179***
		(3.74)		(-3.53)
Number of granted options (M)		2.534***		-2.305**
		(8.79)		(-2.27)
Value of stock held ($M)	-0.003	0.013***	-0.027***	-0.028***
	(-1.36)	(7.53)	(-5.60)	(-8.27)
Management	-0.023***	-0.029***	-0.056***	-0.045*
	(-2.73)	(-3.24)	(-3.55)	(-1.89)
Hourly worker	0.012	0.015	-0.045***	-0.041*
	(0.72)	(0.63)	(-5.80)	(-1.94)
Female	-0.101***	-0.101***	0.060***	0.056***
	(-16.37)	(-13.79)	(3.87)	(3.63)
BA degree	-0.021***	-0.020***	-0.028***	-0.026**
	(-9.06)	(-13.19)	(-3.21)	(-2.00)
Graduate degree	0.023***	0.022**	-0.022***	-0.023**
	(5.64)	(2.28)	(-2.90)	(-2.46)
Age	-0.010	-0.011	-0.004	-0.004
	(-0.82)	(-1.08)	(-0.34)	(-0.36)
Age squared/100	0.011	0.013	0.004	0.004
	(0.76)	(1.03)	(0.30)	(0.32)
Annual income	0.008	-0.005	-0.043***	-0.027
	(1.35)	(-0.47)	(-3.56)	(-1.41)
Preference for risk	0.022***	0.022***	-0.017***	-0.014***
	(6.18)	(5.91)	(-8.73)	(-10.13)
Employee is overpaid	-0.011	-0.010	0.013***	0.013***
	(-1.41)	(-1.06)	(4.80)	(34.81)
Observations	3,819	3,870	3,819	3,870
Log-likelihood	-2,573.65	-2,596.95	-2,330.21	-2,366.46

Table 7. Univariate Relations.

The table shows the means for variables of interest for deals where at least some of the outstanding employee options are canceled by the acquirer and for deals where none of the options are canceled and are instead assumed or converted by the acquirer. *Layoffs after M&A* is equal to $100\times \max\{0, \frac{T+A-C}{T+A}\}$, where C is the number of employees in the combined firm the first year after the merger, T and A are, correspondingly, the number of employees in the target and acquiring firms before the merger. *New option grants/mktcap by acquirer after M&A* is the Black-Scholes value of new stock option grants by the combined firm during the first year after the merger divided by the market value of the combined firm at the end of first fiscal year after the merger. *New stock-based grants/mktcap by acquirer after M&A* is the stock-based compensation expense recorded by the combined firm during the first year after the merger divided by the market value of the combined firm at the end of first fiscal year after the merger. All other variables are described in Appendix B.

Panel A	Cancel	Assume	Diff. in means	t-stat
Offer premium	42.98%	34.39%	8.58%	4.52***
Initial to final offer price increase	10.66%	4.62%	6.03%	2.53**
Bidder CAR (-1,+1)	0.61%	-1.60%	2.21%	3.12***
Bidder CAR (-1,+1) attributed to modified/canceled options	0.60%	0.07%	0.53%	1.41
Bidder value increase $M (-1,+1)	-29.38	-358.60	329.20	1.77*
Panel B	Cancel	Assume	Diff. in means	t-stat
Tender offer	0.595	0.552	0.043	1.18
Cash payment	0.945	0.636	0.309	9.06***
Diversifying deal	0.704	0.552	0.152	4.17***
Public acquirer	0.538	0.856	-0.318	-11.54***
Target size	5.541	6.499	-0.958	-7.38***
R&D	0.072	0.070	-0.002	0.25
Outstanding options/shares	0.100	0.086	0.014	2.60***
Outstanding options value/mktcap	0.051	0.044	0.007	2.34**
Layoffs after M&A	12.86%	6.03%	6.83%	3.93***
New option grants/mktcap by acquirer after M&A	0.004	0.009	-0.005	-4.55***
New stock-based grants/mktcap by acquirer after M&A	0.008	0.010	-0.002	-1.56
CEO ownership	1.833%	1.139%	0.694%	2.12**
Top five ownership	3.173%	2.033%	1.140%	2.00**

Table 8. Offer Premium and Employee Compensation (OLS).

Panel A of the table reports estimates of the OLS regressions of the offer premium on firm characteristics, deal characteristics, and employee stock option variables. The dependent variable is the acquisition premium provided by the SDC, calculated as the ratio of the initial offer price divided by the target's stock price four weeks before the deal announcement, minus one, and all multiplied by 100. The sample consists of completed M&A deals announced between January 2006 and December 2014, in which target firms are public firms in the United States with non-missing data on the number and value of outstanding stock options and the offer premium. All specifications include industry fixed effects (Fama-French 17) and year fixed effects. T-statistics based on heteroskedasticity-consistent standard errors clustered by the acquirer are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Panel A of the table reports δ using the test developed by Oster (2016) and corresponds to specifications estimated in Panel A. We use the input of $R_{max}= 1.3\widetilde{R}$, where $\widetilde{R}$ is the largest empirically observed R-squared (20.29%). All other variables are described in Appendix B.

	(1)	(2)	(3)	(4)	(5)	(6)
Cancel options	4.834**				-0.150	-1.733
	(2.35)				(-0.05)	(-0.56)
Outstand. options/shares	41.149**				-5.151	
	(2.55)				(-0.18)	
Value of outstand. options/mktcap		67.338**				-29.827
		(2.51)				(-0.61)
Out-of-the-money		11.940***	9.895***			11.395***
		(6.47)	(5.27)			(6.14)
Value of vested options/mktcap			8.467			
			(0.20)			
Value of unvested options/mktcap			129.948**			
			(2.55)			
Loss from canceled/modified				131.66***		
options/mktcap				(3.23)		
Cancel options × outstand.					55.390*	
options/shares					(1.73)	
Cancel options × value of						121.02**
outstand. options/mktcap						(2.31)
Tender offer	7.138**	7.625**	5.692*	4.896	6.849**	7.696**
	(2.25)	(2.37)	(1.83)	(1.59)	(2.16)	(2.39)
Cash payment	6.744**	9.702***	9.604***	8.156***	7.137**	8.227***
	(2.14)	(3.33)	(3.38)	(2.78)	(2.26)	(2.65)
Toehold	12.623**	10.841*	8.714	9.991*	12.288**	12.108**
	(2.22)	(1.88)	(1.59)	(1.85)	(2.19)	(2.08)
Public acquirer	4.032*	2.880	2.506	2.546	4.023*	3.410*
	(1.91)	(1.37)	(1.20)	(1.27)	(1.92)	(1.64)
Diversifiying deal	3.745**	3.043*	2.621	2.567	3.858**	3.702**
	(2.01)	(1.66)	(1.42)	(1.35)	(2.07)	(2.01)
Target size	-2.382***	-2.321***	-2.387***	-2.273***	-2.416***	-1.896***
	(-3.79)	(-3.60)	(-3.74)	(-3.64)	(-3.87)	(-2.89)
M/B	-3.274***	-1.882**	-1.774*	-2.701***	-3.146***	-1.786*
	(-3.42)	(-2.04)	(-1.95)	(-3.07)	(-3.29)	(-1.84)
ROA	-15.500*	-12.331	-11.244	-13.223	-16.164**	-12.341
	(-1.92)	(-1.55)	(-1.42)	(-1.60)	(-2.02)	(-1.46)
R&D	9.865	2.839	2.724	8.957	9.511	5.596
	(0.69)	(0.20)	(0.20)	(0.68)	(0.68)	(0.40)
Observations	1,245	1,265	1,237	1,189	1,245	1,233
R-squared	18.28%	19.81%	19.39%	19.17%	18.54%	20.29%

Panel B: Oster's δ with $R_{\max} = 1.3\widetilde{R}$				
	(1)	(2)	(3)	(4)
Cancel options	1.569			
Outstanding options/shares	1.289			
Value of outstanding options/mktcap		1.801		
Out-of-the-money		2.296	1.271	
Value of unvested options/mktcap			0.896	
Loss from canceled and modified options/mktcap				1.271

Table 9. Effect of Employee Compensation on Offer Price Premium (Instrumental Variables).

The table presents the results of LIML estimation of the deal offer price premium and employee stock options use. Odd columns present the results of the first equation, where dependent variables are the number of outstanding options divided by the number of shares outstanding and the value of outstanding options divided by the firm market capitalization. Even columns present the estimates of the model with the number and value of outstanding options endogenized. The excluded instrument is *neighbor firms option use (outside firm industry)*, which is the average ratio of the number of options outstanding to the shares outstanding, calculated for all Compustat firms excluding the firm itself (and firms from the same 1-digit SIC industry), for a given three-digit zip code and year. The estimation includes intercept, year fixed effects, industry fixed effects (Fama-French 17), and all control variables from Table 8. T-statistics based on heteroskedasticity-consistent standard errors clustered by the acquirer are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Outstand. options/shares (1st stage)	Offer premium (2nd stage)	Outstand. options/shares (1st stage)	Offer premium (2nd stage)	Value outst. options/mktcap (1st stage)	Offer premium (2nd stage)	Value outst. options/mktcap (1st stage)	Offer premium (2nd stage)
Outstand. options/shares		162.06**		152.29**				
		(2.07)		(2.05)				
Value of outstand. options/ mktcap						346.77**		318.91**
						(1.99)		(1.97)
Neighbor firms option use	0.247***				0.116***			
	(6.37)				(4.75)			
Neighbor firms option use outside firm industry			0.238***				0.238***	
			(6.31)				(6.31)	
Observations	1,263	1,263	1,261	1,261	1,263	1,263	1,261	1,261
First-stage R^2 (first-stage joint F-test)	26.26% (17.43 p-val<0.001)		26.32% (17.87 p-val<0.001)		25.33% (13.82 p-val<0.001)		25.45% (13.96 p-val<0.001)	
Partial R^2 of excluded instrument	3.42%		3.53%		1.97%		2.13%	
Weak identification test (Craigg-Donald F-stat)	43.40 (p-val<0.001)		44.77 (p-val<0.001)		24.70 (p-val<0.001)		26.60 (p-val<0.001)	

Table 10. The Acquirer Market Price Reaction to the M&A Announcement.

This table reports estimates of the OLS regressions of the acquirer's market price reaction to the M&A announcement on firm characteristics, deal characteristics, and employee stock option variables. The sample consists of completed M&A deals announced between January 2006 and December 2014, in which target firms are public firms in the United States with non-missing data on the number and value of outstanding stock options and the offer premium. All variables are described in Appendix B. All specifications include industry fixed effects (Fama-French 17) and year fixed effects. T-statistics based on heteroskedasticity-consistent standard errors clustered by the acquirer are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Cancel options	1.440**	1.623**		
	(2.01)	(2.26)		
Outstanding options/shares			-10.083**	-9.865**
			(-2.11)	(-2.07)
Offer premium		-0.023***		-0.019**
		(-2.72)		(-2.27)
Tender offer	-1.028	-0.890	-0.716	-0.592
	(-1.10)	(-0.97)	(-0.77)	(-0.65)
Cash payment	1.023	1.083	1.464*	1.554*
	(1.16)	(1.25)	(1.74)	(1.87)
Toehold	0.238	0.400	0.714	0.970
	(0.20)	(0.31)	(0.57)	(0.72)
Diversifiying deal	-1.211**	-1.083*	-1.298**	-1.185**
	(-2.12)	(-1.91)	(-2.27)	(-2.08)
Target size	-0.156	-0.215	-0.362*	-0.424**
	(-0.84)	(-1.16)	(-1.87)	(-2.18)
M/B	-0.837***	-0.890***	-0.960***	-1.005***
	(-3.92)	(-4.14)	(-4.42)	(-4.61)
ROA	-3.384**	-3.602**	-2.809*	-2.991*
	(-2.03)	(-2.20)	(-1.70)	(-1.83)
R&D	-9.109***	-8.566***	-8.218***	-7.888***
	(-3.27)	(-2.97)	(-2.91)	(-2.73)
Observations	518	518	524	524
R-squared	15.82%	16.69%	16.02%	16.62%

Internet Appendix to "Will I Get Paid? Employee Stock Options and Mergers and Acquisitions"

ILONA BABENKO, FANGFANG DU, and YURI TSERLUKEVICH*

This Internet Appendix supplements the analysis in the main text by providing examples of legal language to describe the possible and actual treatement of employee stock options in case of an M&A.

I. Target Compensation Plan Provisions Governing ESO Treatment

Below we provide examples of legal language used in company stock option plans that describes how ESOs can be treated in the event of a change in control.

1. Compensation Plan that Allows for Flexible ESO Treatment

Viasystems Group, Inc., 2010 Equity Incentive Plan

Upon the occurrence of a Change in Control..., the Committee is authorized (but not obligated) to make adjustments in the terms and conditions of outstanding Awards, including the following: (a) continuation or assumption of such outstanding Awards under the plan by the company; (b) substitution by the surviving company or corporation or its parent of awards with substantially the same terms for such outstanding Awards; (c) accelerated exercisability, vesting and/or lapse of restrictions under outstanding Awards immediately prior to the occurrence of such event; (d) upon written notice, provide that any outstanding Awards must be exercised, to the extent then exercisable, during a reasonable period of time immediately prior to the scheduled consummation of the event, or such other period as determined by the Committee (contingent upon the consummation of the event), and at the end of such period, such Awards shall terminate to the extent not so exercised within the relevant period; and (e) cancellation of all or any portion of outstanding Awards for fair value (as determined in the sole discretion of the Committee and which may be zero)...

*Citation format: Babenko, Ilona, Fangfang Du, and Yuri Tserlukevich, Internet Appendix to "Will I Get Paid? Employee Stock Options and Mergers and Acquisitions."

2. Compensation Plan that Specifies How Vesting Will Be Adjusted

Trivida Corp., 1998 Equity Incentive Plan

In the event of a merger or consolidation in which the Company is not the surviving corporation...("Corporate Transaction"), any or all outstanding Awards may be assumed, converted or replaced by the successor or acquiring corporation. In addition, if a Termination Event occurs with respect to a Participant within six (6) months of the consummation of a Corporate Transaction, then notwithstanding any other provision in this Plan to the contrary, the vesting of such Participant's Awards will accelerate and such Participant's Options will become exercisable in full. "Termination Event" shall have occurred if the successor or acquiring corporation terminates the employment of such Participant for any reason other than cause, death or disability. In the event such successor or acquiring corporation does not assume or substitute Awards, then notwithstanding any other provision in this Plan to the contrary, the vesting of all Awards will accelerate and the Options will become exercisable in full..., and if such Options are not exercised prior to the consummation of the corporate transaction, they shall terminate...

II. Examples of Option Treatment From Merger Agreements

Below we provide examples of legal language used in merger agreements that describes how ESOs are treated in the event of a change in control.

1. Cashout of In-the-money Stock Options and Cancellation of Out-of-the-money Stock Options

Global Cash Access Holdings and Multimedia Games Holdings, Sep 8, 2014

As of the Effective Time, each Company Option granted prior to the date hereof and that is outstanding and unexercised immediately prior to the Effective Time (whether vested or unvested) shall automatically terminate and be canceled without any action on the part of any holder of such Company Option in consideration for the right at the Effective Time to receive in full satisfaction of the rights of such holder with respect thereto, as promptly as reasonably practicable following the Effective Time, the Option Cash Payment. "Option Cash Payment" means, with respect to any Company Option, a cash payment equal to the product of (A) the number of shares of Company Common Stock subject to such Company Option as of immediately prior to the cancellation of such

Company Option and (B) the excess, if any, of the Merger Consideration over the exercise price payable per share of Company Common Stock issuable under such Company Option, without interest and less any required withholding Taxes. For the avoidance of doubt, if the exercise price per share of any Company Option, whether vested or unvested as of the Effective Time, is equal to or greater than the Merger Consideration, then by virtue of the occurrence of the Effective Time and without any action on the part of Parent, the Company or the holder thereof, the Company Option will automatically terminate and be canceled without payment of any consideration to the holder.

2. Cancellation of Options

Nightingale Informatix and Vantagemed, Feb 16, 2007

Within two business days following the date hereof, the Company shall deliver notice to the holders of Company Options, which such notice shall be in compliance with the terms of the Plan and such Company Options, that the Plan and Company Options will not be assumed by Parent and will be canceled or terminated immediately prior to the Effective Time.

3. Assumption of Options

Black & Decker, Stanley Works, and Blue Jay Acquisition, Nov 2, 2009

The Black & Decker Board shall (except, with regard to Nolan D. Archibald) adjust the terms of each outstanding Black & Decker Stock Option to provide that, at the Effective Time, each such option, whether vested or unvested, outstanding immediately prior to the Effective Time shall be converted into, and shall constitute, an option to acquire, on the same terms and conditions as were applicable to such Black & Decker Stock Option immediately prior to the Effective Time, the number of shares of Stanley Common Stock (rounded down to the nearest whole share) determined by multiplying the number of shares of Black & Decker Common Stock subject to such Black & Decker Stock Option by the Exchange Ratio, at an exercise price per share of Stanley Common Stock, rounded up to the nearest whole cent, equal to (A) the per share exercise price for the shares of Black & Decker Common Stock otherwise purchasable pursuant to such Black & Decker Stock Option divided by (B) the Exchange Ratio (each, as so adjusted, an "Adjusted Option").

4. Assumption of Unvested and Cashout/Cancellation of Vested Options

Micros Systems, OC Acquisition LLC, Rocket Acquisition, and Oracle, Jun 22, 2014

At the Effective Time, by virtue of the Merger and without any action on the part of the holders thereof, the unvested portion of each Company Stock Option (a "Company Compensatory Award") that is held by a Person who is an employee of, or a consultant to, the Company, shall be assumed by the Ultimate Parent and converted automatically at the Effective Time into an option denominated in shares of Ultimate Parent Stock and subject to terms and conditions substantially identical to those in effect at the Effective Time (an "Assumed Company Award"), except that (i) the number of shares of Ultimate Parent Stock that will be subject to each such Assumed Company Award shall be determined by multiplying the number of shares of Company Common Stock subject to such Assumed Company Award by a fraction (the "Award Exchange Ratio"), the numerator of which is the per share Merger Consideration and the denominator of which is the average closing price of Ultimate Parent Stock on NYSE over the five (5) trading days immediately preceding the Effective Time and (ii) the exercise or purchase price per share of each such Assumed Company Award shall equal (x) the per share exercise or purchase price of each such Assumed Company Award divided by (y) the Award Exchange Ratio.

Notwithstanding the foregoing, (i) the vested portion of each outstanding Company Compensatory Award and (ii) the vested and unvested portion of each outstanding Company Compensatory Award that is held by a Person who is not an employee of, or a consultant to, the Company (a "Cashed Out Compensatory Award") shall not be assumed by the Ultimate Parent and shall, immediately prior to the Effective Time, be canceled and extinguished and, in exchange therefor, each former holder of any such award shall have the right to receive an amount in cash equal to the product of (x) the aggregate number of shares of Company Common Stock subject to such Cashed Out Compensatory Award immediately prior to the Effective Time and (y) the Merger Consideration less any per share exercise or purchase price of such Cashed Out Compensatory Award.

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