

The Effect of Cultural Similarity on Mergers and Acquisitions: Evidence from Corporate Social Responsibility

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Abstract

We study the effect of corporate cultural similarity on merger decisions and outcomes. Using the similarity in firms' corporate social responsibility characteristics to proxy for cultural similarity, we find that culturally similar firms are more likely to merge. Moreover, these mergers are associated with greater synergies, superior long-run operating performance, and fewer write-offs of goodwill. Our evidence is consistent with the notion that cultural similarity eases post-deal integration. Our results contribute to the literature on the determinants of merger success, provide new evidence on the impact of corporate culture, and offer a new approach to defining firms' cultural similarity.

Embedded in our culture is the shared commitment we have to act responsibly, conduct our business ethically and to continually earn the trust of those we serve. Our Vision, Mission and Values are an expression of this commitment and the true essence of who we are and what we strive to be.

—Thomas Ryan, CEO of CVS Caremark
2007 Corporate Social Responsibility Report
(CVS Caremark (2008))

I. Introduction

An important determinant of merger success is post-merger integration: the ease with which two distinct organizations become one. Post-merger integration

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depends on a number of factors, one of which is the similarity between merging firms' corporate cultures. In a recent survey by Graham, Harvey, Popadak, and Rajgopal (2015), 48% of executives indicated that they would abandon a potential deal if there was cultural misalignment, and an additional 28% of executives said that they would complete the deal but would require a discount of between 10% and 30% of the purchase price of the target.¹ Likewise, cultural fit is often mentioned by executives as one of their motivating factors in making merger and acquisition (M&A) deals.² Indeed, many recent high-profile merger failures (e.g., AOL–Time Warner and Daimler–Chrysler) are often attributed to the lack of cultural fit (Finkelstein (2002), Dealbook (2010), and previous research notes that cultural differences are often a key driver of merger failures (e.g., Cartwright and Cooper (1993), Van den Steen (2010a)).³

An increasingly important aspect of corporate culture is a firm's corporate social responsibility (CSR) behavior. Firms frequently communicate with key stakeholders about their vision, mission, and values by disclosing CSR practices.⁴ Moreover, CSR policies are driven by stakeholders' preferences (Benabou and Tirole (2010)) and thus reflect the shared beliefs and values within an organization, defining corporate culture (e.g., Hoi, Wu, and Zhang (2013), Gao, Lisic, and Zhang (2014)). As an example of the importance of CSR in determining a firm's culture, one can see from the quote (that began this article) by the CEO of CVS Caremark that his firm's CSR practice is embedded in its corporate culture and drives its vision and values.

Despite the growing importance of CSR in corporate culture and ample anecdotal evidence of the importance of cultural fit in merger success, there has been little empirical evidence in the finance literature about whether cultural fit is an important determinant of post-merger success (likely via integration). In this

¹Similarly, McKinsey & Company reports that 50% of surveyed executives agreed that the fit between the corporate cultures is integral to merger success, and a quarter of executives indicated that the absence of cultural fit is a key driver of merger failure (Engert, Gandhi, Schaninger, and So (2010)). McGee, Thomas, and Thomson (2015) note that 76% of surveyed executives expressed that cultural alignment is important to integration success. Schein (2001) reports that 61% of survey respondents agreed that corporate culture is at least as important as financial concerns in merger success, and Datta (1991) links "organizational fit" directly to the post-merger performance of the acquiring firm.

²Michael Ferdinandi, CVS Caremark's senior vice president of human resources, corporate communications, and community relations, stated: "As we did in our numerous successful acquisitions of other chains, we learned in our merger with Caremark that we share much of the same business culture" (*Chain Drug Review* (2008)). Similarly, around the time of the Unocal deal, David O'Reilly, Chevron's CEO indicated: "This merger provides current and long-term investment value, and Unocal is an excellent strategic fit with Chevron's assets and corporate culture" (Chevron (2005)).

³The organizational behavior and economics literature has also studied the effects of corporate culture on merger outcomes. Bouwman (2013) notes the focus in economics of the micro-foundations for why culture affects outcomes, whereas the organizational behavior literature treats culture as a variable affecting both individual and group behavior. Sarala, Junni, Cooper, and Tarba (2016) discuss how sociocultural linkages affect knowledge transfer in M&A transactions. We follow from previous literature in approaching "corporate culture" as reflecting shared beliefs and values within the organization. The idea is that "corporate culture" shapes individual behavior in a firm such that culture is a means of coordinating or facilitating cooperation when formal contracts are not practical or would be overly costly (e.g., Schein (1985), Kreps (1990), Lazear (1995), Akerlof and Kranton (2005), and Van den Steen (2010b)).

⁴According to PricewaterhouseCoopers (2010), 81% of all publicly traded companies in the United States report CSR activities on their Web sites as of 2010.

article, we address this question by examining the effects of similarities in firms' CSR practices on merger likelihoods and outcomes. Specifically, we ask whether firms with better cultural fit with respect to their CSR practices are more likely to form merger pairs and, if so, whether they exhibit better outcomes from their deals.

We hypothesize that similarity in CSR behavior reflects cultural similarity between two firms and is positively related to the likelihood of firms forming merger pairs and to superior post-merger performance. An important aspect of this hypothesis is that firms with similar CSR practices have similar cultures and will experience fewer post-merger integration challenges. Their deals will, therefore, exhibit superior merger synergies or will have fewer difficulties in realizing the available synergies. Because CSR encompasses broad and diverse sets of policies and commitments, the differences in firms' CSR policies can thus reflect the differences in the preferences and demands of their different stakeholders. Such differences can increase the cost of integrating various stakeholders from different organizations.⁵

To further illustrate our hypothesis, consider a merger between a firm with an inclusive culture and strong commitment to workplace diversity and another firm with a poor reputation for diversity. All else being equal, the merged firm may face greater challenges in integrating its employees than would two firms with similar levels of commitment to workplace diversity. Likewise, firms with different levels of commitment to and investments in workplace safety, employee perks, and benefits may face greater challenges and costs in retaining employees during the integration process. Apart from employee-related issues, a company committed to environmentally friendly practices may also face greater challenges in offering and marketing its products to socially conscious customers (or downstream firms with such customers) if it were to merge with a company with a poor environmental reputation.

An alternative hypothesis is that *dissimilarities* in firms' CSR practices are associated with increased likelihood of merger occurrence or merger success. Under this hypothesis, differences between firms could be a source of value creation in a merger (Bouwman (2013)). This would be the case if, for example, a value-increasing culture can be imposed on the target firm due to a merger (Wang and Xie (2009)) or if aspects of the dissimilarity between acquirer and target actually create complementarities (e.g., if one firm's strengths are the other firm's weaknesses). In the context of CSR, an acquirer with a reputation for engaging in prosocial activities in a certain area can increase the value of the combined firm by lending its reputational capital to a target firm with a poor track record in that area. In the end, the relation between CSR similarity and merger occurrence or success is an empirical issue, which we explore in this article.

⁵In contrast, culturally similar firms are less likely to incur costly changes to their cultures. This notion was echoed by Edward Whitacre (AT&T's then-CEO) who, upon the completion of AT&T's merger with SBC, assured various stakeholders via AT&T's annual CSR report that its philosophy toward good citizenship would remain steady even after the merger of the two organizations because both companies have made similar commitments to do good works for their customers, stockholders, employees, suppliers, and communities (AT&T (2006)).

To test our hypothesis, we construct a novel measure of CSR similarity between two firms. By using data on 124 different dimensions of firms' CSR practices related to employee relations, environmental practices, human rights, community involvement, governance, and product, we estimate the pairwise closeness of any two firms' multidimensional CSR foci using the data from the Kinder, Lydenberg, and Domini (KLD) environmental, social, and governance (ESG) subcategories. Similar measures have been applied in the economics and finance literature to quantify the technological similarity between two firms (e.g., Jaffe (1986), Bloom, Schankerman, and Van Reenen (2013), and Bena and Li (2014)). A benefit of this measure is that it fundamentally treats CSR practices, and likewise, corporate culture, as the multidimensional construct that it is, yet offers a direct and objective quantitative metric for the similarity of a pair of firms.

Using our measure of CSR similarity, we document the following results: First, we find that mergers are more likely between pairs of firms with higher CSR similarity. Specifically, a 1-standard-deviation increase in CSR similarity increases by 33% the odds of a pair of firms merging, relative to a control sample of hypothetical deals between pairs of firms that did not happen. The magnitude of this effect is measured after controlling for deal, acquirer, and target characteristics. Second, we find that CSR similarity is positively associated with merger synergies. Mergers between acquirers and targets with high CSR similarity are associated with 3.5% (3.1%) higher combined announcement returns at the mean (median).

We then present evidence that a 1-standard-deviation increase in CSR similarity is associated with a 26% increase in the odds of successfully completing the deal and that such deals complete at an 18% more rapid rate. The acquirers in these mergers also experience significantly better long-run operating performance (approximately a 3.7% greater increase in abnormal operating performance than in deals between merger partners with low similarity) and significantly fewer post goodwill write-offs. Both of these results are consistent with more successful integration between culturally similar firms. We also show that these types of mergers experience fewer changes in CSR practices after the merger, consistent with these merging partners not experiencing costly changes to their cultures. In subsequent robustness analyses, we show that our results are robust to alternative definitions of CSR similarity and to different matching methods.

We provide further evidence to illustrate the mechanism by which CSR similarity has such a strong positive impact on post-merger integration. We show that the effect of CSR similarity is even stronger among firms in labor-intensive industries, in mergers that involve firms in the same industry, in horizontal mergers, among serial acquirers, and in relatively larger deals. These results suggest that firms for which smooth post-merger integration is of greater importance are more likely to target firms that share similar cultural values and that greater synergies are expected in such deals.

Our study contributes to the empirical studies on the effects of cultural fit on merger success. The existing work on this issue has mainly focused on the effects of national culture on cross-border M&A deals (Guiso, Sapienza, and Zingales (2006), Frijns, Gilbert, Lehnert, and Tourani-Rad (2013), and Ahern, Daminelli, and Fracassi (2015)). Conversely, research on the role of similarity in corporate

culture has been relatively scant. Earlier works in the organizational science literature have relied on case studies and small samples of questionnaires sent to executives of acquiring firms about their perceived cultural fit (e.g., Datta (1991), Chatterjee, Lubatkin, Schweiger, and Weber (1992), and Weber (1996)); consequently, the results from such studies have been largely inconclusive (Stahl and Voigt (2008)). This gap in knowledge is unfortunate because, as Zingales (2015) points out, “corporations are micro-societies . . . with a better ability to shape their own culture” and thus that “cultural design is more prominent in companies than in countries.” Our article addresses this gap by using a large sample of U.S. M&A deals involving firms that share the same national culture but have potentially different CSR policies, and showing that corporate cultural fit matters in determining post-merger integration.

Several recent finance papers have also begun to examine the effects of corporate cultural similarity on M&A outcomes by attempting to systematically quantify cultural fit. Tremblay (2017) uses textual analysis to quantify dimensions of corporate culture by counting the frequency of words in a firm’s 10-K filing that correspond to the competing values framework: create, compete, control, and collaborate. Tremblay (2017) measures the cultural similarity between two merging firms using the congruence of these word counts and reports a negative association between cultural similarity and post-merger performance.⁶ Our work differs from hers in the way we quantify corporate culture: We examine the “distance” between the merging firms’ CSR policies, whereas Tremblay’s most important variable measuring the (dis)congruence of corporate culture is based on the “distance” between the counts of the words the merging firms use to describe themselves. Alexandridis, Hoepner, Huang, and Oikonomou (2016) use environmental, social, and governance (ESG) data for firms in 80 different countries and find, as do we, that corporate cultural similarity between acquirers and targets is positively associated with synergies from mergers. However, their sample is small and dominated by cross-border deals involving non-U.S. firms: Only around 25% of their sample of 220 deals (162 of which were completed) consists of domestic U.S. mergers. Given that *national* cultural differences are likely to be as important in cross-border deals as *corporate* cultural differences are (Ahern et al. (2015)), the probative value of the Alexandridis et al. (2016) article is limited at best.

More broadly, our study is also related to studies examining the effects of noncultural similarities on M&A deals. For example, Hoberg and Phillips (2010) use text-based analyses of firms’ products and find that product-market similarities are positively associated with deal incidence and merger success (defined as stock returns, ex post cash flows, and growth in products) and that the effect is particularly strong in competitive product markets.⁷ Similarly, Bena and Li (2014) show that technological similarities are positively associated with the likelihood of mergers occurring and with post-merger patent output. We view CSR similarity as a correspondingly important determinant of mergers and of deal success.

⁶Audi, Loughran, and McDonald (2015) quantify the culture of trust in corporations by counting the number of trust-related words in the Management Discussion and Analysis section of the annual reports.

⁷Hoberg and Phillips (2010), however, note that their measure is less likely to be related to corporate culture.

However, similarities in CSR practices likely affect mergers through a different mechanism compared to overlap in product or patent characteristics: by easing post-merger integration and rendering the merged firm better able to exploit merger synergies (Maksimovic, Phillips, and Prabhala (2011), Seru (2014)).⁸

Lastly, in studying the role of CSR similarity in M&A deals, our article is also related to that of Deng, Kang, and Low (2013), who examine the effect of acquiring firms' overall CSR levels on post-merger performance. They find that acquiring firms with high overall CSR scores realize higher announcement returns and superior post-merger operating performance. They propose that firms with strong reputations for CSR are more likely to have a greater commitment to fulfilling implicit contracts with various stakeholders of the firm and are, therefore, less likely to make deals that dissatisfy the company's stakeholders. Although we also examine the implications of CSR policy in M&A deals, our focus is not on the overall *level* of the CSR reputation of an acquiring firm. Rather, we study the role of *similarities* in CSR policies between acquiring and target firms involved in the integration process, allowing us to shed light on one of the potentially important determinants of successful merger outcomes, post-merger integration.⁹

II. Measurement of CSR Similarity and Data

A. CSR Similarity Measure

We construct a measure of CSR similarity between any given pair of firms. The data on CSR policies are obtained from the KLD database from 1991 to 2013.¹⁰ KLD data have been used in previous studies to measure characteristics of corporate culture (e.g., Hoi et al. (2013), Gao et al. (2014)) and encompass specific policies related to *community, corporate governance, diversity, employee relations, environment, human rights, and product*; each of these seven categories has various subcategories, with a total of 124 subcategories.¹¹ The subcategories include more detailed classifications within each of the seven major categories

⁸In a study emphasizing the importance of integration in merger success, Hoberg and Phillips (2017) develop measures of integration risk based on text searches of business descriptions contained in 10-K filings for acquirers and targets. The authors find lower long-run stock returns and weaker accounting performance in mergers in markets with higher ex ante product integration risk.

⁹Lu (2014) also examines the differences in CSR policy for acquiring and acquired firms but, similar to Deng et al. (2013), focuses on firms' CSR scores at the aggregate level.

¹⁰Although firms are invited to participate in data verification, KLD results are not generally affected by self-reporting issues; specifically, MSCI employs research analysts who exploit corporate disclosures, government/media databases, nongovernmental organization (NGO) data sets, and other stakeholder sources. MSCI Inc. (2017) notes that its ESG research team includes "over 150 dedicated research analysts around the world." Other studies provide evidence of KLD's data quality. Chatterji, Levine, and Toffel (2009) provide valuable evidence of environmental performance, where they document that KLD's environmental concerns for firms are good summaries of their past environmental performance. Cheng, Hong, and Shue (2016) provide anecdotal evidence of Apple's and Google's KLD scores changing over time with other documented changes in their sustainability strategy.

¹¹Our results are robust to omitting the corporate governance category from these data. Therefore, our results are distinct from how corporate governance differences can affect merger decisions (Wang and Xie (2009)). Moreover, to the extent that Wang and Xie (2009) show that certain dissimilarities between firms can be a source of value-creation in mergers, our results indicate that integration issues and other drawbacks associated with cultural dissimilarities more than outweigh these dissimilarities' potentially positive effects. We discuss this issue in Section V.

and are classified as either “strengths” or “concerns,” such as charitable giving (strength), retirement benefits (both strength and concern), and hazardous waste (concern).¹² Although the criteria for each subcategory are different, many criteria are qualitative in nature, and KLD generally assigns a score of 1 to firm i at time t for each subcategory only if the firm shows significant engagement in that subcategory relative to other firms in the market. Given the separate subcategories of strengths and concerns, a score of 0 in a strength subcategory does not necessarily mean that a firm is considered socially irresponsible in that dimension but rather that a firm does not show significant engagement.¹³

There are some important issues to consider in using the KLD data to proxy for CSR similarity. First, the standard practice in many CSR studies when using KLD data has been to aggregate individual ratings from each subcategory of KLD data and then net the aggregate scores from total strengths and concerns. Although this approach may be intuitive for studies focusing on the overall CSR performance, it is problematic for measuring the *similarity* between two firms and hence examining merger integration: A company that focuses on “charitable giving (strength)” and is also involved in “tax dispute (concern)” under the same broad *community* category, if aggregated, would have the same score as a firm that is involved in neither charitable giving nor tax disputes. Furthermore, all else being equal, a merger between a company that has a high CSR score with high “charitable giving strength” but a poor “employee diversity” record and a firm that has the same level of total CSR but with the opposite composition (high “employee diversity” but poor “charitable giving”) may face post-merger integration challenges even though both merging partners are regarded as high-CSR firms.¹⁴ Consistent with these contentions, the overall level of CSR and the CSR similarity between merging firms is negatively correlated in our sample (−18%).

To overcome this issue, we estimate CSR similarity using individual subcategories rather than aggregating at a broad level. Incorporating the details of a firm’s CSR practices by using all subcategories is also consistent with the notion that corporate culture is multidimensional in nature and hence could be better examined in a multidimensional setting (Graham et al. (2015)). Furthermore, constructing CSR similarity using the individual ratings from each subcategory rather

¹²Appendix A lists the subcategories that we used. Another aspect of firms’ similarity is their political similarity; our results are robust to controlling for this type of similarity, using Hutton, Jiang, and Kumar’s (2014) Republican index.

¹³For example, a firm with a score of 0 on “retirement benefits (strength)” does not necessarily have a poor retirement benefits policy for its employees, unless it also has a score of one on the “retirement benefits (concern)” subcategory. In fact, most firms are assigned a score of 0 by default in a given subcategory, and only a select few firms are differentiated with a positive score, an issue we further address later in the article.

¹⁴In previous studies there is some discussion of how well KLD data measure CSR, and CSR’s endogeneity with other firm characteristics. This issue is of less concern here because our study focuses on *similarity*, as opposed to the level of the CSR score itself. Even in an extreme case where these measures are not purely representative of CSR per se, they are still reflective of conscious and costly decisions by management. Indeed, the extent to which KLD variables are inappropriate for measuring managers’ decisions (i.e., are just noise) actually biases against us finding significant results.

than netting out strengths and concerns prevents the assumption that strengths and concerns in certain categories carry equivalent importance.¹⁵

Another issue is that KLD is selective in assigning a score of 1 in any given subcategory, which means that most firms by default receive a score of 0 unless they show significant deviations from the average. For example, firms in our final sample have scores of 1 for approximately 3% of subcategories (equivalent to approximately four subcategories) on average. Also, for each firm, most of the 124 categories are filled with 0s, with about 15% of firms having 0s in all of the 124 categories in our final sample. Thus, a positive score in either the strength or the concerns subcategory is more informative about a firm's engagement than a score of 0, which has implications for constructing a measure of similarity across firms' CSR practices. For example, any similarity measure that treats both a pair of firms with 0s on "clean energy" and a pair of firms with 1s on "clean energy" to be equally similar would result in a measure that assigns high similarity to almost all pairs of firms in the sample. Consequently, that type of measure would overestimate the similarity between many unrelated firms, and it would underestimate the similarity between two firms that are active proponents of clean energy. As a result, any similarity measure using the KLD subcategories must carefully consider the informativeness of nonzero scores.

To overcome these issues, we employ Jaffe's (1986) distance measure for calculating CSR similarity. Specifically, we calculate the CSR similarity between two firms i and j as follows:

$$(1) \quad \text{CSR_SIMILARITY}_{ij,t} = \frac{X_{i,t} X'_{j,t}}{(X_{i,t} X'_{i,t})^{0.5} (X_{j,t} X'_{j,t})^{0.5}},$$

where vector $X_{i,t} = (X_{i1,t}, X_{i2,t}, \dots, X_{i124,t})$ and $X_{j,t}$ correspond to firm i 's and firm j 's scores in each subcategory $X_{i,c,t}$ (where, $c = 1, 2, \dots, 124$). To alleviate the noise or temporary fluctuations that are unrelated to actual shifts in a firm's CSR policy, we aggregate each firm's KLD scores in each subcategory over a 3-year rolling window (from $t - 2$ to t) in constructing the vector $X_{i,t}$.¹⁶ This measure equals 1 for two firms (i, j) whose CSR profiles are identical, and 0 for two firms whose CSR profiles are orthogonal. The Jaffe (1986) measure has been used in the economics and finance literature, for example, to estimate the technological similarity between pairs of firms (e.g., Jaffe (1986), Bloom et al. (2013), and Bena and Li (2014)).¹⁷ Although our CSR measure is constructed based on KLD data starting

¹⁵One potential issue with our approach is that our measure will give greater weight to categories with a higher number of subcategories than others, which will introduce bias if those categories are unimportant to the firm. In Section V, we show that our results are unlikely to be affected by this issue by showing that our results are robust to either omitting certain categories or to focusing on those categories that are most prominent in each industry.

¹⁶For robustness, we also construct the cultural portfolio vectors using i) only data from year t and ii) aggregated KLD data from a 5-year rolling window ($t - 4$ to t ; i.e., similar to the 3-year window discussed previously but capturing longer-term aspects of a firm's culture). Our results are robust to defining a firm's "cultural portfolio" using either of these alternatives. A related issue is if CEO turnover affects KLD data (in which case averaging over prior years could be inappropriate). Barrios, Fasan, and Fasan (2014) find that CEO turnover is not significantly associated with changes in CSR scores, consistent with CSR being driven by owners' preferences and not those of managers.

¹⁷Because the Jaffe (1986) distance is normalized by the vector lengths, $(X_{i,t} X'_{i,t})^{0.5} (X_{j,t} X'_{j,t})^{0.5}$, it is undefined if the denominator is equal to 0, which happens when a firm has a 0 score on all

in 1991, CSR_SIMILARITY is only populated from 1994 onward because we require 3 trailing years of information to calculate its value.

A key characteristic of Jaffe's (1986) distance is that it measures similarity along dimensions with actual firm involvement. For example, consider a firm that scores positively only on "charitable giving," "innovative giving," and "tax evasion" and another firm that scores positively only on "charitable giving," "tax evasion," and "employment of the disabled." In that case, the Jaffe (1986) distance between the two companies would be measured along the four subcategories ("charitable giving," "innovative giving," "tax evasion," and "employment of the disabled"). The other 120 categories in which both firms have 0 scores would not contribute to the measure. This characteristic contrasts with another commonly used distance measure, the Euclidean distance, which takes the sum of absolute deviations in all dimensions, regardless of whether the company had positive (or 0) ratings.¹⁸ Another characteristic of the Jaffe (1986) distance is that it treats each subcategory independently. For robustness, we also estimate the Mahalanobis distance, which adjusts for any potential overlap between the subcategories. We discuss this in greater detail in Section V.A and show that our results are robust to that alternative approach.

As a check of the validity of CSR_SIMILARITY in capturing relevant variations in the similarity of corporate culture, we hand-collect data on media and press releases around M&A deal announcement. Specifically, for all deals in our sample, we perform a search on LexisNexis of the acquirer name, target name, and the following terms: i) *merg!* or *acq!* and ii) *cultur!*. We then review news articles and press releases from this search around the deal announcement and completion dates to determine whether the merger is associated with at least one case where the press (or the firms) referred to cultural similarity or fit in describing the motivation for the merger. We find that 82 of the 570 sample deals are associated with media references to cultural similarity. In 69 of those 82 cases, our CSR similarity measure is above the median. Moreover, in robustness results we find that our CSR_SIMILARITY measure is positively and significantly associated with a greater probability of the media mentioning cultural similarity or fit

subcategories (either $X_{i,j}X'_{i,j}=0$ or $X_{j,i}X'_{j,i}=0$). In our final merged sample, 94 deals drop out due to this issue. Our results are qualitatively similar when we assign a CSR similarity score of 0 to all pairs of these "zero firms."

¹⁸ Thus, the addition (deletion) of subcategories with KLD scores of 0 automatically contributes positively (negatively) to the Euclidean-distance-based measure of CSR similarity, whereas it does not affect the Jaffe distance measure. Given this fundamental difference in calculating the distance, the Jaffe (1986) measure is more appropriate than the Euclidean-distance metric if similarity along dimensions with company engagement (i.e., similarity in firms' CSR focus reflected by a score of 1 in each subcategory) contains more information about CSR similarity than when using dimensions with 0 scores. Conversely, if two firms both having 0 scores in certain dimensions contains as much information about their CSR similarity as the dimensions in which they have proactive engagement, our measure would underestimate CSR similarity. However, because the KLD data involve vectors with large dimension (124 subcategories) and frequent scores of 0, the use of a Euclidean-distance-based measure will cause firms to have ostensibly high CSR similarity, causing many firms to mechanically look "similar" to other firms. For example, we find that average CSR similarity is 0.97 when we calculate a Euclidean-distance-based measure, meaning that firms are on average very close to being identical to each other. Conversely, the average CSR similarity using the Jaffe distance is 0.32.

between the acquirer and target. This positive association provides some external validation for CSR.SIMILARITY.¹⁹

B. Merger and Acquisitions Data

We obtain our initial sample of all announced and completed U.S. mergers and acquisitions between 1994 and 2014 from the Securities Data Company (SDC). Following previous studies (e.g., Deng et al. (2013), Bena and Li (2014)), we restrict our main sample to completed mergers involving U.S. acquirers and targets where the acquirer owns less than 50% of the target firm prior to the bid, is seeking to own more than 50% of the target firm, and owns more than 90% of the target firm after deal completion. We require the disclosed deal value to exceed \$1 million.²⁰ Our merged sample results in 570 completed deals announced between 1994 and 2014.

The sample size is principally affected by the need to match mergers from SDC with our CSR similarity measure, the latter of which requires KLD data for *both* acquirer and target. Deng et al. (2013) also merge SDC data with KLD over a reasonably similar sample period to ours, and they report a final sample of 1,556 observations. However, Deng et al. (2013) only require that the acquirer match to the KLD data, whereas we require the more onerous match of both acquirer *and* target. Given that targets are, on average, considerably smaller than acquirers, and that KLD data have historically been biased against including smaller firms in their universe (e.g., before 2003, KLD only reported data on Standard & Poor's (S&P) 500 firms), the attrition in our sample is reasonable. Firm characteristics are obtained from Compustat, and stock returns are obtained from the Center for Research in Security Prices (CRSP). In our analysis of deal completion in Section III.C, we also add failed mergers (deals that are not completed) to our main sample of completed mergers to examine the effects of CSR similarity on the probability of successful merger completion.

In addition to the actual acquirer–target pairs in our sample, we also generate a control sample of pseudo-acquirer–target pairs. As in Bena and Li (2014), for each actual deal pair in every year, pseudo-pairs are formed by pairing the actual acquirer with up to five matched pseudo-targets based on the actual target-firm characteristics (i.e., industry, firm size, and book-to-market ratio) and by pairing the actual target firm with up to five matched pseudo-acquirers based on the actual acquirer characteristics.²¹ Matching criteria for constructing the control sample

¹⁹Of the domestic mergers mentioned in our article, AT&T–SBC, Chevron–Unocal, and CVS–Caremark all rank in the top quartile of CSR similarity. Similarly, AOL–Time Warner involved two firms below the median in CSR similarity.

²⁰Our results are robust to excluding hostile deals (10 deals out of 570). Viewing our results on the role of CSR similarity affecting the *choice* to merge, it is sensible that our results are concentrated in friendly deals. Conversely, however, CSR similarity could still affect the outcome of hostile deals, both in the ability of a target to resist a deal and in its selection as a potential partner. We thus include both friendly and hostile deals in our sample. Additionally, our restriction of 90% post-deal ownership is robust to alternative thresholds (i.e., 80% or 100%).

²¹Thus, for each of the actual M&A deals there are up to 11 firm pairs, comprising one actual acquirer–target pair, five actual acquirer–pseudo-target pairs, and five pseudo-acquirer–actual target pairs. In total, 50% of the actual deals in our sample obtain the full 11 firm-pair matches, but some events have partial matches due to the lack of firms in the same industry/year with nonmissing data on CSR similarity and other controls. Any event with 0 successful matches is excluded from the analysis

are intended to control for time, industry, firm size, growth opportunities, and overvaluation that have been shown to drive M&A deals (e.g., Andrade, Mitchell, and Stafford (2001), Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004), Harford (2005), and Rhodes-Kropf and Robinson (2008)).²²

C. Summary Statistics

Table 1 presents the summary statistics. Panel A of Table 1 reports descriptive statistics for the acquirer–target pair, in the left-hand columns for the actual deals and in the right-hand columns for pseudo–control deals. The mean (median) pair CSR similarity score, CSR_SIMILARITY, is 31.6% (27.9%), with fairly large standard deviation (26.7%). CSR_SIMILARITY is smaller for control deals, an observation that is consistent with our hypothesis that of the set of deals that could have occurred (the union of the actual and pseudo–control samples), the deals that actually did occur are those where the acquirer and target have more CSR similarity. Focusing on firm characteristics for the actual acquirers and targets (first three columns) separately, the key variables are consistent with M&A literature. Specifically, acquiring firms are substantially larger than target firms, have higher sales growth and profitability (return on assets (ROA)), have higher valuation multiples, and exhibit lower research and development (R&D) intensity than target firms (e.g., Harford, Jenter, and Li (2011), Bena and Li (2014)).

Panel B of Table 1 provides additional statistics on the distribution of CSR_SIMILARITY. Consistent with the definition in equation (1), CSR_SIMILARITY is bounded between 0 and 1. Among the sample of actual deals, 23.5% of acquirer–target pairs have no overlap in CSR policy (CSR_SIMILARITY = 0), and 76.5% exhibit some degree of overlap in CSR policy (CSR_SIMILARITY > 0). The proportion of pairs with nonzero CSR_SIMILARITY in the pseudo–control sample is slightly lower, with 71.8% of pairs with some overlap in CSR policy. Likewise, the interquartile range of CSR_SIMILARITY among the actual deals is from 0.053 to 0.524, with the 10th and 90th percentiles at 0 and 0.704, respectively. Among the control deals, the interquartile range of CSR_SIMILARITY is from 0 to 0.434, with the 10th and 90th percentiles at 0 and 0.626, respectively. Some examples of acquirer–target pairs among the top quartile of CSR_SIMILARITY are the Chevron–Unocal (0.668), CVS–Caremark (0.575), and AT&T–SBC (0.522) pairs, which were noted in the introduction as examples of successful deals in which cultural similarity was mentioned as one of the motivating factors. Conversely, the AOL–Time Warner deal, a recent example of a high-profile merger failure, has CSR_SIMILARITY of 0.194.

Panel C of Table 1 provides additional characteristics about sample mergers, reflecting industry characteristics (64% of merging firms are in the same industry, and 16% are high-tech firms), relative size (the median target in our sample is 28% the size of the acquirer), and offer structure (43% are all-cash offers, and 17% are tender offers). Finally, Panel D provides the distribution of our sample by

that uses pseudo–matched data because we use deal fixed effects in those analyses. Our results are also robust to restricting our analyses to use only the sample with the full 11 firm-pair matches.

²²We note that matching on industry, size, and book-to-market ratio also controls for the potential effects of these characteristics on firms' CSR decisions (McWilliams and Siegel (2001)).

announcement year. We have merger announcements in every year of our sample, and deal frequency increases over time with the expansion of the KLD data.

TABLE 1
Summary Statistics of Industry- and Size-Matched Sample

Table 1 reports summary statistics for the sample. Panel A provides summary statistics of acquirers and targets in both the actual and pseudo-control deals, Panel B provides additional statistics on the distribution of CSR_SIMILARITY (defined later in this paragraph) in both the actual and pseudo-control deals, Panel C provides statistics on additional characteristics of actual acquirer-target pairs, and Panel D provides the distribution of our sample by year. Following Bena and Li (2014), we also construct a control sample of pseudo-deals. Specifically, the sample of pseudo-deals is formed by pairing the actual acquirer with up to five hypothetical target matches (in the same industry and closest in total assets to the deal's actual target firm) and by pairing the actual target firm with up to five hypothetical acquirer matches (in the same industry and closest in total assets to the deal's actual acquiring firm). CSR_SIMILARITY is defined as the Jaffe (1986) distance between the acquirer's and target's corporate social responsibility (CSR) policy based on their Kinder, Lydenberg, and Domini (KLD) subcategories for the 3 years prior to the merger announcement; GIM_DIFFERENCE is the difference between the target's and acquirer's Gompers, Ishii, and Metrick (2003) governance index (GIM index); PM_SIMILARITY is an indicator variable equal to 1 if a given firm is in the same product market as defined by Hoberg and Phillips (2010), and 0 otherwise; SAME_STATE_INDICATOR is an indicator variable equal to 1 if the acquirer and target are incorporated in the same state, and 0 otherwise; HORIZONTAL_INDICATOR is an indicator variable equal to 1 if the acquirer and target are in the same 2-digit Standard Industrial Classification (SIC) code, and 0 otherwise; DIVERSIFYING_INDICATOR is an indicator variable equal to 1 if the merger is neither horizontal nor vertical using the 1% vertical relatedness threshold (Fan and Goyal (2006)), and 0 otherwise; ASSETS is the book value of total assets; BOOK_TO_MARKET is the book value of equity divided by the market value of equity; ROA is earnings before interest, taxes, depreciation, and amortization (EBITDA) scaled by the book value of total assets; SALES_GROWTH is the natural logarithm of the current year's sales divided by the prior year's sales; CASH is cash and short-term investments divided by the book value of total assets; LEVERAGE is the book value of debt divided by the book value of total assets; RD_TO_ASSETS is research and development (R&D) expenditure divided by the book value of total assets; ADJUSTED_CSR is the net difference between the category-adjusted total CSR strengths and total CSR concerns as in Deng et al. (2013); HHI is the sum of squared market shares for all Compustat firms in the 2-digit industry; SERIAL_ACQUIRER_INDICATOR is an indicator variable equal to 1 if the firm is a serial acquirer, and 0 otherwise; SAME_INDUSTRY_INDICATOR is an indicator variable equal to 1 if the acquirer and target are in the same 2-digit SIC, and 0 otherwise; HIGH_TECH_INDICATOR is an indicator variable equal to 1 if the acquirer and target operate in high-tech industries as defined by Loughran and Ritter (2004), and 0 otherwise; RELATIVE_SIZE is deal value scaled by the market capitalization of the acquirer; ALL_CASH_INDICATOR is an indicator variable equal to 1 if the deal is financed by cash only, and 0 otherwise; and TENDER_OFFER_INDICATOR is an indicator variable equal to 1 if the merger is a tender offer, and 0 otherwise.

Panel A. Summary Statistics for Actual and Pseudo-Control Deals

Variable	Actual Deals (N = 570)			Pseudo-Deals (N = 4,488)		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
<i>Pair Characteristics</i>						
CSR_SIMILARITY	0.316	0.267	0.279	0.265	0.249	0.227
GIM_DIFFERENCE	0.195	3.561	0.000	-0.035	3.506	0.000
PM_SIMILARITY	0.584	0.493	1.000	0.336	0.472	0.000
SAME_STATE_INDICATOR	0.460	0.499	0.000	0.437	0.496	0.000
HORIZONTAL_INDICATOR	0.169	0.375	0.000	0.234	0.423	0.000
DIVERSIFYING_INDICATOR	0.182	0.386	0.000	0.155	0.362	0.000
<i>Acquirer Characteristics</i>						
ASSETS	28,753.2	36,752.5	12,117.4	25,953.6	34,602.4	10,848.6
BOOK_TO_MARKET	0.480	0.270	0.442	0.527	0.364	0.457
ROA	0.127	0.083	0.125	0.122	0.088	0.122
SALES_GROWTH	0.119	0.210	0.088	0.098	0.207	0.077
CASH	0.136	0.148	0.082	0.130	0.144	0.079
LEVERAGE	0.217	0.151	0.203	0.226	0.158	0.210
ADJUSTED_CSR	-0.116	0.619	-0.200	-0.102	0.615	-0.179
RD_TO_ASSETS	0.057	0.060	0.045	0.054	0.059	0.037
HHI	0.059	0.048	0.043	0.058	0.045	0.043
SERIAL_ACQUIRER_INDICATOR	0.656	0.475	1.000	0.630	0.483	1.000
<i>Target Characteristics</i>						
ASSETS	7,769.3	19,226.6	1,392.7	6,855.0	17,557.2	1,366.4
BOOK_TO_MARKET	0.569	0.385	0.487	0.568	0.394	0.483
ROA	0.093	0.126	0.103	0.093	0.132	0.104
SALES_GROWTH	0.104	0.239	0.084	0.099	0.255	0.083
CASH	0.195	0.219	0.099	0.191	0.216	0.099
LEVERAGE	0.199	0.185	0.168	0.206	0.188	0.180
ADJUSTED_CSR	-0.245	0.473	-0.310	-0.223	0.477	-0.283
RD_TO_ASSETS	0.088	0.097	0.065	0.086	0.103	0.059
HHI	0.063	0.052	0.044	0.060	0.048	0.043

(continued on next page)

TABLE 1 (continued)
Summary Statistics of Industry- and Size-Matched Sample

Panel B. Distribution of CSR_SIMILARITY

CSR_SIMILARITY	N	Percentile				
		10th	25th	50th	75th	90th
Actual deals	570	0.000	0.053	0.279	0.524	0.704
Pseudo-deals	4,488	0.000	0.000	0.227	0.434	0.626

Panel C. Summary Statistics for Sample Pairs

Variable	Pair Characteristics (N=570)		
	Mean	Std. Dev.	Median
SAME_INDUSTRY_INDICATOR	0.642	0.480	1.000
HIGH_TECH_INDICATOR	0.156	0.363	0.000
RELATIVE_SIZE	0.485	0.554	0.280
ALL_CASH_INDICATOR	0.433	0.496	0.000
TENDER_OFFER_INDICATOR	0.167	0.373	0.000

Panel D. Deals by Merger Announcement Year

Year	No. of Deals	% of Sample
1994	7	1.23
1995	8	1.40
1996	9	1.58
1997	9	1.58
1998	15	2.63
1999	18	3.16
2000	13	2.28
2001	10	1.75
2002	5	0.88
2003	11	1.93
2004	47	8.25
2005	55	9.65
2006	64	11.23
2007	70	12.28
2008	33	5.79
2009	32	5.61
2010	47	8.25
2011	26	4.56
2012	42	7.37
2013	25	4.39
2014	24	4.21
Total	570	100.00

III. Results

A. CSR Similarity and the Likelihood of Merger Pairs

We first examine the effects of CSR similarity on merger-pair formation. In Table 2, we run the following conditional logit model as employed by Bena and Li (2014), using our sample of actual mergers and acquisitions and the matched control sample of pseudo-acquirer–target pairs:

$$\begin{aligned}
 (2) \quad \text{ACTUAL_DEAL}_{ijm,t} = & \alpha + \beta_1 \text{CSR_SIMILARITY}_{ijm,t-1} \\
 & + \beta_2 \text{SAME_STATE_INDICATOR}_{ijm,t-1} \\
 & + \beta_3 \text{ACQUIRER_CONTROLS}_{im,t-1} \\
 & + \beta_4 \text{TARGET_CONTROLS}_{jm,t-1} + \text{DEAL_FE}_m + \varepsilon_{ijm,t},
 \end{aligned}$$

where $\text{ACTUAL_DEAL}_{ijm,t}$ is the dependent variable and is equal to 1 if the pair of acquirer firm i and target firm j is the actual acquirer target in deal m , and 0 otherwise (i.e., this variable equals 0 if the observation

TABLE 2
Merger Pairs and CSR Similarity

Table 2 reports the results from conditional logit regressions of the likelihood of an observation being an actual (as opposed to hypothetical) merger on the corporate social responsibility (CSR) similarity of the acquirer–target pair and other control variables. The dependent variable is a binary variable that takes the value of 1 if the observation is an actual merger deal, as defined in Table 1. This variable takes the value of 0 if the observation is a pseudo-firm pair in the control group. Following Bena and Li (2014), the sample contains, for each actual deal, pseudo-deals formed by pairing the actual acquirer with up to five hypothetical matches (in the same industry and closest in total assets, or in the same industry and closest in total assets and book-to-market (BTM) ratio, to the deal's actual target firm) and by pairing the actual target firm with up to five hypothetical matches (in the same industry and closest in total assets, or in the same industry and closest in total assets and BTM ratio, to the deal's actual acquiring firm). The sample period is from 1994 to 2014. The acquirer and target controls are BOOK_TO_MARKET, ROA, LEVERAGE, SALES_GROWTH, CASH, RD_TO_ASSETS, HHI, and ADJUSTED_CSR, with BOOK_TO_MARKET being excluded when it is used to match the control sample. See Appendix B for more detailed variable descriptions. Constant terms are estimated but not reported. *t*-statistics (based on standard errors clustered at the actual deal level) are reported in parentheses. All specifications include deal fixed effects. The control variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	INDUSTRY, SIZE Match		INDUSTRY, SIZE, BTM Match	
	1	2	3	4
CSR_SIMILARITY	1.079*** (5.18)	1.068*** (4.99)	0.958*** (4.86)	0.996*** (4.92)
SAME_STATE_INDICATOR		0.104 (1.00)		0.169 (1.62)
<i>Acquirer Controls</i>				
ROA		1.144* (1.81)		2.073*** (3.65)
SALES_GROWTH		0.403* (1.67)		0.285 (1.23)
CASH		−0.022 (−0.05)		−0.518 (−1.41)
LEVERAGE		−0.284 (−0.86)		0.014 (0.04)
RD_TO_ASSETS		3.241*** (2.73)		1.411 (1.32)
ADJUSTED_CSR		−0.079 (−0.92)		0.111 (1.24)
HHI		−1.789 (−0.98)		−1.646 (−1.12)
BOOK_TO_MARKET		−0.698*** (−4.21)		
<i>Target Controls</i>				
ROA		0.028 (0.06)		−0.093 (−0.18)
SALES_GROWTH		0.177 (1.14)		−0.041 (−0.24)
CASH		0.381 (1.19)		0.646** (2.12)
LEVERAGE		−0.357 (−1.13)		0.204 (0.65)
RD_TO_ASSETS		0.234 (0.26)		0.074 (0.10)
ADJUSTED_CSR		−0.186* (−1.77)		−0.183* (−1.76)
HHI		−0.327 (−0.22)		−0.594 (−0.39)
BOOK_TO_MARKET		0.139 (1.16)		
Deal fixed effects	Yes	Yes	Yes	Yes
No. of obs.	4,902	4,902	4,901	4,901
Pseudo- <i>R</i> ²	0.010	0.024	0.009	0.017

is a pseudo-acquirer–target pair). $CSR_SIMILARITY_{ijm,t-1}$ is our independent variable of interest and is the similarity in CSR practices between firms i and j (as described previously), measured in the year prior (to actual or pseudo–deal announcement). $SAME_STATE_INDICATOR_{ijm,t-1}$ equals 1 if the i, j pair is incorporated in the same state. Following Bena and Li (2014), $ACQUIRER_CONTROLS_{im,t-1}$ and $TARGET_CONTROLS_{jm,t-1}$ include the acquirer’s and target’s $BOOK_TO_MARKET$ ratios (omitted when this variable is used for matching), ROA (earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by the book value of total assets), $LEVERAGE$ (the book value of debt divided by the book value of total assets), $SALES_GROWTH$ (the natural log of the current year’s sales divided by the prior year’s sales), $CASH$ (cash and short-term investments divided by the book value of total assets), $R\&D$ intensity (RD_TO_ASSETS ; $R\&D$ expenditure divided by the book value of total assets), and industry competitiveness (HHI , the sum of squared market shares of all Compustat firms in the same 2-digit Standard Industrial Classification (SIC)). In addition, to control for the acquirer and target’s overall CSR level, we include $ADJUSTED_CSR$, which is the difference between total CSR strengths and total CSR concerns, as in Deng et al. (2013), adjusting for changes in the number of CSR dimensions over time.²³ We provide variable descriptions in Appendix B.

Table 2 reports the conditional logit regression estimates of equation (2). Models 1 and 2 present the results where the control sample of pseudo-deals is based on matching by $YEAR$, $INDUSTRY$, and $SIZE$, and all regressions include deal fixed effects. First, in a bivariate regression of deal likelihood on $CSR_SIMILARITY$ in model 1, we find a positive and statistically significant (at the 1% level) coefficient on the $CSR_SIMILARITY$ variable. This suggests that greater similarity between a pair of firms with respect to their CSR policies is positively associated with the likelihood of that pair actually merging, relative to a control sample of hypothetical deals between pairs of firms (at least one of which is an actual acquirer or target in our sample) that did not happen. The economic significance of this effect is also meaningful: A 1-standard-deviation increase in CSR similarity is associated with a 33% increase in the odds of being an actual acquirer–target pair (instead of a pseudo-acquirer–target pair).²⁴ In model 2, we include additional control variables capturing acquirer and target characteristics. Specifically, we include acquirer and target profitability, sales growth, cash, leverage, $R\&D$ intensity, overall CSR level, industry competitiveness, and book-to-market ratio. The coefficient of $CSR_SIMILARITY$ is robust to including these additional controls.

We also test whether our results are sensitive to the matched control sample by repeating our analysis by forming the matched control sample (of pseudo-deals) based on $YEAR$, $INDUSTRY$, $SIZE$, and $BOOK_TO_MARKET$ (as in Bena and Li (2014)).²⁵ The results are reported in models 3 and 4 of Table 2,

²³ Our results are robust to excluding the $ADJUSTED_CSR$ variable entirely.

²⁴ The results in Table 2 are also robust to including size as an explanatory (control) variable; consistent with Bena and Li (2014), we omit size from the regression because we use it in our matching criteria.

²⁵ An issue related to industry characteristics is whether our results hold regardless of the firm’s level of diversification by industry. Our results are robust to controlling for multisegment firms, and

and they are remarkably consistent with those reported in the earlier columns, despite the different matching criteria. In other words, the effect of CSR similarity on merger-pair likelihood is robust to changing the criteria by which alternate (hypothetical) merger partners are included in the control sample. Additionally, our results are robust to excluding small acquisitions by imposing a minimum 5% relative size constraint (or by excluding the lowest tercile of deals by relative size) and to excluding pseudo-acquirer–target pairs when one of the potential matches (acquirer or target) is never involved in mergers or acquisitions during our sample period.²⁶ In Section IV, we provide additional cross-sectional tests showing that the effects are stronger among the types of mergers where cultural similarity is of particular importance. Finally, to ensure that our tests are picking up *corporate* rather than *national* culture, we note that our results are robust to excluding multinational firms (defined using geographic segment data from Compustat). Overall, our results suggest that firms are more likely to merge when they share similar CSR policies.

B. CSR Similarity and Combined Announcement Returns

Next, we examine whether CSR similarity is associated with higher combined (acquirer and target) announcement returns, potentially reflecting greater synergies generated from mergers between firms with similar CSR policies (Bradley, Desai, and Kim (1988)).²⁷ Abnormal returns are calculated using a market model with the CRSP value-weighted return as the benchmark return, using days -300 through -46 relative to the merger announcement date (day 0) as our estimation period. CARs are computed over -3 to $+3$ trading days centered on day 0.

In Panel A of Table 3, we compare the mean and the median announcement window CARs for mergers involving firms with CSR_SIMILARITY in the top 25th percentile (“high similarity”) and bottom 25th (“low similarity”) percentile in our sample. We find that the mean and median combined CARs in the high-similarity group are 5.3% and 3.8%, respectively. For the low-similarity group, the mean and the median CARs are lower, 1.8% and 0.7%, respectively. The differences in the means and the medians of the high-similarity and low-similarity groups are 3.5% and 3.1%, respectively, and both of these differences are statistically significant at the 1% level. Our results suggest that mergers between two firms with similar CSR policies create greater synergistic gains.

In Panel B of Table 3, we extend the CAR analysis to a multivariate setting by estimating an ordinary least squares (OLS) regression with the 7-day

we do not find evidence that cultural similarity has a different effect on multisegment (compared to single-segment) firms.

²⁶ We also find that CSR_SIMILARITY is significantly associated with merger-pair formation even when excluding observations with media references to cultural similarity between the specific acquirer and target. This indicates that our results are not driven by the most prominent cases of similarity.

²⁷ Our focus is on the ex ante net effect on expected merger synergies. To the degree that mergers of culturally dissimilar firms involve greater integration costs, those mergers would require greater gross synergies to deliver net value for acquirer shareholders. Deng et al. (2013) note that a benefit of studying announcement returns is that the generally unanticipated nature of mergers partially addresses reverse causality between CSR and firm performance (Margolis, Elfenbein, and Walsh (2009)); our focus on CSR similarity (as opposed to CSR level) also helps to mitigate reverse-causality concerns.

TABLE 3
Combined Announcement Returns

Table 3 reports cumulative abnormal returns (CARs) around merger announcement for the 570 actual deals in our sample. The dependent variable is CAR, the 7-day cumulative abnormal announcement return for a value-weighted portfolio of the acquirer and the target centered on the deal announcement date. The sample period is from 1994 to 2014. In Panel A, we report the mean and median CARs of mergers in the top quartile (high similarity, H) and the bottom quartile (low similarity, L) of CSR_SIMILARITY. In Panel B, we estimate ordinary least squares (OLS) regressions with CARs as the dependent variable and with CSR_SIMILARITY and other control variables as independent variables. TOTAL_SIZE is the natural logarithm of 1 plus the sum of the two firms' book values of assets; BOOK_TO_MARKET, LEVERAGE, and CASH are calculated as the (market) value-weighted average of the acquirer's and target's values, and ADJUSTED_CSR is the acquirer's adjusted corporate social responsibility (CSR) score used in Deng et al. (2013). Detailed descriptions of the variables are in Appendix B. In models 4 and 5 of Panel B we show results using Heckman's 2-stage self-selection correction, where the inverse Mills ratio is based on merger-pair likelihood (as in Table 2) and merger-completion likelihood (as in Table 4), respectively. In Panel B, *t*-statistics (based on standard errors clustered by 2-digit Standard Industrial Classification (SIC) group) are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Combined Acquirer and Target CARs

Variable	All		High Similarity (H)		Low Similarity (L)		Difference (H – L)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR (–3, +3)	0.030***	0.016***	0.053***	0.038***	0.018***	0.007	0.035***	0.031***

Panel B. Regressions with Combined Acquirer and Target CARs

Variable	CARs of Combined Acquirer and Target Using (–3, +3) Window				
	1	2	3	4	5
CSR_SIMILARITY	0.035** (2.40)	0.033** (2.07)		0.038** (2.33)	0.035** (2.08)
HIGH_SIMILARITY_INDICATOR			0.021** (2.24)		
LOW_SIMILARITY_INDICATOR			–0.005 (–1.03)		
<i>Pair Controls</i>					
SAME_INDUSTRY_INDICATOR	0.015** (2.20)	0.024** (2.48)	0.024** (2.43)	0.021** (2.29)	0.019** (2.27)
SAME_STATE_INDICATOR	–0.008 (–1.51)	–0.010 (–1.64)	–0.011* (–1.82)	–0.010* (–1.76)	–0.013** (–2.21)
HIGH_TECH_INDICATOR	–0.002 (–0.27)	0.006 (0.55)	0.005 (0.45)	0.003 (0.28)	0.005 (0.51)
RELATIVE_SIZE	0.009** (2.55)	0.009** (2.14)	0.010** (2.25)	0.013** (2.10)	0.005 (0.74)
ALL_CASH_INDICATOR	0.011 (1.65)	0.009 (1.06)	0.008 (0.95)	0.011 (1.23)	0.007 (0.83)
TENDER_OFFER_INDICATOR	–0.003 (–0.35)	–0.008 (–0.87)	–0.006 (–0.64)	–0.008 (–0.83)	–0.007 (–0.81)
<i>Additional Characteristics</i>					
TOTAL_SIZE	–0.006*** (–3.70)	–0.004** (–2.45)	–0.004** (–2.30)	–0.005** (–2.42)	–0.004** (–2.53)
BOOK_TO_MARKET	0.025* (1.79)	0.033** (2.38)	0.035** (2.40)	0.027* (1.98)	0.021 (1.39)
LEVERAGE	0.037 (1.55)	0.030 (1.05)	0.032 (1.09)	0.026 (0.92)	0.022 (0.79)
CASH	–0.055*** (–3.03)	–0.043** (–2.50)	–0.040** (–2.44)	–0.043** (–2.37)	–0.082*** (–3.52)
ADJUSTED_CSR	–0.004 (–0.68)	–0.006 (–1.16)	–0.006 (–1.21)	–0.007 (–1.07)	–0.003 (–0.46)
Inverse Mills ratio (merger-pair likelihood)				0.012** (2.02)	
Inverse Mills ratio (merger-completion likelihood)					0.064** (2.40)
Constant	0.147*** (3.86)	0.141*** (2.98)	0.133*** (3.03)	0.152*** (3.35)	0.147*** (3.31)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	No	Yes	Yes	Yes	Yes
No. of obs.	527	527	527	527	527
R ²	0.196	0.338	0.341	0.341	0.345

combined CARs as the dependent variable and CSR_SIMILARITY and various other characteristics of deals and acquirer–target pair as the independent variables. Model 1 includes both various deal characteristics and the (combined) firm characteristics. Specifically, for deal characteristics, we include an indicator for whether the merging firms are incorporated in the same state, an indicator for whether the merging firms are in the same 2-digit SIC code industry, an indicator for whether the deal is an all-cash deal or a tender offer, and the relative size of the acquirer and the target. For the firm characteristics, we follow Ishii and Xuan (2014) and include the logarithm of combined acquirer and target book assets (TOTAL_SIZE), the (market) value-weighted combined acquirer and target book-to-market ratio (BOOK_TO_MARKET), leverage (LEVERAGE), and cash-to-assets ratio (CASH), along with year fixed effects. Additionally, to control for the acquirer's CSR (e.g., Deng et al. (2013)), we include its adjusted CSR score (ADJUSTED_CSR). In model 2, we repeat model 1 with industry fixed effects. In model 3, we extend our analysis in Panel A by replacing CSR_SIMILARITY with two associated indicator variables, HIGH_SIMILARITY_INDICATOR and LOW_SIMILARITY_INDICATOR, which each take the value of 1 if the acquirer–target pair is in the top 25% or bottom 25% of the CSR_SIMILARITY measure, respectively.

The results in Panel B of Table 3 are strongly consistent with the univariate results in Panel A. For example, in model 2, with full control variables, a 1-standard-deviation increase in CSR_SIMILARITY is associated with a 1% increase in combined merger announcement returns, a viable proxy for merger synergies. Similarly, using our indicator variable for high-similarity mergers in model 3, high-similarity mergers are associated with 2.1% greater combined announcement returns. By contrast, we find that low-similarity mergers are insignificantly associated with announcement returns.²⁸ Finally, we address potential sample selection bias coming from merger likelihood and merger completion using a two-stage Heckman model. In the first stage of model 4, we estimate a probit model of the probability that the observation is in our sample of actual deals (i.e., similar to Table 2). Similarly, in the first-stage of model 5, we estimate a probit model of the probability that the deal is successfully completed (i.e., similar to Table 4). Then, in the second stage, we include the inverse Mills ratio from the first-stage probit as an explanatory variable in the CAR regressions. As shown in columns 4 and 5, the results for both models are consistent with our baseline results, indicating that our results are robust to potential sample-selection bias. To summarize, the results in Table 3 strongly suggest that the market expects the realization of significantly greater merger synergies when the firms share similar CSR policies.

C. CSR Similarity and the Probability of Deal Completion

Announced and agreed M&A deals are not always consummated. In large samples, the failure rate for an M&A bid for a publicly traded target (i.e., the

²⁸ We also examine the association between CSR_SIMILARITY and acquirer announcement returns and find no significant relation. However, we find that target announcement returns and premiums are significantly positively associated with our measure of CSR similarity.

bidder, the target, or both decide to withdraw and not complete the proposed acquisition) is approximately 10%–15% (Officer (2003)). Some of these deals fail to complete for regulatory reasons, where the acquirer's plans are inconsistent with the U.S. federal government's perspective about competitiveness in a given product market. This kind of deal failure, which Savor and Lu (2009) call "exogenous" (p. 1063), is unlikely to be related to the CSR similarity of the merging partners. However, other sources of deal failure are clearly directly related to the cultural fit of the acquirer and target. As an anecdotal example, consider the proposed merger of two of the world's largest advertising agencies: Omnicom Group and Publicis Groupe. After the proposed merger was canceled, the CEO of Omnicom Group said to *Adweek*: "We knew that there would be differences in the corporate cultures of Omnicom and Publicis.... But I know now that we had underestimated the depth of these differences. The cultural differences—and I want to emphasize these were differences of corporate, not national, culture—made it difficult to make decisions and by that I mean major operating decisions" (McMains (2014)). In our sample (which is composed of domestic U.S. deals), we thus examine the effects of CSR similarity on the probability of deal completion.

In Table 4 we expand our main sample to include unsuccessful mergers (i.e., those deals that are not consummated) while still employing the other screens relating to merger size and shares initially held and purchased through the deal. The resulting sample is 729 successful and unsuccessful deals. We find that CSR similarity is positively associated with the probability of deal completion. Specifically, even after controlling extensively for the deal characteristics and for acquirers' and targets' characteristics, model 2 suggests that a 1-standard-deviation increase in CSR_SIMILARITY is related to a 26% increase in the odds of successfully completing a deal.²⁹

In addition to the probability of deal completion, we also examine whether CSR similarity affects the speed of deal completion (using our main sample of 570 completed deals). The dependent variable in model 4 is the number of days between the announcement date and the effective date of a completed deal. Table 4 shows the coefficients from a Cox hazard model for this time of deal completion. Our results suggest that mergers between acquirers and targets with similar CSR policies are associated with an 18.2% more rapid rate of deal completion. Based on the unconditional mean (median) deal completion time in our sample, our results suggest that CSR similarity is associated with a mean and median deal completion time that is 28 days and 23 days faster, respectively. This represents a valuable extra 3 to 4 weeks that the acquirer and target can spend on post-merger integration rather than pondering the uncertainty of deal completion.

In summary, our results show that deals with high CSR similarity are more likely to complete successfully and more quickly. Given that completion speed is considered to be a critical component of post-merger integration (Feldman and Spratt (2001)), the results in this section are consistent with the notion that

²⁹The sample size drops by five between models 1 and 2 in Table 4 because all five deals in our sample announced in 2002 were completed. Therefore, once we add year fixed effects to model 2, those five observations are excluded.

TABLE 4
Likelihood and Duration of Deal Completion

Table 4 reports the likelihood and duration of deal completion. In models 1–3, we report the results from a logit model to estimate the likelihood of an announced deal being completed. Here we complement our main sample of completed mergers with a sample of unsuccessful deals; this results in a sample of 729 successful and unsuccessful merger events. The dependent variable is an indicator variable that equals 1 if the deal is completed, and 0 if the deal is withdrawn. Model 4 reports the hazard ratios for deal completion time, estimated using a Cox proportional hazard model. The dependent variable in model 4 is the number of days between the announcement date and the effective date of a deal and is measured only for completed deals. The acquirer and target controls (suppressed coefficients) are RD_TO_ASSETS, SIZE, BOOK_TO_MARKET, CASH, and the acquirer's ADJUSTED_CSR score from Deng et al. (2013). All variables are defined in Appendix B. Constant terms are estimated but not reported. *t*-statistics (based on standard errors clustered by 2-digit Standard Industrial Classification (SIC) group) are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Dependent Variable = Prob (Deal Completion = 1)			Cox Hazard Model
	1	2	3	4
CSR_SIMILARITY	0.988** (2.23)	0.869* (1.92)		
HIGH_SIMILARITY_INDICATOR			0.497** (2.20)	1.182* (1.85)
LOW_SIMILARITY_INDICATOR			−0.265 (−0.88)	0.951 (−0.51)
<i>Pair Controls</i>				
SAME_INDUSTRY_INDICATOR	−0.375 (−1.44)	−0.295 (−0.92)	−0.290 (−0.91)	0.748* (−1.93)
SAME_STATE_INDICATOR	−0.055 (−0.26)	−0.131 (−0.61)	−0.154 (−0.71)	0.904 (−1.09)
HIGH_TECH_INDICATOR	0.230 (0.76)	0.322 (0.98)	0.300 (0.94)	0.837 (−1.05)
RELATIVE_SIZE	−0.152 (−0.55)	−0.272 (−0.96)	−0.275 (−0.98)	1.099 (0.97)
ALL_CASH_INDICATOR	−0.860*** (−3.03)	−1.054*** (−3.91)	−1.062*** (−4.05)	1.256* (1.95)
TENDER_OFFER_INDICATOR	−0.051 (−0.13)	0.096 (0.23)	0.102 (0.24)	2.286*** (4.74)
Acquirer and target controls	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes
No. of obs.	729	724	724	570
Pseudo- <i>R</i> ²	0.108	0.148	0.151	0.041

similarities in CSR policy ease merger integration and are likely to contribute to an M&A deal being more valuable to the acquiring firm.

D. CSR Similarity and Post-Merger Performance

We next examine whether mergers between acquirers and targets with high similarity in CSR policies are associated with better performance for the acquirer *after* the merger, as would be expected if similarity eases the integration of the target into the acquirer. One way to examine the post-merger performance of the acquiring firm is to evaluate changes in operating performance. In Table 5, we follow Healy, Palepu, and Ruback (1992) in studying the change in industry-adjusted operating performance. We again define high-similarity mergers as those in the top quartile of the in-sample CSR similarity distribution and mergers in the bottom quartile as low-similarity mergers.

In the first two columns of Table 5, we show that mergers with high CSR similarity are associated with significantly positive changes in operating performance over the 3-year period following merger completion. The setup of the regressions in those columns is as in Healy et al. (1992), and we run the

TABLE 5
Abnormal Operating Performance

Table 5 reports the results of ordinary least squares (OLS) regressions explaining industry-adjusted (i.e., abnormal) post-merger operating performance, as in Healy et al. (1992). Specifically, operating performance is defined as earnings before interest, taxes, depreciation, and amortization (EBITDA) scaled by the market value of assets at the beginning of the year, and to calculate abnormal operating performance, we subtract each year's median operating performance in the corresponding Standard Industrial Classification (SIC) 2-digit industry. For the pre-merger years, the "merged firm's" abnormal operating performance is the value-weighted average of the acquirer's and target's abnormal operating performance (with the market value of assets at the beginning of the year as the weights). We then estimate cross-sectional OLS regressions where the dependent variable is the average abnormal operating performance over the 3 post-merger years, controlling for the abnormal operating performance in the year before the merger. Other explanatory variables are defined in Appendix B. The regressions are estimated separately for mergers in the top quartile (high similarity) and bottom quartile (low similarity) of CSR_SIMILARITY. *t*-statistics using robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	1		2	
	Low Similarity	High Similarity	Low Similarity	High Similarity
ABNORMAL_ROA _{<i>t</i>-1}	1.045*** (8.951)	0.620*** (4.242)	1.073*** (9.212)	0.664*** (5.059)
SAME_INDUSTRY_INDICATOR			0.004 (0.311)	-0.012 (-1.063)
SAME_STATE_INDICATOR			-0.006 (-0.524)	-0.008 (-0.756)
HIGH_TECH_INDICATOR			-0.016 (-1.015)	-0.000 (-0.038)
RELATIVE_SIZE			0.001 (0.095)	-0.016 (-1.393)
ADJUSTED_CSR			0.012 (1.081)	0.002 (0.291)
Constant	-0.003 (-0.440)	0.015*** (3.087)	0.001 (0.107)	0.038*** (2.825)
No. of obs.	94	109	94	109
<i>R</i> ²	0.595	0.330	0.611	0.362
χ^2 (constant)		4.64		4.88
<i>p</i> -value (χ^2 test)		0.03		0.03

empirical models separately for the high-similarity and low-similarity subsamples (similar to Harford, Humphery-Jenner, and Powell (2012), Table 7). The results show that high-similarity mergers are associated with 1.5% abnormal increase in post-merger industry-adjusted ROA, whereas there is not a similar change in such performance for mergers between firms that have low similarity. When controlling for the other relevant deal characteristics (second two columns of Table 5), the abnormal increase in post-merger industry-adjusted operating performance for high-similarity mergers grows to 3.8% (whereas for low-similarity mergers it is 0.1% and statistically insignificant). In both sets of results (first two columns and second two columns), the differences in operating performance improvements between the low-similarity and high-similarity mergers are significantly different from 0 at better than the 5% level (see final row).

Another way to assess the post-merger performance of the acquiring firm is to document goodwill write-offs by acquirers following deal completion. Goodwill is an accounting asset created at the merger closing date, representing the value paid by the acquirer for the target in excess of that target's book value of assets. Under accounting rules (principally, Statement of Financial Accounting Standards (SFAS) 141 and SFAS 142 from June 2001, and updates thereto), the Financial Accounting Standards Board (FASB) mandates the recognition of "the portion of the premium related to expected synergies" as "goodwill" on the

acquiring firm's accounting statements. The FASB also mandates that such goodwill be "tested at least annually for impairment" and, if so impaired, be written off from the acquirer's assets (potentially causing the acquirer considerable (paper) losses).

As discussed by Gu and Lev (2011), "goodwill write-off ... results from a misvaluation of expected synergies or unexpected decline in synergies" (p. 2001). Therefore, under our CSR similarity paradigm, we expect to observe fewer goodwill write-offs in mergers between partners with stronger fit compared with other M&A deals with a weaker fit.

Our analysis closely follows that of Gu and Lev (2011). Specifically, we measure goodwill write-offs only for acquisitions for which the acquiring firm does not conduct another M&A deal in the 7-year window centered on the acquisition announcement date. This constraint helps ensure that any write-off of goodwill (in the 3 years after the acquisition) is actually attributable to the specific acquisition for which we measure the CSR-similarity independent variable. We also remove from the sample any acquisitions that were completed using pooling accounting, which was possible during the beginning of our sample period (1994–2001) and which would not result in the creation of goodwill that would need to be written off in an unsuccessful acquisition. These restrictions limit the sample size somewhat (to 79 observations). We then measure goodwill write-offs for the acquiring firm in the 3 years following the acquisition. These write-offs (scaled by lagged total assets) are the dependent variable in the Tobit regressions reported in Table 6. The regressions are similar to the Tobit models employed by Gu and Lev ((2011), Table 7, p. 2017), and a Tobit specification is used because the dependent variable is bounded below by 0.

We show in model 1 of Table 6 that CSR similarity is significantly negatively associated with ex post write-offs of goodwill for the acquiring firm. In model 2, we instead employ indicator variables for high/low similarity (defined as in Tables 3–5). Again, the results demonstrate a strong negative association between CSR similarity and post-acquisition goodwill write-offs. Some of the coefficients on the control variables are consistent with the findings of Gu and Lev (2011). For example, goodwill write-offs are higher when the acquirer has a higher valuation multiple than the target (the coefficient on *RELATIVE_PE_RATIO* is positive and significant) and for larger acquisitions (the coefficient on *RELATIVE_SIZE* is positive and significant).

Our findings concerning the relation between CSR similarity and ex post write-offs of goodwill suggest that post-merger integration is considerably more successful (i.e., fewer admissions that synergies are less than expected) when the acquiring and target firms have more similarity in their CSR policies. Again, this suggests that cultural fit eases integration and increases the probability that the synergies expected from the deal are actually realized.³⁰

³⁰In untabulated robustness tests, we find that CSR similarity is positively and significantly associated with takeover premiums. Consequently, our results hold despite the fact that there should be more goodwill to write off in mergers between culturally similar firms with higher CSR similarity (because those have higher acquisition premiums).

TABLE 6
Post-Acquisition Goodwill Write-Offs

Table 6 reports the results of Tobit regressions explaining post-acquisition goodwill write-offs by acquiring firms, as in Gu and Lev (2011). Specifically, the dependent variable is goodwill write-offs in the 3 years after an acquisition scaled by total assets from the year before the acquisition. We restrict our sample to acquirers with only one acquisition in a 7-year window centered on the acquisition announcement date. This ensures that post-acquisition goodwill write-offs are attributable to the specific acquisition for which we measure the key independent variable of interest, CSR_SIMILARITY. We also remove from the sample any acquisitions that were completed using pooling accounting, which was possible during the beginning of our sample period (1994–2001). RELATIVE_PE_RATIO is the difference between the acquirer's price-to-earnings (PE) ratio and the industry median PE ratio, GOODWILL% is the goodwill created in the acquisition as a fraction of acquisition value, STOCK% is the percentage of the acquisition's value paid for by stock, and ln(MARKET_VALUE) is the natural logarithm of the acquirer's equity market capitalization. Other explanatory variables are defined in Appendix B. Constant terms are estimated but not reported. *t*-statistics using robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Dependent Variable: Goodwill Write-Offs 3 Years Post-Acquisition	
	1	2
CSR_SIMILARITY	−0.235** (−2.35)	
HIGH_SIMILARITY_INDICATOR		−0.251*** (−5.08)
LOW_SIMILARITY_INDICATOR		0.036 (0.59)
RELATIVE_PE_RATIO	0.008*** (8.12)	0.007*** (7.94)
GOODWILL%	−0.072* (−1.96)	−0.085** (−2.26)
STOCK%	0.002** (2.45)	0.002*** (3.01)
RELATIVE_SIZE	0.613*** (15.31)	0.648*** (17.01)
ln(MARKET_VALUE)	0.031*** (4.23)	0.030*** (4.22)
Year and industry fixed effects	Yes	Yes
No. of obs.	79	79
Pseudo- <i>R</i> ²	0.403	0.412

Combined, the results in this section show that CSR similarity matters for deal synergies and subsequent improvements in operating performance. Specifically, mergers between acquirers and targets that are a better cultural fit in terms of their CSR policies are significantly more likely to exhibit improvements in the operating performance of the acquiring firm and significantly less likely to require write-offs of acquired goodwill in the years following deal completion.

E. CSR Stability

Our evidence thus far is consistent with substantially fewer transitional integration issues in mergers between acquirers and targets when they share similar CSR policies: a higher probability that deals are mustered successfully from proposal to consummation, higher combined announcement returns for the merging firms, and better post-merger operating performance and fewer goodwill write-offs. Table 7 continues our analysis by examining a pertinent aspect of post-merger changes: the stability in CSR policy from before to after the merger.

Specifically, we examine the post-merger acquiring firm's CSR policy compared with the pre-merger acquiring firm, the pre-merger target, and the equal- or value-weighted pre-merger combined acquirer and target firm. To do so, we estimate the Jaffe metric in equation (1) using the post-merger acquiring firm's CSR

TABLE 7
Stability between Pre- and Post-Merger CSR Similarity

Table 7 reports the stability between pre- and post-merger corporate social responsibility (CSR) policy. Pre- and post-merger is calculated by estimating the similarity, using equation (1), between the pre-merger acquirer ("pre-acquirer") and pre-merger target ("pre-target") CSR dimensions vector in the year *before* the merger (time $t - 1$) and the CSR dimensions vector of the post-merger firm 2 years *after* the merger event (time $t + 2$). In model 1 the dependent variable is the similarity between pre-acquirer CSR and the post-merger firm's CSR. The dependent variable in model 2 is the similarity between pre-target CSR and the post-merger firm's CSR. In model 3 the dependent variable is the equal-weighted average of the similarity between the pre-acquirer and post-merger firm's CSR and the similarity between the pre-target and post-merger firm's CSR. In model 4 the dependent variable is the (asset) value-weighted average of the similarity between the pre-acquirer and post-merger firm's CSR and the similarity between the pre-target and post-merger firm's CSR. Ordinary least squares (OLS) regressions are used in all four models. The acquirer controls include the acquirers' SIZE and BOOK_TO_MARKET. The target controls are the target firms' SIZE and BOOK_TO_MARKET. The combined firm controls are the SIZE and BOOK_TO_MARKET values of the combined firm, and they are calculated as the sum of the SIZE values of the acquirer and target and the (market) value-weighted average of the acquirer's and target's BOOK_TO_MARKET, respectively; all variables are defined in Appendix B. Constant terms are estimated but not reported. *t*-statistics (based on standard errors clustered by 2-digit Standard Industrial Classification (SIC) group) are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	CSR Similarity with Post-Merger Firm			
	Pre-Acquirer 1	Pre-Target 2	Simple Average 3	Weighted Average 4
CSR_SIMILARITY	0.083* (1.82)	0.526*** (11.08)	0.312*** (9.72)	0.148*** (4.76)
SAME_INDUSTRY_INDICATOR	0.011 (0.44)	-0.034 (-1.34)	-0.010 (-0.56)	0.014 (0.68)
SAME_STATE_INDICATOR	-0.021 (-1.16)	0.025 (1.18)	0.004 (0.31)	-0.017 (-1.18)
HIGH_TECH_INDICATOR	0.015 (0.78)	-0.018 (-0.65)	0.002 (0.19)	0.002 (0.15)
RELATIVE_SIZE	0.026 (1.20)	0.001 (0.03)	0.021 (1.27)	-0.048** (-2.67)
ALL_CASH_INDICATOR	0.014 (0.64)	-0.038 (-1.54)	-0.017 (-1.31)	0.038* (1.91)
TENDER_OFFER_INDICATOR	-0.022 (-0.88)	-0.021 (-1.42)	-0.022 (-1.05)	-0.015 (-0.54)
Acquirer controls	Yes	No	No	No
Target controls	No	Yes	No	No
Combined firm controls	No	No	Yes	Yes
Year and industry fixed effects	Yes	Yes	Yes	Yes
No. of obs.	514	514	514	514
R ²	0.603	0.580	0.666	0.674

characteristics in the 2 years *after* the merger event (time $t + 2$) and the pre-merger CSR characteristics in the year *before* the merger (time $t - 1$) for the acquirer, target, or a blend of the two.³¹ If CSR fit creates value by providing a smoother transition (or integration) in the merger process, we would expect that firms with high CSR similarity experience fewer changes to their CSR policies following a merger.

In models 1 and 2 of Table 7, we examine the CSR policy stability of the post-merger acquiring firm compared with the CSR characteristics of the pre-merger acquiring firm and pre-merger target firm, respectively. We show that the effect of CSR_SIMILARITY on CSR policy stability is significantly positive for both pre-merger acquirer and target but is much stronger for the target firm. The different economic effects for the acquiring and target firms can be understood

³¹We choose this 3-year window so that the comparison of CSR policies pre- and post-merger will not overlap (due to the 3-year rolling window method of composing individual subcategory scores). Our results are robust to employing different windows, to excluding deals with small (bottom tercile) relative size, and to calculating CSR similarity using each industry's top-three CSR categories.

with the reality that the CSR policy of the combined post-merger firm, in general, likely remains most consistent with that of the acquiring firm. Consequently, the smaller change in CSR policy for the acquiring firm implies that the role of CSR_SIMILARITY is less meaningful for the “dominant” merger partner compared with the effect of CSR_SIMILARITY on the change that the target firm experiences.³²

As reported in models 3 and 4 of Table 7, the coefficient on CSR_SIMILARITY is positive and highly significant when examining the CSR policy stability compared with the equal- or value-weighted average of the pre-merger acquiring and target firms. This means that greater CSR similarity between the pre-merger firms is associated with more stability in the combined firm’s CSR policies. Specifically, as a combined firm, a 1-standard-deviation increase in CSR similarity between the pre-merger acquirer and target is related to an approximately 19% increase in post-merger CSR policy stability (7% if similarity is value weighted, as in model 4). Given the costliness of changing corporate cultures (Cremer (1993)), we believe that this gives context to our earlier results: Firms with a stronger fit in CSR policies (ex ante) incur smaller costs associated with integration, thus helping explain their greater likelihood of pursuing a merger and their greater ability to exploit synergies and operating improvements.

IV. Cross-Sectional Evidence on Integration

In this section, we implement cross-sectional analyses to provide further evidence on the integration channel. Specifically, we examine whether the effect of CSR similarity on merger-pair likelihood or combined abnormal announcement returns (which proxy for expected merger synergies) is significantly stronger in situations in which post-merger integration would be of greater importance to the acquiring firm.

A. Industry Characteristics

First, we examine the effects of CSR similarity across different industries. Given that the gains from integration are likely to differ for the various industries in our sample, we test whether certain industries exhibit a greater sensitivity of M&A likelihood and expected merger synergies to our measures of CSR similarity.

First, we compare the effects of CSR similarity for firms in capital-intensive industries and those in labor-intensive industries. We rely on the simple and intuitive argument that capital-intensive firms are less concerned with integrating employees across firms (compared with more labor-intensive firms). To classify capital- or labor-intensive industries, we follow from Meier and Servaes (2015) and define capital-intensive industries as those with SIC codes smaller than 5000; we define all other industries as labor intensive. We define a deal as capital (labor) intensive if both the acquirer and the target are from capital- (labor-) intensive

³² CSR similarity between the pre-merger acquirer and the post-merger firm for an average deal is approximately 62%, whereas similarity between the pre-merger target and the post-merger firm for an average firm is approximately 25%.

industries. We run our analyses of merger-pair likelihood (as in Table 2) and merger synergies (as in Table 3) for these subsamples.

We report the results in columns 1 and 2 of Table 8 (both Panels A (merger-pair likelihood) and B (combined announcement returns)). We find that the point estimates of the effects of CSR similarity are greater for firms in labor-intensive industries for both merger-pair likelihood and combined announcement returns. Although the differences in coefficients between the two subsamples are not statistically significantly different from 0 at conventional levels (p -values of 0.23 and 0.12, respectively), the magnitudes of the estimates are consistent with the effects of CSR similarity being driven by integration concerns. Thus, we find consistent, but weak, evidence for the hypothesis that the effect of CSR similarity will be greater in more labor-intensive industries.

Second, we examine whether the effects of CSR similarity on merger-pair likelihood and combined announcement returns are greater for deals in which acquirers and targets have greater operational overlap. Mergers in which acquires and targets are in the same industry are more likely to have stronger integration needs because acquiring firms likely give targets more operational autonomy in cross-industry deals. To test this, we first divide our sample into two subsamples based on a simple and intuitive classification: Within-industry deals in which the acquirer and the target are in the same industry (based on primary 2-digit SIC code) and cross-industry deals in which the acquirer and target are in different industries. We report the results in columns 3 and 4 of Table 8. In Panel A, we show that the point estimate of the effect of CSR similarity on merger-pair likelihood for within-industry deals is greater than that for cross-industry deals; however, the one-tailed test of the difference in the two coefficients is statistically insignificant (p -value = 0.33). Panel B reports the effects of CSR similarity on the combined announcement returns for the two subsamples of deals. Consistent with the notion that the need for cultural fit is stronger for within-industry mergers than cross-industry mergers, the results show that the within-industry mergers exhibit significantly greater effects of CSR similarity on expected synergies (proxied by combined announcement returns) than cross-industry mergers (the difference is significant at the 10% level).

An alternative but more refined approach to defining relatedness is in identifying whether a merger is horizontal, vertical, or diversifying. We follow Fan and Goyal (2006) to further classify deals into horizontal, vertical, and diversifying based on the degree of relatedness in the acquirers' and the targets' businesses. To classify deals, we use input–output data from the Bureau of Economic Analysis (BEA) to structure the horizontal and vertical relatedness between industries, following Fan and Goyal (2006) (who use the dollar input from one industry associated with another industry's dollar output). Using this information, we define a merger as vertical if the vertical relatedness between the acquirer and target is greater than 1%. A merger is defined as horizontal if the acquirer and target share the same 2-digit SIC code and the merger has a vertical relatedness of

TABLE 8
Cross-Sectional Variations in Integration Needs

Table 8 examines the cross-sectional variations in the effects of corporate social responsibility (CSR) similarity on merger outcomes. Panel A examines the effect on merger-pair likelihood, with INDUSTRY-SIZE-BTM matches, analogous to the tests in Table 2. For all specifications in Panel A, the acquirer and target controls are identical to those in Table 2, and all variables are defined in Appendix B. Panel B examines the effect of CSR similarity on combined announcement returns (i.e., expected merger synergies), analogous to the tests in Table 3. In columns 1 and 2, we run separate specifications on mergers occurring in labor-intensive industries and those occurring in capital-intensive industries (following Meier and Servaes (2015), capital-intensive industries are defined as those with Standard Industrial Classification (SIC) codes less than 5000; we define labor-intensive industries as those with SIC codes greater than or equal to 5000). In columns 3 and 4, we run separate specifications for deals involving within-industry mergers and cross-industry mergers based on their 2-digit SIC codes. In columns 5–7, we divide mergers into horizontal, vertical, and diversifying mergers. In columns 8 and 9, we divide the sample into mergers involving serial acquirers (if the firm is an acquirer at least five times within the previous 3-year rolling window) and nonserial acquirers. In columns 10–12, we divide our sample into low-, mid-, and high-relative-size terciles, where relative size is defined as deal value scaled by the market capitalization of the acquirer. In columns 13–16, we divide the sample into high and low acquirer CSR groups based on the median value of the acquirer's CSR score, and we divide the sample into high and low target CSR groups based on the median value of the target's CSR score. As in Table 2 (Table 3), *t*-statistics based on standard errors clustered at the deal level (2-digit SIC level) are reported in parentheses in Panel A (Panel B). *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Merger-Pair Likelihoods

Variable	Labor Intensive 1	Capital Intensive 2	Within Industry 3	Cross-Industry 4	Horizontal 5	Vertical 6	Diversifying 7	Serial Acquirers 8	Nonserial Acquirers 9	Low Relative Size 10	Mid Relative Size 11	High Relative Size 12	High Acquirer CSR 13	Low Acquirer CSR 14	High Target CSR 15	Low Target CSR 16
CSR_SIMILARITY	1.187*** (3.37)	0.857*** (3.17)	1.049*** (4.32)	0.854** (2.26)	2.621*** (4.05)	0.744*** (2.76)	0.411 (0.68)	1.458*** (5.15)	0.582* (1.77)	0.579 (1.39)	0.674* (1.95)	1.742*** (5.00)	0.925*** (2.88)	1.166*** (4.09)	1.055*** (3.60)	0.896*** (2.89)
	Prob(labor ≤ capital) = 0.228		Prob(within ≤ cross) = 0.332		Prob(horizontal ≤ vertical) = 0.004		Prob(serial ≤ nonserial) = 0.022		Prob(high ≤ low) = 0.016		Prob(high ≤ mid) = 0.015		Prob(high acquirer CSR ≤ low acquirer CSR) = 0.202		Prob(high target CSR ≤ low target CSR) = 0.406	
					Prob(horizontal ≤ diversifying) = 0.006											
					Prob(vertical ≤ diversifying) = 0.307											
Acquirer and target controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	1,724	2,515	3,422	1,479	1,682	1,584	1,624	2,646	1,322	1,682	1,584	1,624	2,461	2,440	2,479	2,422
Pseudo- <i>R</i> ²	0.048	0.019	0.025	0.016	0.036	0.014	0.049	0.0275	0.0208	0.036	0.0138	0.0492	0.0765	0.0806	0.0133	0.0911

(continued on next page)

TABLE 8 (continued)
Cross-Sectional Variations in Integration Needs

Panel B. Combined Announcement Returns

	Labor Intensive	Capital Intensive	Within Industry	Cross- Industry	Horizontal Vertical		Diversifying	Serial Acquirers	Nonserial Acquirers	Low Relative Size	Mid Relative Size	High Relative Size	High Acquirer CSR	Low Acquirer CSR	High Target CSR	Low Target CSR
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CSR_SIMILARITY	0.052*** (2.27)	0.014 (0.47)	0.048** (2.10)	−0.019 (−0.53)	0.091* (1.76)	0.031 (1.11)	−0.078 (−0.71)	0.059*** (3.40)	0.005 (0.14)	−0.007 (−0.30)	0.064 (0.95)	0.006 (0.22)	0.043* (1.86)	0.010 (0.33)	0.026 (1.22)	0.054 (1.18)
	Prob(labor ≤ capital) = 0.118			Prob(within ≤ cross) = 0.068		Prob(horizontal ≤ vertical) = 0.107 Prob(horizontal ≤ diversifying) = 0.058 Prob(vertical ≤ diversifying) = 0.023		Prob(serial ≤ nonserial) = 0.049		Prob(high ≤ low) = 0.366 Prob(high ≤ mid) = 0.230		Prob(high acquirer CSR ≤ low acquirer CSR) = 0.187 Prob(high target CSR ≤ low target CSR) = 0.295				
Acquirer and target controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	199	267	338	189	73	267	80	334	183	174	175	178	263	264	262	265
R ²	0.395	0.478	0.296	0.716	0.769	0.363	0.997	0.327	0.617	0.641	0.500	0.578	0.424	0.607	0.589	0.378

less than 1%.³³ Finally, we consider diversifying mergers as those that are neither horizontal nor vertical. Because relatedness is strongest and weakest for horizontal and diversifying mergers, respectively, we expect to see the strongest effect of CSR similarity for horizontal mergers and the weakest effect for diversifying mergers.

We report the results in columns 5–7 of Panel A in Table 8. We find that all three types of mergers display positive sensitivity to CSR similarity. In comparing the sensitivity of merger-pair likelihood to CSR similarity, horizontal mergers, as expected, have the highest sensitivity (2.62, significant at the 1% level), followed by vertical (0.74, significant at the 1% level) and diversifying mergers (0.41, insignificantly different from 0). The one-tailed tests of differences in the coefficients between horizontal mergers and the other two types of mergers are both statistically significant at the 1% level. Columns 5–7 of Panel B report the effects of CSR similarity on combined announcement returns for the three types of deals. The results are consistent with our expectation that the effect of CSR similarity is strongest for horizontal mergers and is weakest for the diversifying mergers. Moreover, the differences in the effects are all statistically significant (albeit with a *p*-value of 0.11 for horizontal vs. vertical). These results suggest that the role of CSR similarity in merger decisions and outcomes is greatly affected by potential integration challenges; such challenges are undoubtedly greater in horizontal mergers and, to less of an extent, in vertical mergers.

B. Serial Acquirers

In this subsection, we examine whether the effect of cultural similarity is greater for serial acquirers. Serial acquirers have more experience with merger integration and are more vulnerable to the effects of cultural differences given their greater frequency of mergers. Thus, they should generally be more likely to have stronger incentives to smoothly integrate their acquisitions. Therefore, in columns 8 and 9 of Table 8, we compare the effects of CSR similarity on merger-pair likelihoods and combined announcement returns for serial acquirers compared with nonserial acquirers. The variable `SERIAL_ACQUIRER_INDICATOR` is set equal to 1 if the acquirer has been involved in at least five deals in the prior 3 years, and 0 otherwise. In counting the number of deals for the purpose of identifying serial acquirers, we use all deals involving both public and private targets that are reported in the SDC database.

In Panel A of Table 8, the coefficient on CSR similarity on merger-paid likelihood is positive and statistically significant at the 1% level for serial acquirers. For nonserial acquirers, the magnitude of the coefficient is much smaller (0.58) and is significant only at the 10% level. In Panel B, we find that the coefficient estimate of CSR similarity on combined announcement returns (i.e., expected synergies) is again positive (0.06) and statistically significant at the 1% level for serial acquirers, whereas the coefficient for the nonserial acquirers is statistically insignificant. Furthermore, the differences between the coefficients for serial and nonserial

³³Our use of the 1% level of vertical relatedness to define the type of integration follows Fan and Goyal (2006), Garfinkel and Hankins (2011), Ahern and Harford (2014), and Lin, Officer, and Shen (2018).

acquirers are statistically significant at the 5% level for both merger-pair likelihood and combined announcement returns. These results suggest that serial acquirers are particularly cognizant of the importance of cultural similarity. That is, the effect of CSR similarity on merger-pair likelihood is not completely dependent on whether a firm is a serial acquirer, but frequent acquirers do appear to be more sensitive to cultural differences (relative to less frequent acquirers).

C. Relative Size

Next, we examine the effects of cultural similarity conditional on the relative size of the target compared with the acquirer. Relative size is defined as deal value divided by the acquirer's market capitalization. Integration costs might not be particularly high if the target firm's relative scale is small. We test for this in columns 10–12 of Table 8. We divide deals into relative-size terciles (based on 33% and 66% cutoffs for the low-, medium-, and high-relative-size groups). In the merger-pair likelihood tests (Panel A), the estimated coefficients on CSR similarity across the three groups are 0.58 for the low-relative-size group, 0.67 for the medium-relative-size group, and 1.74 for the high-relative-size group. Among these groups, only the medium and high groups' coefficients are statistically significant (at the 10% and 1% levels, respectively), and the point estimate of the effect in the high-relative-size subsample is significantly greater than the effect in either the low- or medium-relative-size groups. These results are consistent with the prediction that integration issues arising from cultural similarity are relatively more important for deals involving relatively large target firms.

D. Acquirer and Target CSR Levels

Lastly, we examine whether cultural fit with respect to CSR plays a more important role for firms with higher individual CSR scores (i.e., stronger individual CSR performance). Existing literature has documented that expected merger synergies, for example, are greater when the acquirer (Deng et al. (2013)) or target (Aktas, Bodt, and Cousin (2011)) has a high level of commitment to CSR. Consequently, it is possible that the relative importance of CSR *similarity* (which is what we focus on in this article) could depend on the level of firms' CSR commitment.

Thus, we divide our deals into high and low acquirer (target) CSR groups based on the median value of the acquirer's (target's) CSR score. We then run the merger-pair likelihood and combined announcement returns analyses for these subsamples. The results are reported in columns 13–16 of Table 8. Whether we examine merger-pair likelihood (Panel A) or combined announcement returns (Panel B), we find the same conclusion: The difference in the point estimates for the importance of CSR similarity between high- and low-CSR acquirers (or targets) is not statistically significantly different from 0. These results suggest that the acquirer's or target's individual level of commitment to CSR does not have much of an impact on the importance of CSR similarity for the merging firms. That is, a firm's overall level of commitment to CSR and its cultural fit with a merger partner's CSR policies are capturing two distinct aspects of CSR (as also evidenced by the negative correlation between overall CSR score and CSR similarity).

V. Robustness and Additional Analysis

A. Alternative Measures of CSR Similarity

One key characteristic of Jaffe's distance measure is that CSR policies from different subcategories are assumed to be independent of each other. For example, although a firm with a positive rating in "pollution prevention" and another firm with a positive rating in "recycling" may share the same underlying CSR policy that values environmentally friendly practices, their ratings on those two subcategories would not contribute to their CSR similarity under the Jaffe measure. As an alternative, we address the potential overlap across different subcategories by utilizing the Mahalanobis distance, which captures the cross-correlations across different dimensions.

We follow from Bloom et al. (2013) to calculate an extended version of the similarity measure, CSR_SIMILARITY_MAHA, based on the Mahalanobis distance:

$$(3) \quad \text{CSR_SIMILARITY_MAHA}_{i,j,t} = \frac{X_{i,t} \Omega X'_{j,t}}{(X_{i,t} X'_{i,t})^{0.5} (X_{j,t} X'_{j,t})^{0.5}},$$

where vector $X_{i,t} = (X_{i1,t}, X_{i2,t}, \dots, X_{i124,t})$ and $X_{j,t}$ correspond to firm i 's and firm j 's scores in each subcategory of KLD from the original Jaffe measure, and Ω is the 124-by-124 matrix of correlations between each subcategory. For example, if CSR areas i and j coincide frequently within the same firm, then the corresponding element Ω_{ij} will be close to unity. In our sample, for example, the incidence of "pollution prevention" and "recycling" is positively correlated; their correlation coefficient is 7.5%, which is in the top quartile among all correlations between "pollution prevention" and other CSR categories. Likewise, subcategories that have the highest correlations with "employee involvement" include "charitable giving," "innovative giving," "support for education," "promotion," "work-life benefits," "gay and lesbian policies," "cash profit sharing," and "compensation and benefits," among others.

The results using CSR_SIMILARITY_MAHA are presented in column 1 of Table 9. The results for both the merger-pair likelihood (Panel A) and combined announcement returns (Panel B) are highly consistent with our baseline results, suggesting that our results are robust to including cross-correlations between different aspects of CSR policy.

Because the existing M&A literature has documented the importance of corporate governance (i.e., Wang and Xie (2009)) and product relatedness (i.e., Hoberg and Phillips (2010)), it could be that our baseline results are driven by the similarities between governance- or product-related subcategories within our CSR_SIMILARITY measure. Consequently, we estimate alternative CSR similarity measures, CSR_SIMILARITY_NOG and CSR_SIMILARITY_NOGP, by excluding the governance components and both the governance and product components, respectively. A related concern is whether CSR performance is driven by "greenwashing" campaigns (Chatterji et al. (2009)), in which case the

environment subcategories would be particularly affected.³⁴ Consequently, we define CSR_SIMILARITY_NOENV to exclude environment-related subcategories.

As noted by Shenkar (2001) and Karolyi (2016), each of the 124 subcategories may not be equally important in contributing to merger-pair likelihood or merger outcomes. For example, it could be that i) the global nature of the “human rights” category may not be as important of a driver of firms’ CSR similarities compared with other categories; ii) employee-related categories might be the most important CSR dimensions given the unique role of employees in firm decisions and performance (e.g., Edmans (2011), Bae, Kang, and Wang (2011),

TABLE 9
Alternative Similarity Measures

Table 9 reports coefficients from models similar to those in model 4 of Panel A in Table 2 and model 2 of Panel B in Table 3. Compared with those tables, the only difference is our use of the following five measures for cultural similarity: In model 1 we use the similarity measure CSR_SIMILARITY_MAHA, estimated using the Mahalanobis distance; in model 2 we use the similarity measure CSR_SIMILARITY_NOG, estimated using the Jaffe distance but excluding the “governance” subcategories from the calculation; in model 3 we use the similarity measure CSR_SIMILARITY_NOGP, estimated using the Jaffe distance but excluding all “governance” and “product” subcategories from the calculation; in model 4 we use the similarity measure CSR_SIMILARITY_NOGPH, estimated using the Jaffe distance but excluding all “governance,” “product,” and “human rights” subcategories from the calculation; in model 5 we use the similarity measure CSR_SIMILARITY_EMPDIV, estimated using the Jaffe distance but including only the “diversity” and “employee relations” categories in the calculation; in model 6 we use the similarity measure CSR_SIMILARITY_NOENV, estimated using the Jaffe distance but excluding all “environment” subcategories from the calculation; in model 7 we use the similarity measure CSR_SIMILARITY_TOPINDUSTRY, estimated using the Jaffe distance but only using each industry’s top-three most prevalent categories; in models 8 and 9 we use the similarity measure CSR_SIMILARITY_STRENGTHS and CSR_SIMILARITY_CONCERNS, using only corporate social responsibility (CSR) strengths or CSR concerns, respectively. All other control variables remain as in model 4 of Table 2 and model 2 of Table 3. As in Table 2 (Table 3), *t*-statistics based on standard errors clustered at the deal level (2-digit Standard Industrial Classification (SIC) level) are reported in parentheses in Panel A (Panel B). *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	1	2	3	4	5	6	7	8	9
<i>Panel A. Merger-Pair Likelihood</i>									
CSR_SIMILARITY_ MAHA	0.928*** (6.19)								
CSR_SIMILARITY_ NOG		0.941*** (4.81)							
CSR_SIMILARITY_ NOGP			0.819*** (4.20)						
CSR_SIMILARITY_ NOGPH				0.786*** (4.06)					
CSR_SIMILARITY_ EMPDIV					0.515*** (2.84)				
CSR_SIMILARITY_ NOENV						0.930*** (4.64)			
CSR_SIMILARITY_ TOPINDUSTRY							0.699*** (3.74)		
CSR_SIMILARITY_ STRENGTHS								0.949*** (3.72)	
CSR_SIMILARITY_ CONCERNS									0.879*** (4.80)
Acquirer and target controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	4,901	4,270	3,981	3,964	3,434	4,736	4,466	1,839	3,505
Pseudo- <i>R</i> ²	0.0217	0.0171	0.0164	0.0157	0.0129	0.0164	0.0135	0.0240	0.0166

(continued on next page)

³⁴Hong, Kubik, and Scheinkman (2011) perform a principal component analysis on five KLD categories. They find a common component in each of the scores, in that performance in one category tends to be associated with that of other categories. Hong et al. note that this finding is inconsistent with greenwashing.

TABLE 9 (continued)
Alternative Similarity Measures

Variable	1	2	3	4	5	6	7	8	9
<i>Panel B. Combined Announcement Returns</i>									
CSR_SIMILARITY_ MAHA	0.024* (1.86)								
CSR_SIMILARITY_ NOG		0.033* (1.78)							
CSR_SIMILARITY_ NOGP			0.029* (1.67)						
CSR_SIMILARITY_ NOGPH				0.030* (1.67)					
CSR_SIMILARITY_ EMPDIV					0.018 (0.90)				
CSR_SIMILARITY_ NOENV						0.030* (1.79)			
CSR_SIMILARITY_ TOPINDUSTRY							0.030* (1.81)		
CSR_SIMILARITY_ STRENGTHS								0.038*** (2.73)	
CSR_SIMILARITY_ CONCERNS									0.028 (1.41)
Acquirer and target controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	527	476	447	446	399	514	489	254	414
R ²	0.336	0.362	0.341	0.341	0.322	0.338	0.338	0.402	0.302

and Edmans, Li, and Zhang (2017)); iii) firms may care about CSR dimensions that are particularly important to their industry; and iv) only subcategories that are classified as “strengths” might matter in determining CSR similarity.

Because we are reluctant to impose our own priors on the data about which categories are more or less important, we estimate the following CSR similarity measures for robustness: i) CSR_SIMILARITY_NOGPH, estimated by additionally excluding the subcategories in the “human rights” category from the previous CSR_SIMILARITY_NOGP measure; ii) CSR_SIMILARITY_EMPDIV, estimated by using only the subcategories in the “diversity” and “employee relations” areas; iii) CSR_SIMILARITY_TOPINDUSTRY, where CSR_SIMILARITY is constructed based on only the subcategories of three broad categories with the highest average CSR ratings in each respective industry for both the acquirer and the target;³⁵ and iv) CSR_SIMILARITY_STRENGTHS and CSR_SIMILARITY_CONCERNS, by using only the subcategories in CSR strengths and concerns, respectively. The results using these alternative measures are presented in columns 2–9 of Table 9. The results in the merger-pair likelihood tests (Panel A) for all of these alternate definitions of CSR similarity are

³⁵Specifically, we calculate the average CSR ratings in each of the seven broad categories by industry and identify the three broad categories with the greatest average score for each industry. We then construct a new CSR similarity measure by using subcategories only from those top-three broad categories. For example, if a given industry has the highest average scores in “community,” “diversity,” and “environment” among the seven broad categories, we would construct the Jaffe distance for firms in that industry by replacing the elements in vector $X = (X_1, X_2, \dots, X_{124})$ with 0s in all subcategories that do not belong to “community,” “diversity,” or “environment.”

remarkably similar to our baseline results in Table 2. This suggests that our merger-pair likelihood results are robust to using various categories of the KLD data in our definitions of CSR similarity and that our conclusions about merger-pair likelihoods in particular are not sensitive to these issues.

The effects of CSR similarity on combined announcement returns (Panel B of Table 9) are broadly consistent with our baseline results in Table 3, although the statistical significance of the regression coefficients declines slightly. Interestingly, CSR similarity driven only by the KLD subcategories in the “diversity” and “employee relations” areas (CSR_SIMILARITY_EMPDIV) does not have a significant association with expected synergies from a merger (although, for reasons outlined previously, we expected it to). Also notable here is that similarity in *strengths* seems to have a positive (and strong) association with combined merger gains, whereas similarity in *weaknesses* does not.

B. Other Endogeneity Issues

Although we match our sample based on YEAR, INDUSTRY, SIZE, and BOOK_TO_MARKET, there may still be some unobserved heterogeneity driving our merger-pair likelihood results in Table 2. For example, because we are matching based on 2-digit SIC codes for our industry match, it is possible that the results in Table 2 are driven by some heterogeneity based on finer industry classifications (e.g., 3-digit or 4-digit SIC classifications). Also, our matching methodology used in Section III could be incomplete such that there still may be some unobserved characteristics other than YEAR, INDUSTRY, SIZE, and BOOK_TO_MARKET that drive merger-pair likelihood (and that are correlated with CSR similarity).

One further way to mitigate this endogeneity concern is to check the robustness of our baseline results by re-estimating our merger-pair likelihood models based on a balanced sample, where treated (high-CSR-similarity merger pairs) and nontreated firms (low-CSR-similarity merger pairs) are comparable in terms of key observable characteristics. To achieve this, we employ the coarsened exact matching (CEM) methodology (Blackwell, Iacus, King, and Porro (2011)), which allows ex ante balance between the treated and control groups. CEM has favorable features relative to propensity-score matching, such as relaxing the degree of model dependence and reducing causal estimation error, bias, and inefficiency, and has recently been used in a variety of studies in finance and economics (e.g., Azoulay, Graff Zivin, and Wang (2010), Iacus, King, and Porro (2011), Feldman, Amit, and Villalonga (2014), and Balsmeier, Fleming, and Manso (2017)). Indeed, King and Nielsen (2016) suggest that propensity scores should not be used for matching and that there are many advantages to using CEM instead. Based on CEM’s coarsening function, we first match treated firms with control firms in the same industry and year while also controlling for the joint distribution of the acquirer’s size and book-to-market ratio and the target’s size and book-to-market ratio. We also show the robustness of our results to using different industry classifications (2-digit, 3-digit, or 4-digit SIC codes). Compared with Table 2, these results both provide more balanced matching and show that our results are robust to narrower industry classifications.

The results are presented in Panel A of Table 10. The number of observations declines because we no longer keep 10 pseudo-deals per actual merger pair but,

TABLE 10
Further Robustness Tests on Merger-Pair Likelihood

Table 10 reports coefficients from models similar to those in column 4 of Table 2 (for merger-pair likelihood) and column 2 of Panel B in Table 3 (for combined cumulative abnormal returns (CAR)). In Panel A we form treated and control samples using coarsened exact matching (CEM). For each sample merger pair, we find pseudo-deal matches in the corresponding year and industry (2-digit Standard Industrial Classification (SIC) industry code in column 1, 3-digit SIC industry code in column 2, and 4-digit SIC industry code in column 3), matching on both the target's and acquirer's size and book-to-market ratio. In Panel B, we control for the difference in corporate governance (GIM_DIFFERENCE), which is the difference in the Gompers et al. (2003) corporate governance score between the target and acquirer. In Panel C, we include product-market similarity (PM_SIMILARITY), as in Hoberg and Phillips (2010). In Panel D, we control for the difference in managerial talent. Following Wang and Xie (2009), MANAGERIAL_ABILITY_DIFFERENCE is defined as the difference between the acquirer's and target's prior 3-year industry-adjusted return on assets (ROA). For all panels, the acquirer and target controls for merger-pair likelihood and combined CAR are identical to those in Table 2 (with the exception of the GIM_DIFFERENCE and PM_SIMILARITY variables) and Table 3, respectively, and all variables are defined in Appendix B. *t*-statistics based on standard errors clustered at the deal level are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Merger-Pair Likelihood		
	1	2	3
<i>Panel A. CEM Analysis</i>			
TREATMENT (High CSR similarity)	0.601*** (4.61)	0.706*** (4.07)	1.486*** (3.55)
SIC code	2-digit	3-digit	4-digit
Acquirer and target controls	Yes	Yes	Yes
No. of obs.	972	493	191
Pseudo- <i>R</i> ²	0.0354	0.0696	0.19
		Merger-Pair Likelihood	Combined CAR(−3, +3)
		1	2
<i>Panel B. Difference in Corporate Governance</i>			
CSR_SIMILARITY		1.779*** (5.13)	0.085* (1.89)
GIM_DIFFERENCE		0.043** (2.28)	0.007* (1.69)
Pair and firm controls		Yes	Yes
Deal fixed effects		Yes	No
Year and industry fixed effects		No	Yes
No. of obs.		1,732	234
<i>R</i> ²		0.0422	0.465
<i>Panel C. Product-Market Similarity</i>			
CSR_SIMILARITY		0.874*** (4.14)	0.030* (1.76)
PM_SIMILARITY		1.582*** (11.58)	0.004 (0.48)
Pair and firm controls		Yes	Yes
Deal fixed effects		Yes	No
Year and industry fixed effects		No	Yes
No. of obs.		4,345	471
<i>R</i> ²		0.092	0.329
<i>Panel D. Difference in Managerial Ability</i>			
CSR_SIMILARITY		0.998*** (4.93)	0.033** (2.08)
MANAGERIAL_ABILITY_DIFFERENCE		0.583* (1.64)	0.020 (0.02)
Pair and firm controls		Yes	Yes
Deal fixed effects		Yes	No
Year and industry fixed effects		No	Yes
No. of obs.		4,901	527
<i>R</i> ²		0.017	0.338

rather, choose the best-matched pseudo-deals that minimize the imbalance with respect to the full joint distribution. The number of observations also declines as we use finer definitions of industry classifications, as it becomes increasingly difficult to find appropriate industry-year matches. Across all specifications, the treatment effect (high CSR similarity) is positive and significant, suggesting that our results in Table 2 are unlikely to be driven by industry effects within the 2-digit SIC classification.³⁶

Alternatively, differences in corporate governance between the two firms may have a positive effect on mergers. Specifically, Wang and Xie (2009) present evidence that deals between acquirers with greater shareholder rights relative to targets produce higher synergies, likely due to the stronger governance being applied to the combined firm. To test whether our results are driven by the differences in governance, we include the difference (target minus acquirer) between the two firms' Gompers et al. (2003) governance index, GIM_DIFFERENCE, in Panel B of Table 10.³⁷

Another important aspect of similarity between merging firms is the potential for product-market synergies. For example, Hoberg and Phillips (2010) find that firms with similar product-market language experience greater merger success, and their results are consistent with mergers being driven by a goal of creating new products as a result of merger-driven synergies. In Panel C of Table 10 we study the impact of product-market similarity on our findings. Finally, it is possible that CSR similarity is correlated with similarity in managerial ability. To address this issue, we follow Morck, Shleifer, and Vishny (1990) in using the immediately prior 3-year industry-adjusted ROA as a proxy for a firm's managerial ability. Then, as in Wang and Xie (2009), we construct the difference in managerial ability by taking the difference between the corresponding values for the acquirer and target. We include this proxy in our analyses in Panel D of Table 10. In all three of these robustness tests in Table 10 (Panels B, C, and D), the effect of CSR similarity is comparable with our baseline results after controlling for these potentially important covariates.

VI. Conclusion

Merger integration is critically important to acquirers: the realization of merger synergies depends on the ability of the acquirer to smoothly incorporate the target firm into the acquirer's business. To this end, cultural "fit" (or similarity) between merging partners is a critical component that contributes to the success of an M&A deal. One important aspect of a firm's culture is its shared beliefs and values relating to CSR. Although there is ample anecdotal and survey evidence about the importance of CSR in corporate culture, and of the cultural fit in M&A deals, ours is the first article (of which we are aware) to attempt to measure and quantify such effects in large samples of deals.

³⁶Our results are also robust to including additional matching criteria such as R&D intensity, cash balances, or CSR levels (in addition to similarity).

³⁷Our results are also robust to simultaneously including GIM_DIFFERENCE and excluding governance-related items from the CSR_SIMILARITY measure (CSR_SIMILARITY_NOG).

In this article we estimate a measure of similarity between two firms' CSR policies by calculating the pairwise closeness of any two firms' multidimensional CSR foci using information on the individual components of the KLD environmental, social, and governance (ESG) scores. Using this measure, we show that firms with similar CSR policies are more likely to decide to merge, complete their deals more quickly, experience greater merger synergies and improved long-run performance, and experience fewer changes in CSR policies after the deal is complete. Our results are consistent with the notion that mergers between culturally similar firms experience smoother post-deal integration (relative to deals between culturally distant firms). Given that deals between firms with similar CSR policies experience faster resolution of uncertainty (less time between announcement and completion) and that the acquirers realize higher long-run synergies (operating performance improvements), similarity between firms' CSR policies appears to significantly ease integration as two distinct organizations become one.

Appendix A. KLD Components

In Appendix A, we list each of the KLD subcategories (both strengths and concerns), grouped by the following categories: community, corporate governance, diversity, employee relations, environment, human rights, and Product.

Community

Charitable giving
Innovative giving
Support for housing
Support for education
Non-U.S. charitable giving
Volunteer programs
Community engagement
Other strengths
Investment controversies
Negative economic impact
Tax disputes
Community other concerns

Corporate Governance

Limited compensation
Ownership strength
Transparency strength
Political accountability strength
Public policy strength
Corruption and political instability
Financial system instability
Corporate governance other strength
High compensation
Ownership concern
Accounting concern
Transparency concern
Political accountability concern
Public policy concern

Governance structures controversies
Controversial investments
Business ethics
Corporate governance other concerns

Diversity

CEO diversity
Promotion
Board of directors gender diversity
Work-life benefits
Women and minority contracting
Employment of the disabled
Gay and lesbian policies
Employment of underrepresented groups
Diversity other strength
Diversity controversies
Non-representation
Board gender diversity
Board of directors minorities diversity
Diversity other concerns

Employee Relations

Union relations
No-layoff policy
Cash profit sharing
Employee involvement
Retirement benefits strength
Health and safety strength
Supply chain policies, programs, and initiatives
Compensation and benefits
Employee relations
Professional development
Human capital management
Employee strengths other strengths
Union relations concern
Health and safety concern
Workforce reductions
Retirement benefits concern
Supply chain controversies
Child labor
Employee relations other concerns
Controversial sourcing

Environment

Beneficial products and services
Pollution prevention
Recycling
Clean energy
Property, plant, and equipment
Management systems strength
Water stress

Biodiversity and land use
 Raw material sourcing
 Environment other strength
 Hazardous waste
 Regulatory problems
 Ozone-depleting chemicals
 Substantial emissions
 Agriculture chemicals
 Climate change
 Negative impact of products and services
 Land use and biodiversity
 Non-carbon releases
 Supply chain management
 Water management
 Environment other concerns
 Natural resource use
 Environmental opportunities: green buildings
 Environmental opportunities: renewable energy
 Waste management: electronic waste
 Climate change: energy efficiency
 Climate change: product carbon footprint
 Climate change: insuring climate change risk

Human Rights

Positive record in South Africa
 Indigenous peoples relations strength
 Labor rights strength
 Human rights other strength
 South Africa concern
 Northern Ireland concern
 Burma concern
 Mexico concern
 Labor rights concern
 Indigenous peoples relations concern
 Operations in Sudan concern
 Freedom of expression and censorship
 Human rights violations
 Human rights other concerns

Product

Quality
 R&D innovation
 Benefits to economically disadvantaged
 Access to capital
 Product other strengths
 Product safety
 Marketing-contracting concern
 Antitrust
 Customer relations
 Product other concerns
 Social opportunities: access to communications

Social opportunities: opportunities in nutrition and health

Product safety: chemical safety

Product safety: financial product safety

Product safety: privacy and data security

Product safety: responsible investment

Product safety: insuring health and demographic risk

Appendix B. Variable Definitions

ABNORMAL.ROA: Firm's ROA minus the corresponding median industry ROA where the industry is defined using Standard Industrial Classification (SIC) 2-digit industry.

ACTUAL.DEAL: An indicator variable that is equal to 1 if the pair of acquirer firm i and target firm j is the actual acquirer target in deal m , and 0 otherwise.

ADJUSTED.CSR: The net difference between the adjusted total CSR strengths and adjusted total CSR concerns for each category as in Deng et al. (2013). The adjusted total CSR strengths and concerns are calculated by scaling the raw strengths and concerns of each category by the number of elements in that category's strength and concerns in the year, then summing all adjusted subcategory scores across all strengths and concerns, respectively.

ALL.CASH.INDICATOR: Equal to 1 if the deal is financed by cash only, and 0 otherwise.

ASSETS: Book value of total assets.

BOOK.TO.MARKET: Book value of equity divided by market value of equity.

CASH: Cash and short-term investments divided by book value of total assets.

CSR.SIMILARITY: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years. The measure between two firms i and j is calculated as

$$\text{CSR.SIMILARITY}_{ij,t} = \frac{X_{i,t} X'_{j,t}}{(X_{i,t} X'_{i,t})^{0.5} (X_{j,t} X'_{j,t})^{0.5}},$$

where the vector $X_{i,t} = (X_{i1,t}, X_{i2,t}, \dots, X_{iC,t}, \dots, X_{iC,t})$ denotes firm i 's scores in various CSR policy aspects in each KLD subcategory classification c ($c = 1, 2, \dots, C$) over the prior 3 years (from time $t - 2$ to t).

CSR.SIMILARITY.MAHA: The Mahalanobis distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years. The measure between two firms i and j is calculated as

$$\text{CSR.SIMILARITY.MAHA}_{i,j,t} = \frac{X_{i,t} \Omega X'_{j,t}}{(X_{i,t} X'_{i,t})^{0.5} (X_{j,t} X'_{j,t})^{0.5}},$$

where vector $X_{i,t} = (X_{i1,t}, X_{i2,t}, \dots, X_{i124,t})$ and $X_{j,t}$ correspond to firm i 's and firm j 's scores in each subcategory of KLD from the original Jaffe measure, and Ω is the 124-by-124 matrix of correlations between each subcategory.

CSR.SIMILARITY.NO: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years but excluding the "governance" subcategories.

CSR.SIMILARITY.NOGP: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years but excluding all "governance" and "product" subcategories.

CSR.SIMILARITY.NOENV: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years but excluding the "environment" subcategories.

- CSR_SIMILARITY_NOGPH: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years but excluding all "governance," "product," and "human rights" subcategories.
- CSR_SIMILARITY_EMPDIV: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years but only including the "diversity" and "employee relations" categories.
- CSR_SIMILARITY_TOPINDUSTRY: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years but only using each industry's top-three most prevalent categories.
- CSR_SIMILARITY_STRENGTHS: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years but only using the corporate social responsibility (CSR) strengths subcategories.
- CSR_SIMILARITY_CONCERNS: The Jaffe (1986) distance of the acquirer's and target's CSR policies based on each firm's KLD subcategories over the previous 3 years but only using the corporate social responsibility (CSR) concerns subcategories.
- DIVERSIFYING_INDICATOR: Equal to 1 if the merger is neither horizontal nor vertical using the 1% vertical relatedness threshold (using data from the BEA as in Fan and Goyal (2006)), and 0 otherwise.
- GIM_DIFFERENCE: The difference between the target's GIM index (as defined in Gompers et al. (2003)) and the acquirer's GIM index (target GIM index – bidder GIM index), following Wang and Xie (2009).
- GOODWILL%: The dollar amount of goodwill created in the acquisition, divided by the acquisition value.
- HHI: The sum of squared market shares of all Compustat firms in the 2-digit SIC industry group.
- HIGH_SIMILARITY_INDICATOR: An indicator variable equal to 1 if the acquirer–target pair is in the top 25% of the CSR_SIMILARITY measure, and 0 otherwise.
- HIGH_TECH_INDICATOR: Equal to 1 if the acquirer and the target operate in high-tech industries as defined by Loughran and Ritter (2004), and 0 otherwise.
- HORIZONTAL_INDICATOR: Equal to 1 if the acquirer and the target share the same 2-digit SIC code and have vertical relatedness of less than 1%, using data from the BEA as in Fan and Goyal (2006), and 0 otherwise.
- LEVERAGE: Book value of debt (sum of current liabilities and long-term debt) divided by book value of total assets.
- ln(MARKET_VALUE): The natural logarithm of the acquirer's equity market capitalization.
- LOW_SIMILARITY_INDICATOR: An indicator variable equal to 1 if the acquirer–target pair is in the bottom 25% of the CSR_SIMILARITY measure, and zero otherwise.
- MANAGERIAL_ABILITY_DIFFERENCE: The difference between the acquirer's and target's prior 3-year industry-adjusted return on assets (ROA).
- PM_SIMILARITY: Equal to 1 if a given firm pair is in the same industry, defined using the firms' product descriptions from 10-K filings as in Hoberg and Phillips (2010), and 0 otherwise. *Source:* Data provided by Gerard Hoberg and Gordon Phillips on their Web site (<http://hobergphillips.usc.edu/>).
- RD_TO_ASSETS: R&D expenditure divided by book value of total assets.
- RELATIVE_PE_RATIO: The difference between the acquirer's price-to-earnings (PE) ratio and the industry median PE ratio.
- RELATIVE_SIZE: Deal value divided by market capitalization of acquirer.

ROA: EBITDA divided by book value of total assets.

SALES_GROWTH: Natural logarithm of current year's sales divided by previous year's sales.

SAME_INDUSTRY_INDICATOR: Equal to 1 if the acquirer and the target firm operate in the same 2-digit SIC industries, and 0 otherwise.

SAME_STATE_INDICATOR: Equal to 1 if the acquirer and the target firm are incorporated in the same state, and 0 otherwise.

SERIAL_ACQUIRER_INDICATOR: Equal to 1 if the firm is an acquirer at least five times within the prior 3 years, and 0 otherwise.

SIZE: Natural logarithm of the book value of total assets from Compustat.

STOCK%: The percentage of the acquisition's value paid for by stock.

TENDER_OFFER_INDICATOR: Equal to 1 if the merger is a tender offer, and 0 otherwise.

TOTAL_SIZE: The natural logarithm of one plus the sum of the two firms' book values of assets.

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