CEO Overconfidence and International Merger and Acquisition Activity

by

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24 November 2009

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Abstract

This study examines the role that CEO overconfidence plays in an explanation of international mergers and acquisitions during the period 2000-2006. Using a sample of CEOs of *Fortune* Global 500 firms over our sample period, we document a number of demographic and national patterns in the global distribution of overconfident CEOs. We find that the Hofstede measures of national culture partially explain these geographical patterns in the dispersion of overconfident CEOs. We conclude that CEO overconfidence is an international phenomenon, although it is most extensively observed in younger individuals heading firms headquartered in Christian countries that encourage individualism while deemphasizing a long-term orientation in their national cultures. We also find that overconfidence is related to a number of aspects of merger activity. CEO overconfidence helps to explain the number of offers made by a CEO, the frequency of diversifying acquisitions, and the use of cash to finance a merger deal.

Keywords: overconfidence, mergers, hubris, behavioral

JEL Codes: G35, C23

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1. Introduction

There exists an extensive literature in corporate finance concerning the causes and performance of mergers (e.g., Asquith, Bruner, and Mullins (1983), Jensen and Ruback (1983), Bradley, Desai, and Kim (1988), Franks, Harris, and Titman (1991), Agrawal, Jaffe, and Mandelker (1992), Loughran and Vijh (1997), Rau and Vermaelen (1998), Bruner (2002), Fuller, Netter, and Stegemoller (2002) and Bouman, Fuller, Nain (2009)). But only a few studies focus on CEO and managerial overconfidence as factors in merger activity. Among this limited set of studies, Doukas and Petmezas (2007) investigate overconfidence in mergers. They conclude that managerial overconfidence results from a self-attribution bias. Specifically, overconfident CEOs feel that they have superior decision-making abilities and are more capable than their peers. The presence of these cognitive biases encourages CEOs to emphasize their own judgment in decision-making and engage in highly complex transactions such as diversifying acquisitions. Because of their overconfidence, these CEOs tend to underestimate the risks associated with a merger or overestimate the possible synergy gains from a business combination.

Malmendier and Tate (2008) examine the extent to which overconfidence can help to explain merger decisions and characteristics of the deal itself. They conclude that overconfident CEOs are more likely to pursue acquisitions when their firms have abundant internal resources. They further report that overconfident CEOs are significantly more likely than other CEOs to undertake a diversifying merger. Finally, they find that overconfident CEOs use cash more often to finance their mergers than other CEOs.

The literature, however, has not investigated the effect of this overconfidence on the nature of international merger and acquisition activity. Indeed, existing studies only examine overconfidence in the context of U.S. mergers and ignore the international aspects of this behavioral trait. Because managerial overconfidence is shaped in part by national culture, we expect that the nature and extent of overconfidence among CEOs will vary across the globe. As noted by such researchers as La Porta et al (1998, 1999, 2000), Stulz and Williamson (2003) and Doidge, Karolyi and Stulz (2007), national culture involves dimensions such as language, religion, and legal heritage and can be expected to influence the decision-making behavior of senior executives. Consequently, national culture has important implications regarding the extent to which overconfidence can explain the acquisition decisions of corporate CEOs. This study provides an examination of how overconfidence might explain the global pattern of merger and acquisition activity.

In this study, we ask two fundamental research questions concerning how overconfidence influences global merger activity. The first focuses on whether there exist country or country group patterns in the distribution of CEO overconfidence. Comparable legal systems and national cultures or shared standards of business practices might produce similarities in managerial decision-making as we examine our sample of international mergers.

Our second question investigates whether the results reported by Malmendier and Tate (2008) regarding US mergers by overconfident managers holds internationally and focuses on how overconfident managers conduct their mergers. Do overconfident CEOs make more acquisition offers than their less confident counterparts? Do overconfident CEOs acquire targets that are more frequently outside of their firm's core business than other CEOs? Do these overconfident CEOs finance their acquisitions differently from other CEOs? Given significant international differences in the regulation of corporate merger activity and the availability of

financing to support acquisitions, it is uncertain whether the results reported for the U.S. apply to a set of global mergers.

For a sample of mergers involving the Fortune Global 500 firms over the period 2000-2006, we document a number of demographic and country patterns in the global distribution of overconfident CEOs. We determine that overconfidence is most commonly observed in younger CEOs leading firms head-quartered in Christian countries. We also find that the Hofstede measures of national culture help to explain geographical patterns in the dispersion of overconfident CEOs. Specifically, we discover that individuality positively influences the likelihood that a CEO will be overconfident. CEOs operating in countries whose cultures emphasize a longer term orientation tend to be less overconfident. We conclude that CEO overconfidence is an international phenomenon, although there are distinct patterns in its global distribution.

This study also shows that overconfidence is related to the variety of different aspects of merger activity. We find that overconfidence influences the number of offers made by a CEO, the frequency of diversifying acquisitions made, and the choice of deal financing. More specifically, we find that overconfidence is an important factor in explaining the number of offers made by a CEO. This result is robust even after controlling for firm size, the availability of internal resources, and the firm's investment opportunities. We confirm that overconfidence is a significant influence in the decision by CEOs to acquire an unrelated target, but that this appears to be more of a U.S. than a global phenomenon. We also determine that overconfidence's role in selecting the deal's financing method is robust and holds for both U.S. and international mergers. Specifically, we find that overconfident CEOs prefer cash for acquiring a target because of their general belief that their firm's equity is undervalued.

We organize the remainder of this study into six sections. Section 2 describes our data collection and our method of sample construction. We discuss our process for measuring overconfidence in section 3. We present our findings regarding international patterns in CEO overconfidence in section 4. Section 5 contains our analysis of the international determinants of overconfidence. The effect of overconfidence on the number of offers, type of merger, and the method of financing is contained in section 6. Section 7 provides a brief summary and conclusion.

2. Data and the Measurement of Overconfidence

2.1 Data and sample construction

Fortune magazine provides an annual ranking of the 500 largest companies of the world based on revenues. We begin our sample selection by compiling these annual lists during 2000-2006. From these annual lists, we create our dataset of all non-financial firms that appeared in this list at least once and the locations of these firms (the country in which a firm is headquartered). We exclude state-owned enterprises as best as we can.

For a firm in our dataset, we include all the CEOs of the firm during 2000-06. During 2004-06, the *Fortune* lists also include the name and gender of the CEO of the included in the list. During the years when a firm is not in the *Fortune* Global 500 list or is in the list during 2000-03 when CEO information was not included in the list, the names of the CEOs are hand collected from a variety of sources. The biographical data such as the date of birth of the CEO, birthplace, nationality, gender, education, and tenure with a firm are also hand-collected from a variety of sources. The sources include *Mergent Online*, web sites of the firms, financial statements, other online sources, etc. We compute the age of a CEO as of 2006. We consider a CEO to have completed college education if s/he has completed a college degree (undergraduate

degree or higher). We further consider a CEO to have completed a graduate college degree if s/he has a law degree, an MBA, or a Ph.D.

The legal regime for countries is obtained from the classification reported in La Porta et al. (1998). Primary religions and languages of countries are from Stulz and Williamson (2003). Dimensions of culture in countries are from Hofstede (2001). We consider a country to be above average on a particular dimension of culture if it has a Hofstede score above the median score for all the countries in the world on that dimension.

We obtain accounting data from *Compustat Global* and *Compustat North America* databases. We measure the size of a firm as the log of assets at the beginning of the year. We measure Tobin's Q as the market value of assets over book value of assets at the beginning of the year and cash flow as earnings before extraordinary items plus depreciation normalized by capital at the beginning of the year.

We convert accounting data other than ratios to US\$ using exchange rates obtained from the *Compustat Global* database. Items measured at a specific time, such as assets, are converted from local currency to US\$ based on the exchange rate at that time. Items measured over a year, such as sales, are converted from local currency to US\$ based on the 12-month average exchange rate over that year.

We use the SDC merger database to obtain announcement dates and merger financing information for completed deals by our sample firms. Following Malmendier and Tate (2008), we require that the acquiring firm obtains a control (at least 51%) of the target shares (and, hence, control) and omit acquisitions in which the acquiror already holds at least 51% of the target before the deal. Further, following Morck et al. (1990), we omit acquisitions worth less than 5% of acquirer value. As in Malmendier and Tate, we consider an acquisition as a related acquisition if the target and the acquirer share the same Fama-French 48 industry groups. We

differentiate offers based on financing used – offers in which only cash was used to finance the acquisition versus other offers in which some debt or equity was used (additionally some cash may or may not have been used.)

2.2 Measuring Overconfidence

Our measure of overconfidence is based on how the market perceives a CEO. Our proxy for market perception is based on the *Factiva* database, which includes articles from major newspapers, magazines and trade publications from around the world. For each CEO of a firm, we record the number of articles related to the firm in Factiva during 1996-2006 that refer to the CEO using the terms (a) "confident" or "confidence," (b) "optimistic" or "optimism," (c) "not confident," (d) "not optimistic," and (e) "reliable," "cautious," "conservative," "practical," "frugal," or "steady." We then compare the number of articles that portray a CEO as confident and optimistic to the number of articles that portray him as not confident, not optimistic, reliable, cautious, conservative, practical, frugal, or steady. That is, we classify a CEO as overconfident if a + b > c + d + e. We do not classify a CEO as overconfident or not overconfident if we do not find any articles related to the firm that mention the CEO.

3. International Patterns in CEO Overconfidence

In this section we explore the nature of CEO overconfidence and how it varies internationally. Previous studies such as Malmendier and Tate (2005), Doukas and Petmezas (2008), Malmendier and Tate (2008) and Campbell et al (2009) examine overconfidence only among the CEOs of U.S. firms. Thus, they are unable to investigate how overconfidence differs across various national cultures. Yet Stulz and Williamson (2003) show that national culture as proxied by religion and language influences the level of protection available to investors and by implication, the extent to which a CEO can exert influence and power. Earlier studies such as

Miller and Hoffman (1995), Diaz (2000), Halek and Eisenhauer (2001) and Osoba (2003) report an inverse relation between religiosity and individual risk tolerance. Hillary and Hui (2009) confirm this result and find that firms located in U.S. counties with high levels of religious participation have lower rates of investment in both tangible and intangible assets. These findings suggest that differences in national cultures can exert important influences on individual behavior. Consequently, national culture has the potential to effect the global distribution of overconfidence and how such overconfidence might be exhibited in corporate behaviors.

3.1 Sample and data characteristics

In a set of panels presented in Table 1, we discuss the characteristics of our data. In panel A we present the demographic profile of our sample CEOs. We observe that 82% of them are between the ages of 50 and 69. Approximately an equal number of individuals are in their 50s and 60s. Almost 98% of our sample CEOs are male and almost all hold at least a bachelor degree. Nearly 64% of our sample has earned a graduate degree. Almost one half (48.9%) of the sample is born in the U.S. followed by Japan (7.38%), France (6.59%), U.K. (5.49%) and Germany (5.34%). Only about 3.3% of our sample CEOs are born in Africa, South America or Australasia. The birthplace of our sample CEOs approximately aligns with the distribution of firm locations. About 48% of our firms are US firms, followed in frequency by Japan (13.1%), U.K. (6.42%), France (6.13%) and Germany (4.67%).

In panel B we provide summary financial characteristics for our sample firms. Given that our firms are drawn from the *Fortune* Global 500 list, it is not surprising that they are large, with an average asset value in excess of \$31 billion and a market equity capitalization of \$34 billion. Our sample firms appear profitable with a mean operating return on assets of 14% and a cash flow to Property, Plant and Equipment (PPE) of 10%. Earnings for these sample firms are \$1.1 billion on an average sales of \$27.5 billion. These firms are not highly leveraged, with a debt-tototal assets ratio of only 29%. These firms appear to have valuable growth opportunities, with an average Q ratio of 1.96.

In panels C and D we present a set of descriptive statistics regarding our measure of overconfidence. These panels provide measures of the extent to which our sample CEOs are mentioned in the press, the relative incidence of over-confident CEOs and an industry distribution of over-confident CEOs.

We present select statistics regarding the nature of the press coverage of our sample CEOs in panel C. We observe that CEOs have a mean (median) number of press mentions of 659 (227) over our sample period. Only a small set of these releases, however, comment on the confidence of the CEO. CEOs have, on average, almost 20 reports that describe them as confident and only about 7 suggesting that they are not confident.

Panel D contains an industry distribution of overconfident CEOs as per the industry classification in Malmendier and Tate (2008). We find that the highest percentage of overconfident CEOs occurs in the service industry which corresponds to SIC codes 7000-8710, 8712-8720, and 8722-8999. This is followed by technical industry (SIC codes: 1000-1799, 8711) at 78.1%. Industries classified as trade in SIC codes 5000-5999 appear to have the lowest percentage of overconfident CEOs. All of these industry percentages are significantly different from 50%.

3.2 Overconfidence and CEO characteristics

In this section, we examine the extent to which overconfidence varies with various CEO characteristics. We undertake this analysis through the construction of a correlation matrix between select CEO attributes and our measure of overconfidence. We observe a number of interesting and significant correlations in Table 2. We find that overconfidence is inversely related to age, suggesting that older CEOs are more cautious. CEOs of firms located in common

law countries are also more overconfident. We also determine that CEOs leading firms headquartered in countries whose primary religion is Christianity and the national language is English tend to be more overconfidence.

We also introduce the Hofstede (1980, 2001) measures of national culture into the correlation analysis of Table 2. These measures have been used in a number of finance studies (Kwok and Tadesse, 2006; Gleason et al., 2000; Sekely and Collins, 1988; Datta and Puia, 1995; Chakrabarti et al , 2009; Kirkman et al., 2006) since their creation by Hofstede in 1980. These measures consist of five different dimensions of a country's culture. The power distance index captures the extent to which less powerful members of organizations and institutions within a country both accept and expect that power is distributed unequally. Individualism measures the extent to which individuals are integrated into groups within a country. Masculinity refers to the distribution of roles between genders. The uncertainty avoidance measure addresses a society's tolerance for uncertainty and ambiguity. It indicates the extent to which that country's culture programs its members to feel comfortable or not in unstructured situations. The last of the Hofstede dimensions is long-term orientation and focuses on the relative culture importance of thrift, perseverance, tradition and satisfaction of social obligations.

We find that the power distance, long-term orientation, and uncertainty avoidance are inversely related to overconfidence. Not surprisingly, individualism and masculinity are positively correlated with overconfidence. The correlation coefficient for masculinity, however, is not statistically significant.

3.3 International patterns in CEO overconfidence

Nationality is traditionally based on the country of the CEO's birth. Alternatively, nationality can be defined from an "assimilated" perspective based on the country in which the firm is headquartered. This definition argues that the attributes and perspectives associated with

a nationally can be assimilated through exposure and living experiences with a given nationality. It reflects the idea that a CEO's cultural beliefs, behaviors, and perspectives will be determined by those of the country in which his firm is headquartered and consequently where he spends the majority of professional time. We find a high correlation in all of our findings between the traditional and assimilation measures of nationality, with no meaningful difference in interpretations between the two. We elect to report the results in this study for only the assimilated measure of nationality.

We now more closely examine the nature of CEO overconfidence as it is exhibited globally. In panel A of Table 3 we find the highest percentage of overconfident CEO to be in Australasia followed by the U.K. But we do note the small number of firms included in Australasia and infer relatively little from this result. Following the U.K. are two other western European countries: Germany and France. Among their CEOs, 83.9% and 82.5% respectively, are classified as overconfident. Nearly 76% of the remaining European CEOs are classified as overconfident, which approximates the 72.4% estimated for U.S. CEOs. The lowest percentage of overconfident CEOs occur in Asia other than Japan (42.5%) and Japan (49.4%).

Given work by LaPorta et al (1997), Stulz and Williamson (2003) and Hilary and Hui (2009) on the impact of national cultural attributes on corporate decision making, we examine how national legal regime, primary religion, and official language might influence a CEO's overconfidence. In panel B we find that CEOs tend to be overconfident regardless of legal regime, although there is a suggestion that CEOs of firms located in common law countries tend to be more overconfident than their civil law counterparts. In the second section of this panel, we examine the influence of the major religion of the country in which the firm is headquartered. We find that CEO overconfidence varies across the national religions. Catholic and Protestant CEOs are more overconfident than Buddhist or Hindu CEOs. The final section of panel B

examine what role that the country's primary language has on CEO overconfidence. We observe that overconfident CEO are present in countries whose primary language is English, Dutch, French, German or Norwegian. Interestingly, the use of Korean as the primary language is significantly and negatively related to the presence of overconfident CEOs. Due to small sample sizes, the other languages are not significantly related to a high percentage of overconfident CEOs.

We examine the ability of national culture to influence CEO overconfidence in another way by analyzing the Hofstede cultural dimensions in panel C. We observe a high percentage of overconfident CEOs regardless of a country's power distance, uncertainty avoidance, and masculinity. Regardless of a country's relative value for a given Hofstede cultural dimension, we observe that, on average, over two-thirds of the CEOs are classified as over-confident. We do find, however, that CEOs of firms headquartered in countries with a high level of individualism are significantly more overconfident than those in low individualism countries. We further find that CEOs are more overconfident when they lead firms headquartered in countries characterized by a low level of long-term orientation.

We conclude from Table 3 that there are significant differences in the national origin of overconfident CEOs. Most typically, overconfident CEOs originate from Europe and North America. Countries on these continents have English or other European languages as their official language, and are Christian in their religious heritage. Overconfident CEOs are also more likely to be found in firms headquartered in countries that emphasize individualism and a shorter-term orientation.

4. International Determinants of Overconfidence

A number of factors can contribute to the presence of overconfidence by a CEO. In this section, we examine the influence of these factors on CEO overconfidence in a multivariate framework. In Table 4 we present the results from a logistics regression of overconfidence against a set of independent variables drawing from a variety of demographic, national, cultural, and institutional variables.

In model 1 we examine the explanatory power of various CEO demographic characteristics. We find that being male is positively associated with CEO overconfidence, but the coefficient is statistically insignificant. We determine that both age and status as a college graduate are inversely related to overconfidence, but only age is statistically significant. Model 1 implies that younger CEOs are likely to be overconfident.

Model 2 examines the role that various national characteristics exert on the likelihood of CEO overconfidence. We observe that both a common law legal heritage and Christianity as the primary religion positively influence the likelihood that a CEO will be overconfident. But only Christianity as the major religion is statistically significant. The use of English as the official language has no significant effect on the probability that a CEO is overconfident.

The influence of Hofstede's five cultural dimensions are examined with Model 3. We find that power distance and individuality both positively influence the likelihood that a CEO will be overconfident. Individuality is statistically significant at the ten percent level while the coefficient for power distance is insignificant. Uncertainty avoidance, masculinity and long-term orientation are all inversely related to CEO overconfidence, but only long-term orientation is statistically significant. CEOs operating in countries whose cultures emphasize a longer term orientation tend to have less overconfident CEOs.

In models 4 and 5, we estimate a combined model, using the significant variables identified in the previous three models. We find in model 4 that only age and long-tem orientation are statistically significant when we simultaneously consider CEO demographic, national and cultural variables. Model 5 is estimated using only non-US firms. We find virtually identical results to that obtained for Model 4. We conclude that the effect of age and cultural norms regarding long-term orientation is not simply a U.S. phenomenon, but rather is a global effect.

5. The Nature of International Merger Activity

In this section we explore the extent to which overconfident CEOs can influence a number of important dimensions of international merger activity. We also determine the extent to which the findings of Malmendier and Tate (2008) concerning merger frequency, the incidence of diversifying versus related mergers, and the method of deal financing by overconfident CEOs holds for non-U.S. firms.

5.1 Number of merger offers

We begin our analysis in Table 5 with a comparison of the number of merger offers made between overconfident and non-overconfident CEOs across a variety of country grouping classifications. As noted in the literature, overconfident CEOs overestimate their ability to generate value through a merger. Consequently, they overestimate the synergies possible from a merger and will induce an excessive desire to acquire other firms. Thus, we anticipate that overconfident CEOs will extend a higher number of merger offers. Our evidence supports such a conjecture. We find across our aggregate sample that overconfident CEOs make, on average, more offers than non-confident CEOs. We find that the overconfident CEO makes an average of 4.04 merger offers compared to only 2.27 for the non-overconfident CEO. This result is

consistent with the findings reported by Malmendier and Tate (2008) concerning comparative merger frequencies for overconfident and non-overconfident CEOs in the U.S.

The remainder of Table 5 tests this relation across a variety of national and cultural country sub-samples. We find that this result is robust to legal regime and equally applies to CEOs in common and civil law countries. That is, overconfident CEOs make more offers than non-overconfident CEOs in both civil and common law countries. We observe, however, that overconfident CEOs make more offers only in countries where the major religion is Christianity. Overconfident CEOs operating in non-Christian countries make the same number of offers as CEOs identified as non-overconfident. We find that the extent to which English is the country's official language fails to generate any differences in the number of merger offers between overconfident and non-overconfident CEOs.

We complete our analysis in Table 5 with a study of the five Hofstede cultural dimensions. Overconfident CEOs make more offers regardless of the country's power distance and its masculinity. But for the other three dimensions, we observe more nuanced results, suggesting an interplay between these aspects of culture and the role of overconfidence in the decision to bid on a firm. A high level of uncertainty avoidance tends to depress the willingness of overconfident CEOs to make offers. Lower levels of a long-term orientation are associated with a greater number of merger offers by overconfident CEOs. Not surprisingly, high levels of individualism encourage overconfident CEOs to make more offers. Overconfident CEOs operating in countries with a low cultural level of individualism do not make any more offers than their less confident peers.

We provide a multivariate analysis of CEO overconfidence and merger activity by estimating a Tobit regression in Table 6. In this table, we regress the number of merger offers per CEO against CEO overconfidence and a set of control variables. We include the logarithm of

assets at the beginning of the year as a control for firm size while the market-to-book ratio of asset value at the beginning of the year is a control for the firm's internal investment opportunities. Cash flow is a measure of internal resources available to the CEO to finance the acquisition. We also include a binary indicator variable to control for status as a U.S. firm or otherwise.

Table 6 contains four different models for our analysis of the number of offers made by a CEO. In model 1 we simply estimate the regression between the number of offers and an indicator variable for CEO overconfidence. We obtain a statistically significant coefficient for overconfidence, indicating that these CEOs tend to extend more offers than non-overconfident CEOs. In model 2 we introduce all of the control variables except the U.S. dummy since we test the aggregate sample without any control for national origin. Again we find that overconfidence is positively and significantly related to the number of merger offers made by a CEO. We also find that size of the CEO's firm is a significantly positive influence on the offer behavior of CEOs. Model 3 uses all of our sample observations and consequently we introduce our U.S. indicator variable. Again we obtain statistical significance for overconfidence as well as firm size, the market-to-book ratio, cash flow, and the U.S. indicator variable. We eliminate all U.S. firms from the estimation of model 4. We continue to observe that overconfidence is statistically significant along with the rest of the other independent variables. We conclude from Table 6 that overconfidence is an important factor in explaining the number of offers made by a CEO. This result is robust for the control of firm size, the availability of internal resources, and the firm's investment opportunities. Of even greater interest is our finding that this result is not limited to U.S. firms, but is an international phenomenon.

5.2 Type of Acquisition

Overconfidence among CEOs can also manifest itself in the type of deal that they elect to undertake. More specifically, mergers that are diversifying in nature are generally considered to be more uncertain and are often met with negative announcement period returns (Morck, Shleifer and Vishny, 1990). Because overconfident CEOs are more likely to overestimate their ability to create value from a merger, they might be more likely to pursue acquisitions beyond their firm's core business. Consequently, in this section, we examine the extent to which overconfident CEOs engage in diversifying mergers relative to their less confident peers. Consistent with Malmendier and Tate (2008), we define a diversifying merger as one where the acquirer and target do not share the same Fama-French 48 industry group.

In Table 7 we present a set of univariate statistics comparing the types of acquisition made between overconfident and non-overconfident CEOs. We find for our aggregate sample that overconfident CEOs make significantly more diversifying as well as non-diversifying mergers than their non-overconfident peers. As we control for various national and cultural factors, we find that the legal origin, English language and power distance have no effect in explaining the difference in offer type between overconfident and non-overconfident CEOs. This results holds for both diversifying and non-diversifying offers. The masculinity of a country's culture has no effect on the number of diversifying offers made between overconfident and non-overconfident CEOs. We do observe, however, that religion, uncertainty avoidance, individualism, and long-term orientation are significant factors in understanding the differences in offer behavior between CEOs. We find that overconfident CEOs operating in primarily Christian countries make both more diversifying as well as non-diversifying offers than their less confident cunterparts. We find similar results for those overconfident CEOs leading firms headquartered in countries with a low uncertainty avoidance score, a high individualism score or

a low long-term orientation. We conclude that these aspects of a national culture tend to encourage or reinforce the self-assurance of overconfident CEOs, leading them to make more offers, including more risky diversification offers.

In Table 8 we introduce overconfidence as an independent variable in a multivariate examination of the determinants of the number of bids made by corporate CEOs. We estimate separate regressions for the diversifying and non-diversifying offers. The other control variables are the same as those included in Table 6. The first three models are estimated for the non-diversifying mergers while models 4 through 6 correspond to the set of diversifying offers. Model 1 is calculated for our aggregate set of firms and we find that overconfidence is significantly positive. The other remaining regressors are likewise positive and statistically significant. Model 2 also contains all firms but makes use of an binary indicator variable to control for classification as a U.S. firm. Again, we find that overconfidence is significantly positive. Model 3 is limited to only non-U.S. firms and we continue to observe that overconfidence is statistically significant and positive. The results from these three models provide robust evidence that CEO overconfidence is an important influence in the decision of firms to acquire non-diversifying targets.

Our analysis of diversifying mergers is provided in models 4 through 6. Model 4 contains all sample firms and indicates that overconfidence is a significant factor for understanding the corporate pursuit of unrelated targets. Model 5 contains both U.S. and foreign firms and again we obtain a statistically significant coefficient for CEO overconfidence. We examine our sample of non-U.S. firms in model 6 and find that although the coefficient for overconfidence is positive, it is not statistically significant. Firm size, the market-to-book ratio and cash flow are all statistically significant and positive. These results suggest that the acquisition of unrelated targets

is less common abroad than that observed in the U.S. It might be that the high number of overconfident CEOs leading U.S. firms accounts for this result.

5.3 Financing Method

Overconfident CEOs not only overestimate the value they create in their acquisitions, but also in their own firms. They tend to view their own firms as undervalued and are more averse to the use of equity to finance an acquisition. Hence, our expectation is that overconfident CEOs will make greater use of cash to finance their mergers. Table 9 provides us with initial univariate evidence on this prediction. We observe for the entire sample that overconfident CEOs finance 45.3% of their acquisitions with cash compared to 24.3% for non-overconfident CEOs. This difference is statistically significant at the five percent level. We then proceed to examine how this finding varies across various subsamples based on national characteristics and cultural measures. We find that this greater use of cash financing by overconfident CEOs holds most strongly in common law countries where English is the leading language and Christianity is the leading religion. Of course, we recognize that these two attributes are highly correlated with the common law legal regime. We further find that overconfident CEOs disproportionately use cash to finance their mergers when the power distance is low, uncertainty avoidance is low, individualism is high, masculinity is high and long-term orientation is low. These are the Hofstede dimensions that most strongly define western, common law cultures. The results in Table 9 confirm the greater use of cash by overconfident CEOs but the effect appears to vary more cross-sectionaly than some of the other behaviors we have examined. Specifically, we find that this more extensive use of cash is most prevalent in common law countries where the business environment and cultural norms emphasize individualism, greater risk taking, shorter time horizons and aggressiveness.

Table 10 provides our multivariate analysis of merger financing choice by overconfident CEOs. In model 1 we simple regress overconfidence against a binary dependent variable having a value of one if the acquisition is financed only with cash and zero otherwise. We find that the coefficient for overconfidence is significantly positive. Model 2 includes all of the additional regressors used in the earlier analysis of merger activity by overconfident CEOs. Again we find that overconfidence is significantly positive and contributes to an understanding of why mergers are paid for in cash. The coefficient for cash flow is also significantly positive, consistent with the argument that abundant internal resources make it more likely that CEOs will use cash rather than what they often perceive as undervalued equity to finance a deal. We find, however, that Q is inversely related to the likelihood of a cash payment for a merger. This is consistent with the belief that CEOs are less likely to view their firm as undervalued when they experience higher Q ratios. Hence, CEOs will be more willing to use equity rather than cash to finance their acquisitions. Model 3 is a pooled regression of both U.S. and foreign firms, using a binary indicator variable to indicate status as a U.S. firm. There results confirm the significance of overconfidence for explaining the choice of merger financing. Model 4 tests whether CEO overconfidence can explain financing choice for non-U.S. mergers. We find that even with these mergers, both overconfidence and the firm's market-to-book ratio are significant in explaining the cash vs equity financing choice.

We conclude from Table 10 that CEO overconfidence is a significant factor in understanding why some mergers are financed with cash and others with equity even after controlling for firm size, internal resources and the firm's investment opportunities.

6 Conclusion

This study is a novel examination of two fundamental research questions concerning the international presence and impact of CEO overconfidence. We first examine whether there exists country or country group patterns in the relationship between overconfidence and M&A that might otherwise be masked in an aggregate international sample of mergers. Beyond providing the descriptive, the presence of commonalities in legacy legal systems or national cultures might foster similar experiences in the development and behaviors of over-confidence CEOs.

We document a number of important findings concerning demographic and country patterns in the global distribution of overconfident CEOs. We find that overconfidence is most commonly observed in younger CEOs leading firms head-quartered in Christian countries. We also find that the Hofstede measures of national culture help to explain geographical patterns in the dispersion of overconfident CEOs. Specifically, we discover that power distance and individuality both positively influence the likelihood that a CEO will be overconfident. CEOs operating in countries whose cultures emphasize a longer term orientation tend to have less overconfident CEOs. We conclude that CEO overconfidence is an international phenomenon, although there are distinct patterns in its global distribution.

We then test whether the results reported by Malmendier and Tate (2008) for US mergers by overconfident managers also occurs internationally. Given significant international differences in the regulation of corporate merger activity and the availability of financing to support acquisitions, it is uncertain whether those results obtained for the U.S. will apply for foreign firms. We find that overconfidence is related to the variety of different aspects of merger activity. We determine that overconfidence influences the number of offers made by a CEO, the frequency of diversifying acquisitions made, and the use of cash rather than equity as the primary financing vehicle.

We conclude from our empirical analysis that overconfidence is a factor in the global market for corporate acquisitions. It is not a solely a U.S. or western European phenomenon. The presence of CEO overconfidence in the international merger market indicates that behavioral considerations might occupy an increasing importance in our understanding of executive decision-making and the nature of agency conflict within the firm.

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Table 1: Data characteristics

Firms are drawn from the *Fortune* Global 500 lists that appeared in 2000-2006. Corresponding data years are 1999-2005. Following table is based on all firm-year observations during fiscal years 1999-2005. All values other than ratios are in millions of US\$. Items measured at a point in time, such as assets, are converted from local currency to US\$ based on the exchange rate at that time. Items measured over a year, such as sales, are converted from local currency to US\$ based on the 12-month average exchange rate over that year. Earnings refer to earnings before extraordinary items. *z*-statistics are two-tailed for the test that the proportion of overconfident CEOs is half. CEOs with zero all mentions not included in computations. *z*-statistics are two-tailed for the test that the proportion of overconfident CEOs is half.

Item	Number	Percent
Age	646	
30-39	1	0.15
40-49	59	9.13
50-59	241	37.31
60-69	289	44.74
70-79	52	8.05
80 and above	4	0.62
Gender	685	
Male	671	97.96
Female	14	2.04
Education	577	
No / some college	8	1.39
Bachelor	200	34.66
Master	246	42.63
Ph D	70	12.13
Law degree	53	9.19
Birthplace	637	
Africa	7	1.10
Japan	47	7.38
Asia ex Japan	48	7.54
Australasia	7	1.10
France	42	6.59
Germany	34	5.34
U.K.	35	5.49
Rest of Europe	80	12.56
U.S.A.	312	48.98
N. America ex US	18	2.83
South America	7	1.10
Firm location	685	
Africa	0	0.00
Japan	90	13.14
Asia ex Japan	41	5.99
Australasia	8	1.17
France	42	6.13
Germany	32	4.67
U.K.	44	6.42
Rest of Europe	80	11.68
U.S.A.	328	47.88
N. America ex US	17	2.48
South America	3	0.44

Panel A: CEO aemographics	<i>) demographics</i>
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Characteristic	Obs.	25 th	Median	75 th	Average
		percentile		percentile	
Assets	2,684	10,257.67	18,278.98	34,249.91	31,577.54
Market value of equity	2,605	4,968.09	11,404.31	28,622.69	34,384.88
Capital (PPE)	2,684	2,522.38	5,874.84	12,342.39	10,778.63
Investment (CAPX)	2,671	429.97	920.00	1,947.00	1,873.59
Sales	2,712	11,699.89	17,147.55	30,018.31	27,530.10
Earnings	2,712	197.33	597.45	1,483.27	1,133.95
Operating Income	2,709	1,150.18	2,211.40	4,534.41	4,012.91
Operating Income/Assets	2,681	0.08	0.13	0.18	0.14
Debt/Assets	2,683	0.17	0.27	0.38	0.29
Cash Flow	2,700	688.17	1,422.98	3,144.00	2,719.18
Cash Flow/PPE	2,671	0.16	0.27	0.50	0.51
Cash Flow/Assets	2,672	0.05	0.08	0.13	0.10
Q	2,605	1.09	1.29	1.81	1.96

Panel B: Firm financial characteristics

Panel C: Press mentions indicating overconfidence

Item	Mean	Median	Std dev.
All mentions	658.76	227.00	1420.06
Confident/optimistic mentions	19.44	6.00	43.00
Mentions indicating Not confident	6.91	2.00	19.46

Panel D: Industry distribution

Industry	Total	OC CEOs	% OC	z-statistic
All	676	478	70.71	10.76***
Manufacturing industry	326	222	68.10	6.54***
Service industry	41	36	87.80	4.84***
Technical industry	32	25	78.13	3.18***
Trade industry	130	84	64.62	3.33***
Transportation industry	147	111	75.51	6.19***

Table 2: Correlation matrix – Overconfidence and CEO characteristics

Pearson product moment correlations between overconfidence and a number of firm, country and demographic variables. The number of observations ranges from 556 to 685. Age is as of 2006. College is a binary variable that takes a value of one if the CEO has completed a college degree (undergraduate degree or higher). Graduate is a binary variable that takes a value of one if the CEO has completed a graduate college degree (Law, MBA, Ph.D.). So, if Graduate is one, College is a one as well. Common, Christianity, and English are all binary indicator variables assuming a value of 1 if the variable is common (Christian, English) and zero otherwise. Variables related to Hofstede's measures are binary variables. They take a value of one if the country of the firm location has a score above the world median. ***, **, and * indicate two-tailed significance at the 1%, 5%, and 10% level, respectively.

Charactoristic	Over				Craduat	Commo	Christianit		Dowor	Uncertaint		
Characteristic	confidence	Age	Male	College	e	n Law	y y	English	distance	y Avoidance	Individual	Masculinity
Age	-0.112***											
Male	0.021	0.132***										
College	-0.038	-0.025	-0.017									
Graduate	0.008	-0.059	0.001	0.158***								
Common Law	0.123***	-0.156***	-0.034	-0.058	-0.030							
Christianity	0.189***	-0.291***	-0.008	-0.042	0.050	0.435***						
English	0.123***	-0.142***	-0.039	-0.061	-0.036	0.962***	0.519***					
Power distance	-0.080**	-0.127***	0.004	0.049	0.007	-0.409***	-0.055	-0.497***				
Uncertainty Avoidance	-0.181***	0.217***	-0.004	0.065	-0.029	-0.742***	-0.544***	-0.713***	0.480***			
Individuality	0.171***	0.055	-0.032	-0.027	-0.024	0.214***	0.014	0.260***	-0.523***	-0.253***		
Masculinity	0.037	0.102**	-0.019	-0.056	-0.023	0.494***	0.003	0.569***	-0.790***	-0.345***	0.381***	
Long-term Orientation	-0.251***	0.267***	0.019	0.048	-0.060	-0.519***	-0.885***	-0.580***	0.237***	0.652***	-0.385***	-0.154***

Table 3: International patterns of overconfidence

Common, Christianity, and English are all binary indicator variables assuming a value of 1 if the variable is common (Christian, English) and zero otherwise. The five variables related to Hofstede's measures are binary variables. They take a value of one if the country of the firm location has a score above the world median and zero otherwise. *z*-statistics are two-tailed for the test that the proportion of overconfident CEOs is half.

	Total	OC CEOs	% OC	z-statistic
Firm location	676	478	70.7	10.76***
Japan	89	44	49.4	-0.11
Asia ex Japan	40	17	42.5	-0.95
Australasia	8	8	100.0	2.83***
France	40	33	82.5	4.11***
Germany	31	26	83.9	3.77***
U.K.	44	42	95.5	6.04***
Rest of Europe	78	59	75.6	4.52***
U.S.A.	326	236	72.4	8.09***
N. America ex US	17	11	64.7	1.21
South America	3	2	66.7	0.58

Panel A: Overconfidence by CEO nationality

Dimension	Total	OC	% OC	z-statistic
Legal Origin				
Civil Law	268	171	63.8	4.52***
Common Law	408	307	75.2	10.18***
Religion				
Buddhist	102	51	50.0	0.00
Catholic	118	90	76.3	5.71***
Christianity-Other	3	1	33.3	-0.58
Hindu	9	6	66.7	1.00
Protestant	444	330	74.3	10.24***
Language				
Chinese	11	5	45.5	-0.30
Dutch	20	16	80.0	2.68***
English	395	298	75.4	10.10***
Finnish	5	4	80.0	1.34
French	40	33	82.5	4.11***
German	44	37	84.1	4.52***
Hindi	9	6	66.7	1.00
Italian	14	10	71.4	1.60
Japanese	89	44	49.4	-0.11
Korean	18	4	22.2	-2.36**
Norwegian	4	4	100.0	2.00**
Portuguese	3	2	66.7	0.58
Russian	3	1	33.3	-0.58
Spanish	11	6	54.5	0.30
Swedish	8	6	75.0	1.41
Thai	2	2	100.0	1.41

Panel B: Overconfidence by legal origin, religion, and language

Hofstede's measures	Total	OC	% OC	z-statistic		
Power distance						
Low	576	416	72.2	10.66***		
High	100	62	62.0	2.40**		
z-statistic to compare proportions in two groups						
Uncertainty avoidance						
Low	494	374	75.7	11.42***		
High	182	104	57.1	1.92*		
<i>z</i> -statistic to compare proportions in two groups 4.71						
Individualism						
Low	31	11	35.5	-1.62		
High	645	467	72.4	11.38***		
z-statistic to compare propor	tions in two g	roups		-4.41***		
Masculinity						
Low	128	86	67.2	3.89***		
High	548	392	71.5	10.07***		
z-statistic to compare propor	tions in two g	roups		-0.96		
Long-term orientation						
Low	541	414	76.5	12.33***		
High	130	62	47.7	-0.52		
z-statistic to compare propor	tions in two g	roups		6.49***		

Panel C: Overconfidence by Hofstede's measures of culture

Table 4: Logistic regressions of overconfidence with standard errors clustered by firm

The dependent variable is CEO overconfidence. Age is as of 2006. College is a binary variable that takes a value of one if the CEO has completed a college degree (undergraduate degree or higher). Male, Common, Christianity, and English are all binary indicator variables assuming a value of 1 if the variable is male (common, Christian or English) and zero otherwise. The five variables related to Hofstede's measures are binary variables. They take a value of one if the country of the firm location has a score above the world median and zero otherwise. *z*-statistics are in parentheses. ***, **, and * indicate two-tailed significance at the 1%, 5%, and 10% level, respectively.

Model	(1)	(2)	(3)	(4)	(5) Non-U.S.
CEO demographics					
Age	-0.03**			-0.02*	-0.04*
	(-2.10)			(-1.66)	(-1.91)
Male	0.66				
	(1.05)				
College	-0.98				
	(-0.91)				
Firm demographics					
Common		0.85			
		(1.21)			
Christianity		1.00***		-0.50	-0.39
		(3.48)		(-0.60)	(-0.41)
English		-0.69			
		(-0.94)			
Culture					
Power distance			0.26		
			(0.51)		
Uncertainty avoidance			-0.25		
			(-0.80)		
Individuality			0.90*	0.41	0.64
			(1.87)	(0.49)	(0.68)
Masculinity			-0.04		
			(-0.11)		
Long-term Orientation			-0.98***	-1.52*	-1.71*
			(-3.01)	(-1.81)	(-1.77)
Intercept	3.09**	-0.04	0.33	2.57	3.75*
	(2.22)	(-0.19)	(0.54)	(1.45)	(1.68)

Table 5: Offer activity and overconfidence by country groups

The numbers reported are the mean number of offers per CEO. Common, Christianity, and English are all binary indicator variables assuming a value of 1 if the variable is common (Christian, English) and zero otherwise. The five variables related to Hofstede's measures are binary variables. They take a value of one if the country of the firm location has a score above the world median and zero otherwise. The *t*-statistics are for equality of means test for two unpaired samples with unequal variances. ***, **, and * indicate that the difference in means is two-tailed significant at the 1%, 5%, and 10% level, respectively.

	Number of offers made by	Number of offers made by	
Country grouping	overconfident CEOs	non-overconfident CEOs	t-statistic
Entire sample	4.04	2.27	3.95***
Legal Origin			
Civil Law	3.22	1.87	2.43**
Common Law	4.50	2.66	2.95***
Religion			
Christianity	4.43	2.44	4.03***
Other	1.19	1.81	-0.94
Language			
English	4.60	2.71	2.95***
Other	3.12	1.85	2.37**
Power distance			
Low	4.22	2.51	3.35***
High	2.82	1.29	2.28**
Uncertainty avoidance			
Low	4.47	2.61	3.41***
High	2.49	1.76	1.20
Individualism			
Low	1.36	0.60	1.08
High	4.10	2.46	3.51***
Masculinity			
Low	3.44	1.88	2.34**
High	4.17	2.38	3.40***
Long-term orientation			
Low	4.42	2.68	3.41***
High	1.32	1.62	-0.53

Table 6: Tobit regressions of number of offers per CEO with standard errors clustered by firm

Tobit regressions are estimated since the dependent variable has a lower bound of zero. *Size* is the log of assets at the beginning of the year. *Q* is the market value of assets over book value of assets at the beginning of the year. *Cash flow* is earnings before extraordinary items plus depreciation and is normalized by capital at the beginning of the year. *US Dummy* is a binary variable with a value of one for CEOs of American firms. *t*-statistics are in parentheses. ***, **, and * indicate two-tailed significance at the 1%, 5%, and 10% level, respectively. Models 1-3 are for the entire sample.

Model	(1)	(2)	(3)	(4)	
				Non-U.S.	
Overconfidence	2.78***	1.89**	1.69**	1.93**	
	(2.96)	(2.43)	(2.25)	(2.43)	
Size		2.83***	3.05***	1.93*	
		(2.71)	(2.79)	(1.78)	
Q		0.07	0.07**	0.05***	
		(1.43)	(2.01)	(3.88)	
Cash flow		1.29*	1.14*	4.20***	
		(1.89)	(1.84)	(2.83)	
US Dummy			3.20**		
			(2.45)		
Intercept	-1.36	-29.08***	-32.63***	-20.50***	
	(-1.90)	(-2.68)	(-2.77)	(-2.70)	

Table 7: Type of acquisition and overconfidence by country groups

The numbers reported are the mean number of offers per CEO. OC refers to overconfident CEOs. Common, Christianity, and English are all binary indicator variables assuming a value of 1 if the variable is common (Christian, English) and zero otherwise. The five variables related to Hofstede's measures are binary variables. They take a value of one if the country of the firm location has a score above the world median and zero otherwise. The *t*-statistics are for equality of means test for two unpaired samples with unequal variances. ***, **, and * indicate that the difference in means is two-tailed significant at the 1%, 5%, and 10% level, respectively.

Country grouping	Number of diversifying offers per CEO		<i>t</i> -statistic	Number of non- diversifying offers per CEO		t-statistic
	OC	Not OC	_	OC	Not OC	-
Entire sample	2.29	1.34	3.85***	1.75	0.93	3.24***
Legal Origin						
Civil Law	1.46	0.89	1.84*	1.75	0.98	2.53**
Common Law	1.91	0.97	2.69***	2.59	1.69	2.51**
Religion						
Christianity	2.51	1.54	3.39***	2.51	1.54	3.39***
Other	0.53	1.00	-1.23	0.67	0.81	0.46
Language						
English	1.96	1.00	2.66***	2.64	1.71	2.54**
Other	1.71	0.99	2.43**	1.41	0.86	1.82*
Power distance						
Low	1.80	1.03	2.65***	2.42	1.48	3.35***
High	1.40	0.50	2.48**	1.42	0.79	1.68*
Uncertainty						
avoidance						
Low	1.90	0.96	3.12***	2.57	1.65	2.85***
High	1.19	0.88	0.89	1.30	0.87	1.39
Individualism						
Low	0.91	0.35	1.11	0.45	0.25	0.69
High	1.77	0.99	2.93***	2.33	1.47	3.36***
Masculinity						
Low	1.77	0.71	3.02***	1.67	1.17	1.21
High	1.74	0.99	2.51**	2.43	1.39	3.61***
Long-term						
orientation						
Low	1.90	0.97	3.32***	2.51	1.71	2.67***
High	0.63	0.90	-0.82	0.69	0.72	-0.10

Table 8: Tobit regressions of number of related offers and number of unrelated offers per CEO with standard errors clustered by firm

We use Tobit regressions since the dependent variable has a lower bound of zero. An unrelated merger is one where the acquirer and target do not share the same Fama-French 48 industry group. *Size* is the log of assets at the beginning of the year. *Q* is the market value of assets over book value of assets at the beginning of the year. *Cash flow* is earnings before extraordinary items plus depreciation and is normalized by capital at the beginning of the year. *US Dummy* is a binary variable with a value of one for CEOs of American firms. *t*-statistics are in parentheses. ***, **, and * indicate two-tailed significance at the 1%, 5%, and 10% level, respectively. Models 1-2 and 4-5 are for the entire sample.

Model]	Related Offers		Unrelated Offers				
	(1)	(2)	(3)	(4)	(5)	(6)		
	Non-U.S.							
Overconfidence	1.25**	1.14**	1.63**	1.21*	1.10*	0.82		
	(2.46)	(2.29)	(2.11)	(1.83)	(1.71)	(1.15)		
Size	1.65***	1.78***	0.90*	2.15***	2.23***	1.40***		
	(3.05)	(3.17)	(1.86)	(2.77)	(2.80)	(2.72)		
Q	0.03*	0.04***	0.04***	0.04	0.40	0.02**		
	(1.76)	(2.72)	(4.26)	(1.23)	(1.50)	(2.44)		
Cash flow	0.72**	0.63**	1.29	0.76*	0.69*	2.70**		
	(2.16)	(2.13)	(0.97)	(1.76)	(1.73)	(2.37)		
US Dummy		1.81**			1.45*			
		(2.57)			(1.71)			
Intercept	-17.56***	-19.61***	-11.46**	-24.42***	-25.89***	-16.77***		
	(-3.11)	(-3.24)	(-2.25)	(-2.92)	(-2.93)	(-3.03)		

Table 9: Financing method and overconfidence by country groups

Common, Christianity, and English are all binary indicator variables assuming a value of 1 if the variable is common (Christian, English) and zero otherwise. The five variables related to Hofstede's measures are binary variables. They take a value of one if the country of the firm location has a score above the world median and zero otherwise. The numbers reported are the total number of offers. OC refers to overconfident CEOs. The *t*-statistics are for whether the % of acquisitions financed only with cash is equal for OC and not OC CEOs. ***, **, and * indicate that the difference in % Cash only is two-tailed significant at the 1%, 5%, and 10% level, respectively.

Country	Number of offers by OC CEOs			Number of offers by not OC CEOs			<i>t</i> -statistic
grouping	Cash	Others	% Cash	Cash only	Others	% Cash	
	only		only			only	
Entire sample	77	93	45.3	9	28	24.3	2.59**
Legal Origin							
Civil Law	23	17	57.5	4	6	40.0	0.96
Common Law	54	76	41.5	5	22	18.5	2.63**
Religion							
Christianity	75	92	44.9	8	26	23.5	2.57**
Other	2	1	66.7	1	2	33.3	0.71
Language							
English	53	76	41.1	5	22	18.5	2.57**
Other	24	17	58.5	4	6	40.0	1.02
Power distance							
Low	72	87	45.3	9	27	25.0	2.44**
High	5	6	45.5	0	1	0.0	n/a
Uncertainty							
avoidance							
Low	74	84	46.8	7	24	22.6	2.82***
High	3	9	25.0	2	4	33.3	0.34
Individualism							
Low	0	0		0	0		
High	77	93	45.3	9	28	24.3	2.59**
Masculinity							
Low	13	12	52.0	2	3	40.0	0.45
High	64	81	44.1	7	25	21.9	2.62**
Long-term							
orientation							
Low	75	90	45.5	8	26	23.5	2.63**
High	2	1	66.7	1	2	33.3	0.71

Table 10: Logistic regressions of financing method with standard errors clustered by firm

The dependent variable is a binary variable with a value of one if the acquisition is financed only with cash and zero otherwise. *Size* is the log of assets at the beginning of the year. Q is the market value of assets over book value of assets at the beginning of the year. *Cash flow* is earnings before extraordinary items plus depreciation and is normalized by capital at the beginning of the year. *US Dummy* is a binary variable with a value of one for CEOs of American firms. Models 1-3 are for the entire sample. *z*-statistics are in parentheses. ***, **, and * indicate two-tailed significance at the 1%, 5%, and 10% level, respectively.

Model	(1)	(2)	(3)	(4)
				Non-U.S.
Overconfidence	0.27*	0.24*	0.24*	0.47*
	(1.75)	(1.67)	(1.67)	(1.91)
Size		0.06	0.06	-0.03
		(1.30)	(1.28)	(-0.23)
Q		-0.01**	-0.01**	-0.01***
		(-2.52)	(-2.41)	(-6.91)
Cash flow		0.14*	0.14*	0.36
		(-1.85)	(-1.87)	(0.93)
US Dummy			-0.00	
			(-0.01)	
Intercept	0.20	-0.32	-0.32	0.24
	(1.49)	(-0.61)	(-0.61)	(0.19)