

# Similarity or Dissimilarity is Better: Does Culture Dissimilarity Impact M & A Performances?

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## ABSTRACT

*The primary accomplishment of this study is to explore how national culture dissimilarities impact pre and post performances of the resulted acquirers in China Merger and Acquisition (M&A) cases. This article developed the simplified representations of the National Culture Dissimilarity Index (NCDI) to examine the built-in models by taking hierarchical regression analysis approach. The NCDI consists of five factors, Power Distance Index (PDI), Uncertainty Avoidance Index (UAI), Individualism (IDV), Masculinity (MAS) and Long-Term Orientation (LTO). Data collected on 92 merger and acquisition firms between years of 1985 and 2005 indicated that the culture between acquirers and targets had significant differences. Moreover, results showed that the more of national culture dissimilarity existed, the worse of acquirers' growth percentage in ROA and ROE resulted. However, national culture factors could not directly express the negative change of stock premium.*

**Keywords:** Merger and Acquisition (M&A), National Culture, National Culture Dissimilarity Index(NCDI).

## INTRODUCTION

Comparing to product-market and resource synergies, culture may seem like a trifle when evaluating M & A performances (Weber & Camerer, 2003). Culture impact in M & A is seldom noticeable until the numbers of recent cross-national failures have been unexpectedly increased, like Daimler- Chrysler, Ben Q- Siemens etc. It has drawn academic and practical attention. Culture difference hence plays an important role to explain the M & A failure (Buono et al., 1985; Jemison & Sitkin, 1986).

Merger and Acquisition failure derived from culture difference has been explored widely around these two decades in management literatures (Hofstede, 1994; Buckley & Ghauri, 2002; Weber & Camerer, 2003; Pablo & Javidan, 2002; Warell, 2007), economic and financial literatures. However, divergent results associated with culture difference and M & A performance exist sometimes. Most scholars believe that national culture difference will cause poor communication, misunderstanding and M & A failure (Buono et al, 2002; Hofstede & Usunier, 2003). Krishnan (1997) claimed that this divergence was caused by different viewpoints of definitions on culture differences.

Past literatures, which were outlined before, mostly used case studies or questionnaires to represent the effect of national culture strength - post performance on singular firms. There are no measurable index to present national culture dissimilarity between acquirers and targets.

The purpose of this paper is to measure the effect on national culture dissimilarity in China M & A. We also explored the weight of National Culture Dissimilarity Index (NCDI), which's sincerely hoped to help evaluate the effect of culture dissimilarity and post performance of acquirers in the future.

## THEORY DEVELOPMENT AND HYPOTHESES

*National Culture.* Hofstede's (1980) dimensional theory of culture is so far the most popular and influential theory (Hofstede, 1980, 2001; Morosini & Singh, 1994). It includes four dimensions: Power Distance (PDI) means the degree that people can accept inequality authority in an institution or organization. Low power distance denotes that

people can't tolerate inequality authority. Uncertainty Avoidance Index (UAI) represents the degree that members in a society feel uncomfortable for uncertain and ambiguous environment. High uncertainty avoidance society has low tolerance in unstructured, unclear, and unpredictable environment. Individualism (IDV), on the other side is collectivism, stands for the degree to which individuals are integrated into groups. The ties among people in high individualism nation are loose and the loyalty is lower than that in collectivism society. Masculinity (MAS), the opposite of femininity, refers to the distribution of roles between the genders. Masculinity society is focused on right, control of society resources; and femininity society is focused on emotional factor and life quantity.

*National culture dissimilarity.* National cultural distance explains the difference (or dissimilarity) from two countries by tracking some cultural related traits. The pioneers of discovering national cultural distance were Kought & Singh (1988). They defined national cultural distance with the introduction of cultural norms, which were found to be different from one country to another and could be calculated by analyzing the deviation from each of Hofstede's national culture scale. Morosini (1998) extended the meaning defined by Kought & Singh (1988) and used distance formula to measure four dimensions in Italy and other countries as typical references on national cultural distance.

*National Culture dissimilarity versus M & A Performance.* There were contrary conclusions to address relationships of culture-performance in past literatures. One who supported national cultural dissimilarity stated that it could create un-imitative advantage (Kought & Singh, 1988; Morosini, et al., 1998) and made M & A a success (Chatterjee, et al., 1986; Barney, 1991; Morosini & Singh, 1994), while the others claimed that conflict, hostile feeling and M & A failure were caused by national cultural difference (Jemison & Sitkin, 1986). The incompatibility of uncertainty risk avoidance between members is one of the major causes of conflict (Hofstede & Usunier, 2003), disharmony (Weber & Camerer, 2003) and merger failure (Pablo & Javidan, 2002). Besides, Weber & Camerer (2003) used laboratory experiment design to measure M & A performance and they found that language difference between groups would decrease the post-merger performance based on results of their experiments.

We extend the measurements of Morosini (1998) by having some differences on them: Firstly, we not only use Hofstede's four dimensions but also add long term oriented factor (Hofstede, 2001) as variable to measure National Culture Dissimilarity Index (NCDI). Secondly, Morosini, et al., (1998) did not standardize variables, which might cause the measurement error by scale effect. Thirdly, they only explored the relationships between national culture distance and performance in Italy, but we believed the effect of each variable might be different in China. Hence, we standardize the weight of each index in China M & A cases. Fourthly, because culture effect needs measuring for certain long period, so we've collected growth percentage of ROE, growth percentage of ROA and stock premium for three-year window before and after the acquisition individually. Fifthly, Morosini (1998) empirically found that national culture distance and M & A performance had positive relationships in Italy, while we believed that national culture dissimilarity might cause serious communication problems in China. Hence, our hypothesis is different from that of Morosini (1998) when China culture factor's focused on.

Our hypothesis: There are negative relationships between National Culture Dissimilarity Index (NCDI) and post-merger performances of acquirers in China.

## METHODS

### Sample and Data Sources

Our sample frame, identified from Thomson Financials Securities Data Corporation (SDC) on Merger and Acquisition database, was composed of 507 completed and disclosed cases during 1985 to 2005 in China. In order to measure the effect of national culture dissimilarity-performance, we set up three defined thresholds to select our samples: Firstly, we skipped sample if its acquisition's nation was not included in Hofstede's (1980) dimensional theory. Secondly, in order to define the culture indexes, we didn't take samples whose homepages couldn't be found in 2008. Thirdly, we wanted to explore the long term effect of cultures, but SDC didn't offer the long term information on ROE, ROA, and stock price. Hence, all acquisition firms selected were collected from COMPUSTAT database. After selection's done, finally only 46 M & A cases (92 firms) were satisfied for our criteria. The sample size was considered enough for multiple analyses later.

## Definitions of Variables

*Dependent variables.* In this paper, it's interested that if dissimilarity national culture between acquirers and targets will affect the post performance of acquirers, then we should use growth percentage of return on equity (ROE), growth percentage of return on asset (ROA), and stock premium as our dependent variables. The ROE, ROA, and stock price have been collected from COMPUSTAT for six years (three years before and after M & A individual case). The growth percentage of ROE is the difference between average growth percentage of ROE before M & A for three years and average growth percentage of ROE after M & A for three years. The formula is listed as the following:

$$\Delta\%Performance_j = (AAROE_j - ABROE_j) * 100\%$$

$$AAROE_j = \frac{\sum_{t=0}^2 AROE_{jt+1} - AROE_{jt}}{3}, j = 1, 2, \dots, 46$$

$$ABROE_j = \frac{\sum_{t=0}^2 BROE_{jt+1} - BROE_{jt}}{3}, j = 1, 2, \dots, 46$$

$\Delta\%Performance_j$ : The performance change (growth percentage of ROE, growth percentage of ROA and stock premium) of the  $j^{\text{th}}$  acquirer. It is calculated by the difference between average growth of ROE before M & A for three years and average growth of ROE after M & A for three years times one hundred percent.

$AAROE_j$ : The average growth of ROE of the  $j^{\text{th}}$  acquirer after M & A for three years and  $AROE_{jt}$  stands for ROE for the  $j^{\text{th}}$  acquirer in the following  $t$  year after M & A.

$ABROE_j$ : The average growth of ROE of the  $j^{\text{th}}$  acquirer before M & A for three years and  $BROE_{jt}$  stands for ROE for the  $j^{\text{th}}$  acquirer in the prior  $t$  year before M & A.

## Independent Variables and Control Variables

*National Culture Dissimilarity Indexes.* We used Hofstede's (1980) dimensional theory of culture and extended the formula of Morosini (1998) national cultural distance to compute the national cultural dissimilarity between acquirers and targets in China cases. Our dimension is different from that of Kought & Singh (1988) and Morosini (1998). We computed five dimensions: Power Distance Index (PDI), Uncertainty Avoidance Index (UAI), Individualism (IDV), Masculinity (MAS) and Long-Term Orientation (LTO) as proxy variables of national culture in many fields. Because Hofstede (2001) wanted to understand the difference of eastern thinking of Confucius and western thinking style so he emphasized the fifth measurement dimension: Long-Term Orientation (LTO). We believed that this variable is important for analyzing national culture dissimilarity- post performance in China M & A as well. The formula is listed as the following:

$$NCDI_j = \sqrt{\sum_{i=1}^5 (V_{ij} - V_{ic})^2}, j = 1, 2, \dots, 46$$

$NCDI_j$ : The National Cultural Dissimilarity Index between China and the  $j^{\text{th}}$  country.

$V_{ij}$ : The  $i^{\text{th}}$  national cultural measurement dimension of the  $j^{\text{th}}$  country.

$V_{ic}$ : The  $i^{\text{th}}$  national cultural measurement dimension of China.

*Control variables.* Because the economic and financial conditions vary in years, they will affect the performance of M & A (Morosini 1998). Hence, in order to discover relationships on culture dissimilarity – post performance of acquirers, we applied dummy variables to data collected from years of 1985 to 2005 as control variables.

## The Model

In this paper, we tested our hypotheses of merger and acquisition in China by performing Ordinary Least Squares regression analysis (OLS), which's formulated as the model below. Definitions of  $\Delta\%Performance_j$  and the rest of variables were expressed individually as well.

$$\Delta\% Performance_j = a_{0j} + \beta NCDI_j + Control$$

$\Delta\% Performance_j$ : Growth percentage of ROE (or ROA, stock premium) of the  $j^{th}$  acquirer,  $j: 1, 2, \dots, 46$ .

$NCDI_j$ : National culture dissimilarity index between China and the  $j^{th}$  country.

$Control$ : Dummy variables for M & A that have taken place from 1985 to 2005 respectively.

## RESULTS

### Descriptive Statistics

The mean value and standard deviation of independent variables were summarized in Table 1. The first column (All sample) showed the descriptive statistics for 92 firms over 1985-2005. The second and third columns (Acquirers, targets) showed the descriptive statistics for 46 acquirers and 46 targets respectively. The fourth column (Difference) was the difference of each culture variable between acquirers and targets. Our samples included 11 (23.9%) China - China acquisitions, 4 (8.7%) China - other countries acquisitions, and 31 (67.4%) other countries - China acquisitions.

We used independent samples to test and chi-square to examine our samples, and found that the differences of national culture variables between acquirers and targets were significant. It meant that acquirers firms were with lower power distance, higher uncertainty risk-avoidance, lower long term oriented and more emphases on individualism and femininity than those of targets firms.

**Table 1: National culture dissimilarity index Descriptive statistics**

	All sample	Acquirers	Targets	Difference	
Power distance	70.05 [16.12]	60.72 [18.48]	79.39 [2.49]	-18.67***	(0.00)
Uncertainty Avoidance	35.12 [12.88]	39.5 [16.81]	30.74 [3.72]	8.76***	(0.00)
Individualism	34.13 [26.7]	48.3 [32.08]	19.96 [1.64]	28.34***	(0.00)
Masculinity	63.8 [6.95]	62.89 [8.73]	64.74 [4.44]	-1.84	(0.204)
Long term oriented	96.5 [35.17]	76.47 [40.29]	117 [4.636]	-40.5***	(0.00)

1. Numbers in the columns with names of All sample, Acquirers, and Targets were samples' mean values. Standard deviations were in brackets.

2. Numbers(Difference column) were the differences of groups' mean values between acquirers and targets. \*\*\*, \*\*, \* indicated that the differences were significant at 0.01, 0.05, 0.1 level. P values were in parentheses.

Other than descriptive statistics on table 1, the correlation between national culture dissimilarity variables and post performance of acquirers were shown on Table 2. The correlation of national culture dissimilarity index (NCDI) was having negative relationships with performances, and was negative relationships with stock premium.

**Table 2: Correlation table of dependent and independent variables**

Variables	1	2	3	4	5	6
1. National culture dissimilarity index	1					
2. Power distance	.97**	1				
3. Individualism	.96**	.94**	1			
4. Masculinity	.20	.01	-.03	1		
5. Uncertainty Avoidance	.61**	.43**	.44**	.69**	1	
6. Long term oriented	.98**	.96**	.95**	.13	.50**	1

1. All independent variables explicated the differences between acquirers and targets

2. n=46. \*\*, \* indicated that correlations were statistically significant at  $p < 0.01$ , 0.05 respectively.

### Regression Result

Hypothesis proposed a negative relationship between national culture dissimilarity index and post performances. From Table 5, model 1-1 and 2-1, the coefficients for these variables were -13.43 ( $P < 0.001$ ) in growth percentage of ROA and -18.37 ( $p < 0.001$ ) in growth percentage of ROE. Hence, it would appear that the more national culture dissimilarity between acquirers and targets, the worse post performance for acquirers. Besides, the coefficient for power distance difference was -4.47 ( $p < 0.001$ ), uncertainty Avoidance difference was 0.23 ( $p = 0.63$ ), individualism difference was -1.58 ( $p = 0.163$ ), masculinity difference was -2.73 ( $p < 0.001$ ), long term oriented difference was -9.39 ( $p < 0.010$ ), in

growth percentage of ROA. The coefficient of power distance difference was -4.3 ( $p < 0.001$ ), uncertainty Avoidance difference was -0.54 ( $p = 0.19$ ), individualism difference was -3.32 ( $p < 0.001$ ), masculinity difference was -2.95 ( $p < 0.001$ ), long term oriented difference was -12.07 ( $p < 0.010$ ) in growth percentage of ROE.

We examined the relationship of stock premium and national culture dissimilarity indexes further. From model 3-1, the coefficients were -7.48 ( $p = 0.18$ ) in national dissimilarity index. Thus, it appeared that national culture factors could hardly explain the negative change of stock premium of acquirers in China merger and acquisitions.

**Table 3: Results of NCDI and Growth percentage of ROA, ROE and Stock premium**

	Model 1-1	ROA	Model 2-1	ROE	Model 3-1	Stock premium
Intercept	0.67	(0.77)	1.87	(0.77)	0.23	(0.99)
National culture dissimilarity index	-13.43***	(0.00)	-18.37***	(0.00)	-7.48	(0.18)
Difference of Power distance	-4.47***	(0.00)	-4.3***	(0.00)	-1.13	(0.36)
Difference of Uncertainty Avoidance	0.23	(0.63)	-0.54	(0.19)	-0.91	(0.30)
Difference of individualism	-1.58	(0.16)	-3.32***	(0.00)	-2.63	(0.20)
Difference of Masculinity	-2.73***	(0.00)	-2.95***	(0.00)	-0.73	(0.45)
Difference of Long term oriented	-9.39***	(0.00)	-12.07***	(0.00)	-3.36	(0.31)
R <sup>2</sup>	0.75		0.75		0.16	
Adjusted	0.69		0.69		-0.054	
$\Delta R^2$	0.75		0.75		0.16	

1. Because of space limitations, we did not include the dummy variables in this table for years that we controlled from 1985 to 2005.

2. Standardized regression coefficients were shown with p value in parentheses.  $n = 46$ . \*\*\*, \*\*, \* indicated that the differences were significant at 0.01, 0.05, 0.1 level respectively. P values were in parentheses.

## DISCUSSION AND IMPLICATIONS

Culture difference is a critical component of merger and acquisition. Prior researches released that national culture distance can create un-imitate advantage (Kought & Singh, 1988; Morosini 1998) and make M & A success. Morosini (1998) found positive relationship between culture distance and M & A performance in Italy. But our study had opposite finding in China M & A, we supported the result that national culture difference can cause conflict and make M & A failure in China (Jemison & Sitkin, 1986) Furthermore, Hofstede & Usunier (2003) claimed that the difference of uncertainty risk avoidance was the main reason for M & A failure, but our study couldn't map this phenomenon in China. Contrarily, we found that the difference of long term oriented, masculinity and power distance all had negative impact significantly. In addition to that, prior researches suggested that we should consider and control culture factor to explore the possible stock variation of acquirers. But our study found no sign on culture dissimilarity factor to smoothly explain the negative change of stock premium in China.

This study mentioned the concept of creating national culture dissimilarity indexes and analytically examined impacts of the national culture dissimilarity simultaneously to China merger and acquisition. The research extended Hofstede's dimension of culture theory in China M & A. We believed that our findings provided with meaningful evidences on culture theory development to explain M & A performance.

Apart from the implications for academic research, our findings supported a meaningful evidence for managers of multinational firms to consider using M & A to enter an emerging economy environment as China. We searched acquisitions during years of 1985 and 2005 in China, and found that culture difference could mostly explain the worse post performance of acquirer. Our findings suggested managers that they better not only consider the synergy of M & A, but also national culture dissimilarity.

Finally, our study suggested acquirers respect and consider influence of each national culture trait. As we know, most multinational firm likes to build up unity culture throughout all of their targeted firms. According to our research, if the national culture dissimilarity between acquirers and targets is large, then no matter how strong the organization culture advantage they have, this advantage will have chance to be offset.

## LIMITATIONS AND FUTURE RESEARCH

The main purpose of this study was to research relationship between national culture dissimilarity and post performance of acquirers in China merger and acquisition. Although, we believed that our study had tracking methodologies applied and literatures supported to collect variables, there were still several limitations. Firstly, there was no database available for us to collect a variable for all countries. Secondly, because SDC database didn't include all information about China acquirers and targets, it limited our expected size of samples. Besides, we suggested that future researches use two stage least square (2SLS) to analyze the dynamic relationship and apply hierarchical linear regression model (HLM) to explore two-level moderate effect of national cultures and organizational cultures.

## CONCLUSION

Despite some mentioned limitations, we believed that our study provided practical analysis in explaining the worse performances of acquirers in China M & A. We found that the acquirers and China firms had significant national culture differences. Thus, analyzed data revealed rational comments that the more dissimilarity of national culture with firms in China, the worse performance consequences for acquirers. All the differences of power distance, individualism, masculinity and long term oriented exposed negative effect significantly to indicate the failures of acquirers. The influence of national culture dissimilarity was crucial in China merger and acquisition. Other than those, we discovered that national culture dissimilarity between acquirers and targets could hardly explain the change of negative stock variation. Here, we would like to pay our sincere thanks to SunHui (Dorinda) Hu, current PHD candidate in National Taiwan University, who has dedicated her continuous efforts in doing paper research and regression analysis simulation.

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