

Board Leadership Structure and Firm Performance: A Meta-Analysis

Yong Yang
University of Sussex

Mei Yu
Coventry University

Abstract

This study seeks to discover if there is any systematic relationship between the estimated CEO duality-performance relationship and the characteristic of each study in the literature. We conduct a meta-analysis on 111 papers that examines the relationship between CEO duality and firm performance. Our main results indicate that CEO duality-performance relationship is higher 1) in countries with a strict level of rule of law and control of corruption; 2) when there is more trust among people in that country; 3) after the codes of corporate governance recommending splitting joint CEO and chairman positions were implemented; 4) for short term performance, relative to long term performance; and 5) when advanced regression techniques that address endogeneity problems are not used.

Key words: Meta-analysis, Board leadership structure, CEO duality, Firm performance, Corporate governance

1. INTRODUCTION

There is a burgeoning literature concerning CEO duality, *i.e.* the CEO is also the chairman of the board, and its impacts on the firm (Dalton *et al.*, 1998; Kang & Zardkoohi, 2005; Rhoades *et al.*, 2001). Much of the empirical literature on duality-performance relationship is firmly rooted in agency, stewardship and institution-based theories. On one hand, CEOs have firm-specific knowledge and if they act as stewards for the best interest of the firm, CEO duality enables a prompt decision-making which is paramount in a high-volatility, innovative-driven market environment nowadays (Finkelstein & D'Aveni, 1994; Donaldson & Davis 1991, 1994). On the other hand, CEO duality is likely to increase CEO entrenchment due to concentration of power and ineffective board monitoring, so as such if CEOs pursue their personal interest that are misaligned with shareholders' interest, this can result in a greater agency cost, thereby reducing firm performance (Jensen & Meckling, 1976; Mallette & Fowler, 1992). In the past three decades of research on duality-performance relationship, despite its managerial relevance for the firm and the implication for national policy, there is virtually no congruent answer as to whether CEO duality improves or hinders firm performance. It is therefore important to systematically review the literature to identify the factors that affect CEO-duality-performance relationship.

Increasingly, countries vary significantly in regulation, culture and norm, and institutions are typically envisaged as “the rule of the game in the society” that exerts a significant influence on corporate governance (Scott, 1995; North, 1990; Fligstein & Freeland 1995; Aguilera & Jackson, 2003; Filatotchev & Boyd, 2009). Along with an emergent but fast-growing interest in exploring the effect of institutional environments on corporate governance structure, it becomes pivotal to explore whether there is a systematic relationship between the estimated duality-performance

relationship and institutional environments of countries. Specifically, we seek to explore to what extent formal and informal institutional environments affect duality-performance relationship. Allied to these, we have witnessed a growing number of countries announcing various codes of good governance that advocate the separation of the combined CEO and Chairman position (Dahya, 2009). Yet, the regulators in some other countries allow a more flexible approach to let companies choose the most suitable board leadership structure. Using meta-analytical approach, we also tend to examine to what extent the duality-performance relationship is influenced by an introduction of code of good governance.

Conducting a meta-analysis on 111 papers that examine the duality-performance relationship, we find that performance benefit of CEO duality is determined at a large-scale by the institutional environments of the countries. Specifically, the duality-performance relationship is bigger in countries where there is a more established legalisation, a tighter control of corruption or a higher level of trust among people - the findings robust from different specifications. In addition to that, the heterogeneity in firm performance measurements and estimation methods employed in different studies moderates the CEO duality-performance relationship.

The paper is structured as following. The next section proposes our hypotheses, and section three describes in more detail about our meta-analysis approach and methodology. Section four describes data, followed by the results section. Section six concludes.

2. HYPOTHESIS

Our first interest is to explore to what extent institutional developments of countries impact CEO duality-performance relationship. There is an increasing consensus that institutions matter for

corporate governance (Fligstein & Freeland 1995; Aguilera & Jackson, 2003; Filatotchev & Boyd, 2009). Behavior of individuals, groups and organisations are to a large extent determined by national institutions that consist of not only formal institutions, such as legal and regulation, but also informal institutions, such as norm and culture (Scott, 1995; North, 1990; Aguilera & Jackson, 2003).

The ability of the firm to capture the rent is not only influenced by firm and industry characteristics, but also determined by the institutions of the country where the firm operates (Morey *et al.* 2009; Anderson & Gupta, 2009; Ngobo & Fouda, 2012), so as such there has emerged a growing interest exploring to what extent national institutions affect corporate governance, and their impact on firm performance (Aguilera & Jackson, 2003; Li & Xia, 2008). A high level of national legislation and enforcement is more effectively in protecting investors' interest (La Porta et al 1998), monitoring agent behaviours (Black 2001; Globerman, Peng and Shapiro 2011), solving firm-level agency issues and conflicts (Aslan & Kumar, 2014; Van Essen, Engelen, & Carney, 2013; Nguyen et al., 2015), thereby reducing the likelihood of CEO entrenchment in firms with CEO duality.

The rule of law is typically regarded as the concept of 'law and order' that regulate individual, groups and companies in the country, and control of corruption has been widely used to measure institutional conditions of the country (Cuervo-Cazurra 2006; Kaufmann *et al.*, 2010; Berry et al 2010). We expect a country with stricter level of rule of law or a tighter control for corruption is likely to have a higher performance return from CEO duality.

Hypothesis 1a (H1a): The effect of CEO duality on firm performance is bigger in countries with stricter rule of law.

Hypothesis 1b (H1b): The effect of CEO duality on firm performance is bigger in countries with more control of corruption.

Stewardship theory has firmly rooted in psychology and sociology and has been employed to examine situations in which executives as stewards are motivated to act in the best interests of their principals (Donaldson & Davis, 1989, 1991), and the underlying view of this theory proposes that managers are diligent stewards of the principal, building upon a high level of trustworthy behaviour of these managers (Davis et al., 1997). When managers with a level of trustworthy behaviour are assigned unambiguous decision-making power would maximize a firm's wealth and economic return (Donaldson & Davis, 1989, 1991; Davis *et al.*, 1997), as their interests are aligned with those of principals.

Stewardship theory has a focus on the structures that facilitate and empower, rather than monitor and control. When the executives can be trusted, empowering governance structures, *i.e.* CEO duality, are conducive for maximizing the benefits of the principal, and there is a decline in monitoring and bonding costs. A high level of trust can promote a better firm performance (Goergen et al. 2013), and the trust between citizens can be regarded as a substitute for property rights and law enforcement in countries where the latter are weak (Keefer 1997). We therefore propose that

Hypothesis 2: CEO duality-performance relationship is higher when there is more trust among people in that country.

Following the waves of scandals in 1990s and 2000s, and the dominance of agency theory in the corporate governance debate (Jensen & Meckling, 1976; Eisenhardt, 1989), there is a growing emphasis in the corporate governance codes concerning CEO duality and the monitoring role of the board of directors. For instance, The Cadbury Code of Best Practice in 1992 recommended that a public company's chairperson should not also be the chief executive. By separating the two roles, boards would be more effective in efficient in supervising and monitoring the executive actions of management. Companies are expected to completely comply with the provisions of the Code or to explain as to why they have not done, which is under the Code's "comply or explain" philosophy. Since then, there is a growing number of countries (more than 40) who published similar guidelines calling for the separation of the combined CEO and chairperson position, for example, the Dey Report (1994) in Canada and the King Report (1994) in South Africa (Dahya, 2009) and among others.

The underlying presumption of this code of corporate governance is that boards with two separate individuals holding the posts of CEO and chairperson is conducive to the overall quality of corporate monitoring (Aguilera & Cuervo-Cazurra, 2004; Dahya, 2009). Countries recommending splitting joint CEO and chairman roles are likely to have a high level of monitoring in CEO behaviour, thereby lowering the likelihood of the misaligned interests between the principles and agents and lowering the agency costs, and we therefore propose

Hypothesis 3: CEO duality-performance relationship is higher in countries after the codes of corporate governance recommending splitting joint CEO and chairman roles were implemented.

There exist various types of performance measurements in the empirical literature of CEO duality-performance relationship, including market based (i.e. Tobin's Q, risk-adjusted returns, etc) and accounting based performance indicators (i.e. return on sales, return on assets, return on equity), and firm productivity (such as factor productivity, sales per worker). A paramount advantage of CEO duality is concerned with unity of command and clear-cut leadership (Boyd, 1995; Finkelstein & D'Aveni, 1994), thereby enabling a quick strategic decision for the firm which is often useful to meet the financial target in the short-term.

Profitability ratios such as return on sales and return on assets are regarded as short-term performance indicators, as compared to other market-based performance indicators such as Tobin Q and share price (Martins and Yang 2009, Yang and Driffield 2012). Chen et al. (2005) for example find that CEO duality is often negatively related to market-based performance, as compared to profitability-based measurements such as ROA and ROE. A recent study by Poutziouris et al. (2015) reaches a similar finding that CEO duality is positively related to a firm's ROA but negatively related to Tobin's Q. We therefore propose that

Hypothesis 4: CEO duality-performance relationship is higher for short term performance, relative to long term performance.

Recently, there is a growing attention to the level of significance and size of the effect in the hypothesis testing studies. In meta-analysis literature, it is widely acknowledged that the different methods used in different studies is likely to lead to mixed or unclear findings (Martins and Yang 2009; Yang and Driffield 2012). For the dominance of agency theory in corporate governance literature (Jensen & Meckling, 1976; Eisenhardt, 1989), one may expect that, CEO duality

leadership structure enables concentration of power which incurs greater agency costs and may lead to worse firm performance.

There is also a significant heterogeneity in terms of estimation methods in different studies, which may affect estimation results. Firms are heterogeneous in various characteristics which not only affect its ability to generate income but also influence its corporate governance structure. Additionally, whether to combine CEO and chairperson positions is the strategic decision made by the firm, and therefore CEO duality is endogenous. One may expect a more reliable estimate when a study has controlled for both firm characteristics and endogeneity issue in data analysis. Due to the nature of endogeneity issues in corporate governance research, in recent years, more authors used advanced regression techniques to tackle the endogeneity issues, such as 2SLS and system GMM. Abdallah et al. (2015) argue that failure to adjust for endogeneity is likely to lead to the wrong inferences. Both Bhagat and Bolton (2013) and Faleye (2015) have found that CEO duality is negatively related to ROA when using 2SLS regressions, yet this relationship is not significant using OLS regressions. We expect that using advanced method is likely to uncover the expected negative relationship between CEO duality and firm performance, as compared other methods such as OLS, t-test or ANOVA.

Hypothesis 5: CEO duality-performance relationship is lower when advanced regression techniques that address endogeneity problems are used.

3. METHODOLOGY

Given the large amount of heterogeneity across previous studies, this paper adopts a meta-analysis regression (MAR) approach (Card & Krueger 1995; Pereira & Martins, 2004; Martins & Yang,

2009; Yang & Driffield, 2012; Wang & Shailer, 2017) to explore if there are any systematic relationships between the characteristics of each study and its estimated CEO duality-performance relationships.

3.1. Meta-analysis regression

Our meta-analysis of the CEO duality-performance relationship is primarily concerned with firm-level studies that estimate equations of the following type:

$$Y_{it} = \hat{\beta}_j \text{duality}_{it} + \lambda X_{it} + \gamma_t + e_{it} \quad (1)$$

in which Y_{it} is firm performance of firm i for a given period t . duality_{it} refers to the board leadership structure over the same period t , a dummy variable equal to one if the CEO also acts as the board chairman and zero otherwise. The equation may also include other control variables X_{it} such as ownership structure, debt ratio and firm size etc. γ_t is firm year fixed effect. e_{it} is error term. The key parameter that we are interested in is $\hat{\beta}_j$, which indicates the average change in performance for a firm in relation to whether it has a combined CEO and chairman position reported in each paper. We include the estimate $\hat{\beta}_j$ in a meta-analysis Equation 2 as follows:

$$\hat{\beta}_j = \alpha_0 + \sum_{k=1}^K \alpha_k Z_{jk} + e_j \quad (2)$$

Z_{jk} are variables measuring sampling and methodological heterogeneity across different studies j that influence the estimated duality-performance relationship $\hat{\beta}_j$. We consider sampling and methodological heterogeneity across different studies from the following dimensions:

3.2. Variables

Institutional Development: we draw on rule of law and control of corruption data from the World Bank worldwide governance indicators to measure institutional development of countries, and the governance indicators are widely used in the literature as measures of institutional quality (e.g. Licht et al., 2007; Haggard & Tiede, 2011; Ngobo & Fouda, 2012). Rule of law and control of corruption range from -2.5 to 2.5, and a higher value indicate a better governance.

Trust: World Values Survey (WVS) provide country-level trust data since the late 1990s and it is measured by the percentage of respondents in each country replying that “most people can be trusted”. Following the existing literature (e.g., Knack and Keefer, 1997; La Porta et al., 1997; Goergen et al., 2013), we use trust data from WVS to measure the stewardship trait of managers in different countries.

Codes of Corporate Governance: we create a dummy variable 'Code' equals to one if the country published a 'Code of Corporate Governance' requiring the CEO duality role to be separated, and zero otherwise.

Measure of Performance: The two most common firm performance indicators used in CEO duality-performance relationship literature are market based and financial accounting based performance measurements. We generate a dummy equal to one for papers that use accounting-based, rather than a market-based, indicator.

Advanced estimation Methods: A dummy variable is created that equal to one if the estimate is based on GMM or IV approach, rather than OLS, t-test or ANOVA.

Survey Year: we also control for survey year of samples included in each study in our analysis. We took the average of each time period used for each observation. For example, if the time period used in one observation is from 2001 to 2005, we took the average of this time period which is 2003.

Other control variables: we also control for economic development of the country where data samples are based, and the number of observations included in each study. In order to avoid the bias due to some bigger CEO-duality value but at the insignificant level (Yang and Driffield 2012), we also control for the reported standard errors of the CEO duality estimate.

Weights: One may argue that the estimate in a paper that was published in a higher ranked journal may deserve a greater importance and weighting. In order to shed the light on this, we follow other meta-analysis approach (such as Martins and Yang 2009) and include a weighting that is proportional to ranking of the journal. We have considered two weighting criteria. Weight 1 is based on Association of Business Schools (ABS) journal rankings published in 2015, and the other weighting is based on ABS journal ranking of 2010 from Harvey *et al.* (2010), which rank journals from 1 to 4 (4 being the highest). We give a weighting of 0.5 for papers not published in ABS list.

4. DATA

We only considered papers that use financial accounting and/or market-based performance indicators in order to make our meta-analysis regression on comparable studies¹. We also excluded papers that examined the log of financial ratios or log of Tobin's Q, and we also only consider papers that use Equation (1) to estimate CEO-duality relationship. Our meta-analysis includes 111 journal papers covering thirty-three countries, and each of these papers include CEO duality as either a key dependent variable or a control variable in determining firm performance. 96 papers are published at journals listed at ABS journal list². More information about each study characteristics are available upon the request.

Table 1 presents descriptive statistics of our data. The average CEO duality-performance coefficient is -0.011, implying a negative performance relationship between CEO duality and firm

performance of the surveyed papers. On average, rule of law and control of corruption are 0.67 and 0.693, respectively, and trust among people is around 0.367. Around 48% of sample data are surveyed in a country where the Code of Corporate Governance has been implemented. The number of observations reduces to 568 in column three when controlling for country trust data due to data availability. It also shows that 61% of papers use financial-based, rather than market-based, performance measurement, and 19% of estimates are based on advanced regression techniques that address endogeneity issues. The average of survey year is 2002 with a standard deviation of 3.1 years, and the most recent survey year is 2015. The average GDP growth rate is 5%. The average of weight 1 and weight 2 are 2.36 and 2.6 respectively.

 [Insert Table 1 here]

As it shown in correlation matrix Table 2, r-value of correlation between rule of law and control of corruption is 0.98, suggesting an issue of multicollinearity, and we therefore don't include them together in analysis. The correlations between code of corporate governance and time is 0.68, showing a trend of implementing codes of corporate governance over time. However, r-values among other pair-variables are relatively low.

 [Insert Table 2 here]

5. RESULTS

Table 3 reports our meta-analysis results. Given the issue of multicollinearity, we add rule of law in models 1-4 while control for the control of corruption in columns 5-8. Columns 1 and 5 are our benchmark results without any journal weights. Columns 2-4 and 6-8 are results weighted by different journal weightings for robustness checking.

 [Insert Table 3 here]

As it shows in column one, a high level of rule of law has a positive and significant impact on CEO duality-performance relationship, which is in line with the existing studies on institutional development of country and corporate governance. Bgobo and Fouda (2012) for example find that an improvement of good governance in countries with low levels of governance ratings has greater positive effects on firm profitability. Klapper & Love (2004) provide evidence that a better corporate governance is highly correlated with better operating performance and market valuation of companies. As expected, in column two we find that control of corruption leads to higher CEO duality-performance relationship. Our hypotheses 1a and 1b are therefore supported.

In addition, we also use Lester range (Lester, 1952) to estimate the economic effect of rule of law on CEO duality-performance relationship. This is to capture the increase of CEO duality-performance relationship estimate that would move from 'low' to 'high' rule of law countries, where all other factors are constant. 'Low' and 'high' are defined as two standard deviation below

and above the mean (Martins & Yang 2015). Lester range for rule of law is 0.06 in our benchmark result, which means that the estimated CEO duality-performance estimate would be 0.06 higher in a country with higher rule of law compared to in a country with lower rule of law³.

In column three, we find a positive and significant role of trust on the duality-firm performance relationship. In countries where there is more trust among people, the managers are more likely to exhibit more of a stewardship trait which lowers monitoring and bonding costs and, in turn, augment the benefit of CEO duality corporate structure. Our hypothesis 2 is supported.

Across all columns, Codes of corporate governance play a positive impact on CEO duality-performance relationship. This implies that along with the recommendation of Codes of Corporate Governance, some poor performing companies in which the CEOs acting as poor agents are likely to split the CEO duality roles, and other better performing companies in which CEOs acting as diligent stewards have kept the CEO duality leadership structure, and it is therefore showing a positive relationship between the implementation of the Code with estimated CEO duality-performance relationship. This implies that the guidelines of corporate governance from policy makers and the 'comply or explain' approach are conducive to monitor CEO's behaviour, and it in turn improves firm performance. Our hypothesis 3 is then evidenced.

In addition, we find that when performance is measured by financial-based indicators, the CEO duality-performance is likely to be higher as compared to market-based performance indicators, suggesting that CEO duality is conducive for meeting a short-term financial target for the firm, which supports our hypothesis four.

We also find that after controlling for endogeneity issue and firm heterogenous characteristics using GMM and IV estimators, it is more likely to find a negative CEO duality-performance relationship, which also supports the view of policy makers to split the joint CEO and chairman roles in many countries. Hypothesis five is supported.

In Table 4, we assign more weighting to those reported estimates of CEO-duality relationship that were published in higher ranked journals. In columns one to three we add the weighting proportional to ABS 2015 journal ranking, and in columns four to six we assign the weighting based on ABS 2010 journal ranking.

[Insert Table 4 here]

Rule of law, control for corruption and trust remain positive but at the insignificance level in columns 1-3 with the weighting based on ABS 2015 journal, but they tend to be significant when using ABS 2010 journal weighting in columns 4-6. This is perhaps because most papers included in our analysis is published prior to 2010, and therefore the weighting based on ABS 2010 may be more appropriate. Apart from these, all other hypothesized relationships have been evidences in Table 4.

Additional tests

In addition, we have considered other factors relating to the board structure and the financial leverage of the firm, and explored whether they influence the relationship between the CEO duality and performance. First, we found that the percentage of independent directors in relation to the total number of directors does not affect the CEO duality-performance relationship. One can argue that hiring independent directors is to curb the oversight of the board, while these independent directors may have less access to the critical information of the board decisions due to their absence of the board meeting and thus are more lenient in monitoring the CEO behaviour, which can lead to an insignificant effect on the relationship between CEO duality and firm performance. Second, we found that the effect of CEO duality is higher when the board size is small rather than large, and this is possibly because the board in a large size, although with more resources, may find it difficult to coordinate and communicate, and hence there may have some oversights in regulating the board and monitoring CEO behaviour. Third, we found that the firms with a large extent of leverage as measured by the debt to assets ratio have a higher CEO duality-performance relationship. Shareholders and creditors may be inclined to monitor the high-debt ratio firms more regularly, thus curbing the self-serving behaviour of the CEOs. These additional tests are robust in general from the different specifications and are available upon the request.

6. CONCLUSION

We conducted a meta-analysis of 111 papers that examined the relationship between CEO duality and firm performance in thirty-three countries. Our main result indicates that the effect of CEO duality on firm performance is higher in countries with stricter rule of law, control of corruption

and more trust, and after the codes of corporate governance recommending splitting joint CEO and chairman positions were implemented. These suggest that the institutional environment such as rule of law, control of corruption and trust plays an important role in CEO duality-performance relationship. We also find the role of CEO duality on performance is higher when financial ratios are used to measure firm performance, relative to the use of market-based indicators, suggesting the CEO duality are more likely to generate positive returns in the short run compared to long run. Further, we find that the effect of CEO duality on firm performance is lower when advanced regression techniques that address endogeneity problems are used.

The results from this study reveal that institutional factors such as rule of law and control of corruption play an important role in strengthening the effectiveness of firm-level board leadership structure (Fligstein & Freeland 1995; Aguilera & Jackson, 2003; Morey *et al.* 2009; Filatotchev & Boyd, 2009; Anderson & Gupta, 2009; Aslan & Kumar, 2014). In countries with strict rule of law and control of corruption, there is a more positive implication regarding CEO duality-firm performance relationship. By contrast, in countries with loose rule of law and control of corruption the likelihood of agency abuse would be higher. Therefore, the performance effect of CEO duality board leadership structure varies in different institutional contexts. Filatotchev & Boyd (2009) advocates that future studies should look at how national institutions may affect the extent of agency conflicts, as well as the effectiveness of corporate governance practices designed to deal with these conflicts. This paper supports their call and adds original contribution and further evidence to the important role of national institutions in corporate governance. The policy implication is that the policy makers should consider strengthening national institutions and building up accountability in the system.

Our limitation of this paper could be that meta-analysis is based on studies in thirty-three countries, and this leads to an issue surrounding the sample selection and how representative our results are. A majority of data samples used in this literature is large firms, and therefore we won't be able to explore how firm size moderate the CEO duality-performance relationship. Further, characteristics of CEOs themselves (such as experience, age and education) and block shareholding as well as board ownership could be important factors on the CEO duality-performance relationship. Most papers, however, do not provide this information. We leave these topics to future research.

Endnotes:

¹ We also considered sample heterogeneity (i.e large vs. small companies and non-financial vs. financial companies). However, due to data restriction and the issue of variation we do not include them in our meta-analysis regression.

² Those journals which were listed at ABS list include: British Journal of Management, Journal of Financial Economics, Journal of Business Venturing, Strategic Management Journal, Corporate Governance: An International Review, Financial Review, Journal of Corporate Finance, Journal of Banking and Finance, Asia Pacific Journal of Management, Journal of Comparative Economics, Journal of Business Research, Journal of Business Finance and Accounting etc.

³ In this paper Lester range is defined as the elasticity of coefficients, the estimated CEO duality-performance relationship, with respect to main independent variables such as rule of law. We obtain the Lester range by multiply the estimated coefficient of rule of law in each regression model by four times the ratio between the standard deviation of rule of law and mean rule of law. It can be interpreted as indicating the degree to which coefficient changes if a company were hypothetically to move from a low- to a high-rule of law country. More specifically, the range considers a company that keeps all characteristics unchanged except that it moves from a country where the rule of law are two standard deviations below the mean level of rule of law to another country where the rule of law are two standard deviations above that mean level.

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Table 1: Summary Statistics and Correlation Analysis

	Mean	Std. Dev.	Obs
1 Coefficient	-0.01	0.13	634
2 Rule of Law	0.71	0.90	634
3 Control Corruption	0.74	1.04	634
4 Trust	0.37	0.13	581
5 Code of governance	0.51	0.47	634
6 Accounting-based performance	0.59	0.49	634
7 Advance method	0.22	0.41	634
8 Survey Year	2002.44	4.13	634
9 GDP growth	0.05	0.03	634
10 Observations	3088.88	4224.37	634
11 Standard errors	0.07	0.19	634

Notes: Dependent variable is the reported CEO duality-performance estimate in each study. ‘Rule of law’ and ‘Control of Corruption’ are from World Bank worldwide governance indicators. ‘Trust’ is from World Value Survey and is measured by the percentage of respondents in each country replying that “most people can be trusted”. ‘Code of corporate governances’ is a dummy variable equals to one if the country published ‘Code of Corporate Governance’ requiring the CEO duality role to be separated, and zero otherwise. ‘Accounting-based performance’ is a dummy variable equals to one if performance measurement is accounting-based, rather than market-based, indicator. ‘Advanced Method’ is a dummy variable equals to one if the paper uses GMM or IV approach, and zero otherwise. ‘Survey year’ is the average of time period used in each observation of each paper. ‘GDP growth rate’ is GDP growth rate of the country. ‘Observation’ is square root of number of observations. ‘Standard Errors’ is standard error of each reported CEO duality-performance estimate.

Table 2: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11
1 Coefficient	1										
2 Rule of Law	-0.031 (0.438)	1									
3 Control Corruption	-0.029 (0.470)	0.980*** (0.000)	1								
4 Trust	0.133** (0.001)	-0.278*** (0.000)	-0.206*** (0.000)	1							
5 Code of governance	0.062 (0.119)	-0.213*** (0.000)	-0.224*** (0.000)	0.083* (0.046)	1						
6 Financial PERF	0.109** (0.006)	-0.178*** (0.000)	-0.199*** (0.000)	0.141*** (0.001)	-0.044 (0.272)	1					
7 Advance method	-0.160*** (0.000)	0.070^ (0.080)	0.055 (0.165)	0.020 (0.629)	0.061 (0.124)	-0.020 (0.611)	1				
8 Survey Year	-0.007 (0.862)	-0.209*** (0.000)	-0.283*** (0.000)	-0.093* (0.025)	0.555*** (0.000)	0.138*** (0.001)	0.108** (0.007)	1			
9 GDP growth	0.073^ (0.067)	-0.546*** (0.000)	-0.548*** (0.000)	0.360*** (0.000)	0.407*** (0.000)	0.082* (0.038)	-0.040 (0.313)	0.244*** (0.000)	1		
10 Observations	-0.039 (0.325)	-0.063 (0.114)	-0.075^ (0.058)	0.231*** (0.000)	0.230*** (0.000)	0.137*** (0.001)	0.174*** (0.000)	0.250*** (0.000)	0.257*** (0.000)	1	
11 Standard errors	0.141*** (0.000)	-0.068^ (0.086)	-0.078* (0.049)	0.063 (0.129)	-0.043 (0.278)	-0.173*** (0.000)	-0.011 (0.781)	-0.099* (0.012)	-0.037 (0.357)	-0.201*** (0.000)	1

Notes: Dependent variable is the reported CEO duality-performance estimate in each study. ‘Rule of law’ and ‘Control of Corruption’ are from World Bank worldwide governance indicators. ‘Trust’ is from World Value Survey and is measured by the percentage of respondents in each country replying that “most people can be trusted”. ‘Code of corporate governance’ is a dummy variable equals to one if the country published ‘Code of Corporate Governance’ requiring the CEO duality role to be separated, and zero otherwise. ‘Accounting-based performance’ is a dummy variable equals to one if performance measurement is accounting-based, rather than market-based, indicator. ‘Advanced Method’ is a dummy variable equals to one if the paper uses GMM or IV approach, and zero otherwise. ‘Survey year’ is the average of time period used in each observation of each paper. ‘GDP growth rate’ is GDP growth rate of the country. ‘Observation’ is square root of number of observations. ‘Standard Errors’ is standard error of each reported CEO duality-performance estimate. Values in parentheses are P value. Significance level: ^ p<0.1; * p<0.05, ** p<0.01, *** p<0.001.

Table 3: Meta-Analysis Regression (main results)

	(1)	(2)	(3)
Rule of Law	0.011*		0.017***
	[0.005]		[0.005]
Control for corruption		0.010*	
		[0.005]	
Trust			0.110*
			[0.043]
Code of corporate governances	0.029*	0.028*	0.051***
	[0.012]	[0.013]	[0.012]
Accounting-based performance	0.041***	0.042***	0.043***
	[0.011]	[0.011]	[0.011]
Advanced Method	-0.046**	-0.046**	-0.034**
	[0.014]	[0.014]	[0.012]
Survey Year	-0.001	-0.001	-0.002
	[0.001]	[0.002]	[0.001]
GDP growth	0.311^	0.321*	0.206
	[0.159]	[0.162]	[0.161]
Observations	-0.000	-0.000	-0.000*
	[0.000]	[0.000]	[0.000]
Standard Errors	0.108^	0.109^	0.096^
	[0.062]	[0.062]	[0.051]
No. observations	634	634	581
R-squared	0.078	0.079	0.100

Notes: Dependent variable is the reported CEO duality-performance estimate in each study. ‘Rule of law’ and ‘Control of Corruption’ are from World Bank worldwide governance indicators. ‘Trust’ is from World Value Survey and is measured by the percentage of respondents in each country replying that “most people can be trusted”. ‘Code of corporate governances’ is a dummy variable equals to one if the country published ‘Code of Corporate Governance’ requiring the CEO duality role to be separated, and zero otherwise. ‘Accounting-based performance’ is a dummy variable equals to one if performance measurement is accounting-based, rather than market-based, indicator. ‘Advanced Method’ is a dummy variable equals to one if the paper uses GMM or IV approach, and zero otherwise. ‘Survey year’ is the average of time period used in each observation of each paper. ‘GDP growth rate’ is GDP growth rate of the country. ‘Observation’ is square root of number of observations. ‘Standard Errors’ is standard error of each reported CEO duality-performance estimate. Values in parentheses are robust standard errors. Significance level: ^ p<0.1; * p<0.05, ** p<0.01, *** p<0.001.

Table 4: Meta-Analysis Regression (with weighting)

	Weight 1			Weight 2		
Rule of Law	0.007 [0.005]		0.014* [0.006]	0.009^ [0.005]		0.016** [0.005]
Control for corruption		0.006 [0.005]			0.009* [0.005]	
Trust			0.069 [0.042]			0.076^ [0.040]
Code of governances	0.038** [0.012]	0.038** [0.012]	0.052*** [0.012]	0.033* [0.013]	0.033* [0.013]	0.052*** [0.012]
Performance Measures	0.053*** [0.009]	0.053*** [0.009]	0.056*** [0.011]	0.052*** [0.010]	0.052*** [0.010]	0.052*** [0.010]
Advance Method	-0.045*** [0.012]	-0.045*** [0.012]	-0.039** [0.012]	-0.044*** [0.013]	-0.044*** [0.013]	-0.036** [0.012]
Survey Year	-0.001 [0.001]	-0.001 [0.001]	-0.002 [0.001]	-0.001 [0.001]	-0.000 [0.002]	-0.001 [0.001]
GDP growth	0.064 [0.151]	0.067 [0.151]	0.041 [0.156]	0.091 [0.140]	0.112 [0.143]	0.031 [0.140]
Observations	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Standard Errors	0.114 [0.074]	0.114 [0.075]	0.111 [0.071]	0.123 [0.082]	0.124 [0.082]	0.11 [0.070]
No. observations	634	634	581	634	634	581
R-squared	0.089	0.089	0.106	0.086	0.087	0.102

Notes: Dependent variable is the reported CEO duality-performance estimate in each study. ‘Rule of law’ and ‘Control of Corruption’ are from World Bank worldwide governance indicators. ‘Trust’ is from World Value Survey and is measured by the percentage of respondents in each country replying that “most people can be trusted”. ‘Code of corporate governances’ is a dummy variable equals to one if the country published ‘Code of Corporate Governance’ requiring the CEO duality role to be separated, and zero otherwise. ‘Accounting-based performance’ is a dummy variable equals to one if performance measurement is accounting-based, rather than market-based, indicator. ‘Advanced Method’ is a dummy variable equals to one if the paper uses GMM or IV approach, and zero otherwise. ‘Survey year’ is the average of time period used in each observation of each paper. ‘GDP growth rate’ is GDP growth rate of the country. ‘Observation’ is square root of number of observations. ‘Standard Errors’ is standard error of each reported CEO duality-performance estimate. Weight 1 is an indication of the journal ranking by the Association of Business Schools 2015. Weight 2 is based on the journal ranking of the Association of Business Schools 2010; Values in parentheses are robust standard errors. Significance level: ^ p<0.1; * p<0.05, ** p<0.01, *** p<0.001.