Corporate governance and financial performance: The role of ownership and board structure*

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Abstract

This study examines how corporate governance and ownership structure relate to the financial performance of firms. We estimated this relationship using fsQCA. We enhanced our analysis using complementary linear and non-linear multiple regression analysis. The panel data used in this study covered 1207 companies from 59 countries across 19 sectors for the period 2013 to 2015. The study makes two main contributions. First, the multiple empirical techniques employed in this study offer a broader approach to the empirical analysis of financial performance. Second, the study aids our understanding of the role of corporate governance and ownership in the financial performance of firms.

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1 Introduction

This study explores the determinants of financial performance. Corporate governance, firm size, and ownership are analyzed as antecedents of financial performance. This novel study combines fuzzy-set qualitative comparative analysis (fsQCA) of a large panel of firms (1207 companies from 59 countries for the period 2013 to 2015) with linear and non-linear multiple regression analysis (MRA). It thus overcomes the known limitations of linear regression analysis (Woodside, 2013) by using a comprehensive approach that embraces Poisson regression and fsQCA.

The study has two salient features. First, from a methodological perspective, the study combines the use of three empirical techniques. Second, the study provides some useful hints for practitioners and managers regarding the controversial relationship between corporate governance and financial performance.

The academic debate on the link between corporate governance and financial performance is open. For example, do high stock dividends negatively impact future returns? Does a high capitalization ratio affect return on equity (ROE)? And what is the optimal board size? Certain scholars suggest that corporate governance and firm performance are complex (Hermalin and Weisbach, 1991; Dalton and Dalton, 2011; McGuire et al., 2012a; Fogel and Geier, 2007). These scholars have found multiple contradictory linkages including outside directors, compensation, and board size. Furthermore, the empirical findings in this area are not conclusive (Bhagat and Black, 2001; Klein, 2015). Yet studies have failed to jointly control for board size, compensation, and ownership dispersion. Research has shown that ownership dispersion is relevant to financial performance (La Porta et al., 2002; Maury and Pajuste,

2005; Konijn et al., 2011). This study uses board size and ownership dispersion to provide a new perspective on previous studies (Bhagat and Black, 1999; Eisenberg et al., 1998; Jensen, 1993; Hermalin and Weisbach, 2001). Additionally there is no clear consensus on the most suitable way to measure financial performance (Dalton and Dalton, 2011). This study uses ROE as a direct measure of financial performance (Bhagat and Black, 1997).

The rest of the study is structured as follows: Section 2 presents the research hypotheses. Section 3 introduces the dataset and empirical method. Section 4 presents and discusses the results. Section 5 concludes by providing research limitations, managerial implications, and avenues for future research.

2 Conceptual framework

Corporate governance is a popular target of academic research because of its substantial effect on the firm. Relevant research topics include shareholders, the board of directors, management remuneration, corporate governance policies, and social media (Bebchuk and Weisbach, 2010; Paniagua and Sapena, 2014a,b; Paniagua et al., 2017; Shleifer and Vishny, 1997). This study's conceptual framework and hypotheses are based on agency theory, which is the most widely used conceptual framework to analyze corporate governance (Fama and Jensen, 1983; Jensen and Meckling, 1976). According to this theory, multiple ownership represents a challenge to the firm because of a lack of incentives to control asset management (Grossman and Hart, 1986). While corporate governance through a board of directors partially

solves this problem, it introduces new issues such as information asymmetries, which give rise to the classic agency problem between owners and managers. This study identifies two key areas of corporate governance that affect financial performance: board members and ownership.

2.1 Board members and financial performance

Scholars have confirmed that the board structure is a relevant aspect of agency theory (Jensen and Meckling, 1976; Eisenberg, 1976; Fama, 1980; Fama and Jensen, 1983; Dalton and Dalton, 2011; Dey, 2008; Bhagat and Bolton, 2008). Studies have shown that external board members play a crucial role in monitoring the firm's activities (Brickley et al., 1994; Shivdasani, 1993; Bebchuk and Weisbach, 2010). Much of the existing literature confirms that the most efficient boards of directors have a larger proportion of outside directors than insider directors (Mizruchi, 1983; Lorsch and MacIver, 1989; Zahra and Pearce, 1989; Dalton et al., 1998; Rosenstein and Wyatt, 1990; Denis, 1999; Bhagat and Black, 2001).

Several theories explain the advantages of smaller boards. One is cohesiveness, which is helped by smaller boards. Evans and Dion (2012) report a positive association between group cohesion and performance. Another is strategic management. Large boards limit the members' ability to initiate strategic interactions (Goodstein et al., 1994). Moreover, board members' assessments of top management are more easily manipulated when boards are large (Mintzberg and Mintzberg, 1983).

However, the relationship between board composition and firm financial performance is inconclusive. Several studies present evidence of a negative correlation

between board size and firm value (Bhagat and Black, 1997; Eisenberg et al., 1998; Jensen, 1993). For example, Yermack (1996) used a sample of 452 large US industrial corporations to show that small boards of directors are most effective. Eisenberg (1997) studied profitability for a sample of small and midsize Finnish firms and found a negative correlation. In contrast, Dalton et al. (1998) conclude that most studies provide scant evidence of the relationship between financial performance and board structure. Based on a sample of 20,620 observations from 131 studies, a meta-analysis by Dalton et al. (1999) suggests a positive correlation between board size and financial performance. Several scholars have also suggested a non-significant relationship (Fogel and Geier, 2007; COLES et al., 2008; Dalton and Dalton, 2011). These findings led Dalton and Dalton (2011) to affirm that "there is virtually no evidence related to the financial performance of the firm about either of these fundamental elements of firms' governance structures".

The linkages between the board and financial performance have been studied using a broad array of empirical approaches and data. He and Huang (2011) exploited the informal hierarchy dimension and showed a positive relationship with financial performance. Post and Byron (2015) examined the relationship between gender of the board members and financial performance, concluding that female board representation is positively related to financial returns. Some scholars, such as Conyon (2014); Kor and Mahoney (2005); McGuire et al. (2012b), have used the dimension of executive compensation, whereas others (Bear et al., 2010; Marie McKendall et al., 1999; Webb, 2004), have based their research on other characteristics such as diversity and social responsibility.

Hypothesis 1: The number of board members is negatively related to the firm's financial performance.

2.2 Ownership and financial performance

Two key ownership-related features affect financial performance: ownership dispersion and ownership costs. Certain scholars argue that firm ownership dispersion is an important component of financial performance. The seminal research of Fama and Jensen (1983) discusses the concept of entrenchment, or the adverse effect of a high share of management ownership driven by short-term opportunism. Empirical evidence seems to support this argument. Booth and Chua (1996) showed that broad initial ownership increases secondary-market liquidity, which in turn reduces the required return to investors. Maury and Pajuste (2005) found evidence that the presence of a strong third substantial shareholder positively affects firm value, while a second large shareholder may negatively affect firm value. Konijn et al. (2011) investigated the effect of concentrated versus dispersed blockholder ownership on firm value, reporting a negative relationship between blockholder dispersion and financial performance. Similarly, Anderson and Reeb (2003) posit that family influence can also provide competitive advantages and that family firms outperform non-family firms. Other studies have failed to show a significant relationship between ownership concentration and company performance (Demsetz and Villalonga, 2001).

Hypothesis 2a: Ownership dispersion is negatively related to the firm's financial performance.

The main sources of ownership financial costs are dividends. Easterbrook (1984)

posits that dividends are a way of aligning managers' interests with those of investors. Dividends, which in the short run undermine prospective investment, therefore reduce agency costs. This is especially true in countries with weak institutions and poor shareholder protection (La Porta et al., 2000; Pinkowitz et al., 2006). In advanced economies, high dividends are associated with low growth companies (Gaver and Gaver, 1993). For example, Gugler (2003) reports that, in Austria, companies that are controlled by the state tend to pay higher dividends than private firms do. Additionally, Allen et al. (2000) indicate that firms use dividend policies to attract institutional investors.

Hypothesis 2b: Ownership cost (dividend) is negatively related to the firm's financial performance.

3 Empirical methods and data

3.1 The data set

This study used panel data for a random sample of 1207 companies from 59 countries across 19 sectors for the period 2013 to 2015. These data were obtained from the Orbis database (Bureau van Dijk). The dependent variable was the annual growth rate of ROE. The variables of interest were measured as follows: The board members variable was measured by counting the number of members on the board. Ownership dispersion was measured using a composite index (0.1 to 1) where 0 indicated concentration of ownership and 1 indicated maximum dispersion. Property dispersion was calculated as follows: 1 for companies with six or more identified

shareholders whose ownership percentage was known, and 0.1 for companies with a recorded shareholder with a direct stake of more than 50%. All other firms lay between these two cases. The dividends variable was measured as the annual dividend payout (in US dollars). All variables came from the same data source.

An important component of financial performance is firm size. Our estimates would be biased if we failed to control for firm size heterogeneity. The control variables for firm size were number of employees, assets, and capital.

Summary statistics and the correlation matrix are shown in Tables 1 and 2, respectively.

[Table 1 about here.]

[Table 2 about here.]

A graphical inspection of the data in Figure 1 revealed no significant relationship between the variables of interest. This observation invited analysis using more sophisticated techniques to detect relationships that would otherwise remain hidden.

[Figure 1 about here.]

3.2 Empirical method

3.2.1 Multiple regression: OLS

Multiple regression analysis is a standard method to estimate the relationship between the determinants of financial performance and financial performance itself. We estimated the following equation:

$$\begin{aligned}\ln(ROE3_{it}) &= \beta_1 + \beta_2 Owner_{it} + \beta_3 Board_{it} + \beta_3 \cdot Dividend_{it} + \\ &\quad \beta_4 \ln(Employees_{it}) + \beta_5 \ln(Assets_{it}) + \beta_6 \ln(Capital_{it}) + FE_c + FE_s + e_{it}\end{aligned} \tag{1}$$

where i indicates a particular company, t denotes the time in years, e_{it} is a stochastic error term, and all other variables are defined as in Table 1. Our specification included sector and country dummies (FE_c+FE_s) to control for any unobserved confounding factors at the country or sector level.

3.2.2 Multiple regression: Poisson

OLS regression has limitations. For instance, it requires the assumption that the dependent variable is normally distributed and that the relationship between the variables is linear. To overcome these limitations, scholars have advocated the use of non-linear Poisson regression (Silva and Tenreyro, 2006). Poisson regression is compatible with zeros in the dependent variable and reduces estimation bias because of heteroskedasticity in the error term. Poisson regression is popular in non-linear empirical settings where the dataset can contain many zeros. Such settings include foreign investment and trade (e.g., Myburgh and Paniagua, 2016; Paniagua et al., 2015). We estimated the following equation:

$$ROE3_{it} = \exp\left(\begin{array}{c}\beta_1 + \beta_2 Owner_{it} + \beta_3 Board_{it} + \beta_3 \cdot Dividend_{it} + \\ \beta_4 \ln(Employees_{it}) + \beta_5 \ln(Assets_{it}) + \beta_6 \ln(Capital_{it}) + FE_c + FE_s\end{array}\right) + e_{it} \tag{2}$$

3.2.3 fsQCA

Finally, to complete our empirical analysis, we employed fsQCA. As Ragin (2000) notes, qualitative comparative analysis (QCA) is a relatively new technique that uses Boolean algebra to compare cases. QCA's focus on causal configurations gives this method a strong advantage over other techniques. QCA also enables identification of the combinations of multiple causes, while bridging the gap between qualitative and quantitative analysis. QCA provides powerful instruments for the analysis of causal complexity. It is also ideal for small to intermediate N research designs, particularly in economics and business (for recent applications, see Apetrei et al. (2016), Lassala et al. (2017)).

According to Rihoux and Ragin (2009), conventional quantitative approaches such as regression analysis differ epistemologically from comparative configurational methods. The epistemological differences are an improvement rather than a drawback because they allow for two different but potentially complementary approaches to the same research question.

The decision to use QCA is motivated by a need to overcome the limitations of MRA when relationships are asymmetrical and complex (Woodside, 2013). Unlike conventional techniques, QCA is based on the assumption that causation is complex, rather than simple. In most conventional techniques, it is assumed that causal conditions are "independent" variables whose effects on the outcome are linear and additive. In complex truth tables, the rows (combinations of causal conditions) may be numerous because the number of causal combinations is a geometric function of the number of causal conditions: The number of causal combinations is 2^k, where k is

the number of causal conditions. Asymmetric relationships are often present in real life (Rihoux and Ragin, 2009). Moreover, fsQCA is capable of detecting inconsistent results (Schneider and Wagemann, 2012; Fiss, 2011; Pajunen, 2008; Rey et al., 2017; Woodside, 2013).

4 Results and discussion

4.1 Multiple regression analysis

Table 3 presents the results of the OLS estimation of equation 1. We followed a stepwise estimation procedure, whereby we added control variables sequentially. This method enabled identification of potential omitted-variable bias. Column 1 reports the results with no control variables, and the last column reports the results with the full set of control variables and fixed effects as specified in equation 1. Overall, the OLS results in Table 3 fail to support any of our hypotheses. These results highlight the limitations of OLS when studying firm financial performance. The results in column 1 suggest that the variables of interest (i.e., ownership dispersion, board members, and dividend) have no significant effect on ROE. R^2 is low (less than 1%), suggesting that the joint explanatory power of these variables is low. This result supports the introduction of the control variables for firm size (number of employees, assets, and capital) in column 2. After introducing these variables, the sign of ownership dispersion is positive and significant ($p<0.01$). This result contradicts our theoretical expectations and most of the previous findings that are reported in the literature (e.g., Booth and Chua, 1996; Maury and Pajuste, 2005).

This result appears only in columns 2 and 4, which include the country fixed effects. Therefore, these countries' specific characteristics bias the estimation of ownership dispersion when using this estimation method. The effect of control variables remains unchanged and appears to be robust to our multiple specifications. Firms with greater assets and lower capital requirements (i.e., higher debt) have, on average, higher levels of ROE.

[Table 3 about here.]

The Poisson regression results in Table 4 resolve most of the issues that arise when using OLS regression (Table 3). All variables of interest are estimated with precision ($p<0.01$). We observe the expected negative sign across all multiple specifications. The estimated coefficient of ownership dispersion ranges from -0.206 (column 2) to -0.317 (column 1). Thus, increasing ownership dispersion in a particular firm by 1% is expected to decrease ROE by between 0.2% and 0.3% on average (keeping all else constant). The estimated coefficient of board member dispersion ranges from -0.005 (column 3) to -0.035 (column 2). Thus, adding one board member in a particular firm is expected to decrease ROE by between 3.5% and 5.0% on average (keeping all else constant). The estimated coefficient of dividends ranges from -0.015 (column 4) to -0.020 (column 3). Thus, increasing the dividend by 1 USD in a particular firm is expected to decrease ROE by between 3.5% and 5.0% on average (keeping all else constant).

The estimated coefficients of the control variables are as expected and are consistent with the OLS results in Table 3. Moreover, the coefficient for employees is

negative and significant (p<0.01). The signs of assets (positive) and capital (negative) are consistent with the signs of these variables in the OLS analysis, albeit an order of magnitude greater. Therefore, firms with greater debt and fewer employees have, on average, higher ROE. However, the estimated coefficients of the variables of interest are robust and independent of firm size.

[Table 4 about here.]

4.2 FsQCA

Finally, we present the outcomes of the fsQCA based on the model that is described by the following equation:

$$ROE3_{fsct} = f(Owner, Board, Dividend, Employees, Assets, Capital) \quad (3)$$

Equation 3 associates the ROE ratio with property dispersion independence, the number of members on the board of directors, payouts, and size (number of employees, assets and capital).

The analysis was performed using fsQCA 2.5 software. The first step consisted of calibrating the conditions and outcome. Calibration is necessary when performing fsQCA. Calibration requires the definition of three observation points: 0.05 to indicate full non-membership to the set, 0.5 to indicate the point of maximum ambiguity, and 0.95 to indicate full membership to the set. After calibration, the truth table must be built to display sample case distributions for all possible combina-

tions of causal conditions. FsQCA allows researchers to find multiple pathways to an outcome.

Table 5 shows the intermediate solution for the fsQCA. The procedure uses the Quine-McCluskey algorithm to logically reduce the configurations. The configurations'mean for the outcome is weighted by the membership in each configuration. This value is tested and reported against the mean as weighted by the maximum value of the other configurations. Standard tests are performed between each configuration's y consistency (inclusion in y) versus its n consistency (inclusion in not-y, or 1-y). Non-significant results (to 0.1 level) are discarded. This method requires reasoning about how each causal set is expected to contribute to the result. The alternatives are presence, absence, or both. Ragin (2006) suggests 0.80 as the low bound for a high score in the outcome. Therefore, we discarded any solution with a consistency of less than 0.80.

We calculated the intermediate solution because the assumptions that were made for the parsimonious solution might not be justified. Intermediate solutions use counterfactuals to simplify the complex solution without making unjustified assumptions. This procedure requires reflection upon how each causal set is expected to contribute to the outcome. The alternatives are presence, absence, or both.

[Table 5 about here.]

The solution term in the truth table (Table 5) shows the relationship between sets of conditions and the outcome. Corroborating the results of the Poisson regression, the combination of conditions indicates an inverse relationship between the ROE

and the number of board members. Accordingly, a higher number of board members implies a lower ROE. This finding is significant and validates the first hypothesis. Similarly, the estimated relationship between the dispersion of ownership and ROE confirms the second hypothesis. The combination of conditions indicates an inverse relationship between the ROE and payout. Accordingly, a higher payout implies a lower ROE. This finding is significant and validates the fourth hypothesis (that high dividend negatively affects financial performance).

The fsQCA identifies an exception to the rule, where highly indebted companies with high property dispersion require an extended board of directors to increase ROE. This path, whose coverage accounts for 15% of companies in the sample, is an interesting exception to the general rule. This path possibly corresponds to new ventures, including entrepreneurs and financial partners.

5 Conclusions

This study investigated the role of corporate governance in the financial performance of firms. A multi-method multi-country approach was used to do so. This study makes two important contributions to the business finance literature. First, it highlights the value of using multiple empirical techniques to increase the robustness of results. It also underlines the limitations of traditional multiple OLS regression analysis. The results suggest that non-linear techniques (Poisson regression) and fsQCA provide deeper empirical insight. While regression analysis (OLS or Poisson) offers unidirectional averages, fsQCA highlights an additional path to increase re-

turns even with high ownership dispersion. The use of both methods is useful for understanding complex relationships.

Second, we report interesting findings for academics and practitioners. This study was based on agency theory, which provides the theoretical foundations that we used to study the link between corporate governance and financial performance. The lessons learned from this study can help practitioners (CFOs and CEOs) design corporate financial strategies.

This study is not without limitations. It reflects the general situation of a pool of heterogeneous firms. Further research is needed to adapt the lessons learned from this study to specific sectors or regions. At best, our study captures the variation of around 20% of ROE. Therefore, further studies should be developed to explain the unknown variation of financial performance.

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Table 1: Summary Statistics

Definition	variable	N	Mean	St. Dev.	Min	Max
Return on equity	$ROE3$	1,207	35.915	122.229	1	3,423
Ownership dispersion	$Owner$	1,207	0.711	0.357	0.100	1.000
Board members	$Board$	1,207	10.731	6.965	0	61
Dividend	$Dividend$	1,207	0.823	5.377	0.000	125.780
Employees	$\ln(Employees)$	1,207	3.840	0.619	0.477	5.713
Assets	$\ln(Assets)$	1,207	6.469	0.562	5.239	8.624
Capital	$\ln(Capital)$	1,207	6.294	0.626	3.855	8.498

Table 2: Correlation Matrix

	Owner	*Board*	ln(*Employees*)	ln(*Assets*)	ln(*Capital*)	*Dividend*
Owner	1					
Board	-0.020	1				
ln(*Employees*)	0.043	0.343	1			
ln(*Assets*)	0.005	0.454	0.628	1		
ln(*Capital*)	0.036	0.364	0.613	0.769	1	
Dividend	-0.051	-0.051	0.008	0.054	-0.010	1

Table 3: Multiple regression results: OLS

Dependent variable: $\ln(ROE3)$

	(1)	(2)	(3)	(4)
$Owner$	0.059	0.147***	0.069	0.122**
	(0.046)	(0.056)	(0.047)	(0.056)
$Board$	-0.001	-0.003	0.003	-0.001
	(0.002)	(0.003)	(0.003)	(0.003)
$Dividend$	0.0004	0.0001	0.0004	-0.00002
	(0.003)	(0.003)	(0.003)	(0.003)
$\ln(Employees)$		-0.044	-0.044	-0.063
		(0.038)	(0.037)	(0.040)
$\ln(Assets)$		0.187***	0.110**	0.172***
		(0.054)	(0.053)	(0.058)
$\ln(Capital)$		-0.219***	-0.179***	-0.216***
		(0.045)	(0.045)	(0.048)
Observations	1,207	1,207	1,207	1,207
R^2	0.001	0.093	0.049	0.118
FE_{sector}	no	no	yes	yes
$FE_{country}$	no	yes	no	yes

Notes: Standard error in parenthesis

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Multiple regression results: Poisson

Dependent variable:ROE3

	(1)	(2)	(3)	(4)
Owner	-0.317***	-0.206***	-0.259***	-0.301***
	(0.013)	(0.016)	(0.013)	(0.016)
Board	-0.011***	-0.035***	-0.005***	-0.027***
	(0.001)	(0.001)	(0.001)	(0.001)
Dividend	-0.017***	-0.016***	-0.020***	-0.015***
	(0.002)	(0.001)	(0.002)	(0.002)
ln(*Employees*)		-0.081***	-0.147***	-0.199***
		(0.010)	(0.010)	(0.011)
ln(*Assets*)		0.900***	0.536***	0.804***
		(0.015)	(0.014)	(0.017)
ln(*Capital*)		-0.853***	-0.612***	-0.760***
		(0.013)	(0.012)	(0.013)
Observations	1,207	1,207	1,207	1,207
Pseudo R^2	0.0083	0.1481	0.1275	0.2234
FE_{sector}	no	no	yes	yes
$FE_{country}$	no	yes	no	yes

Notes: Standard error in parenthesis

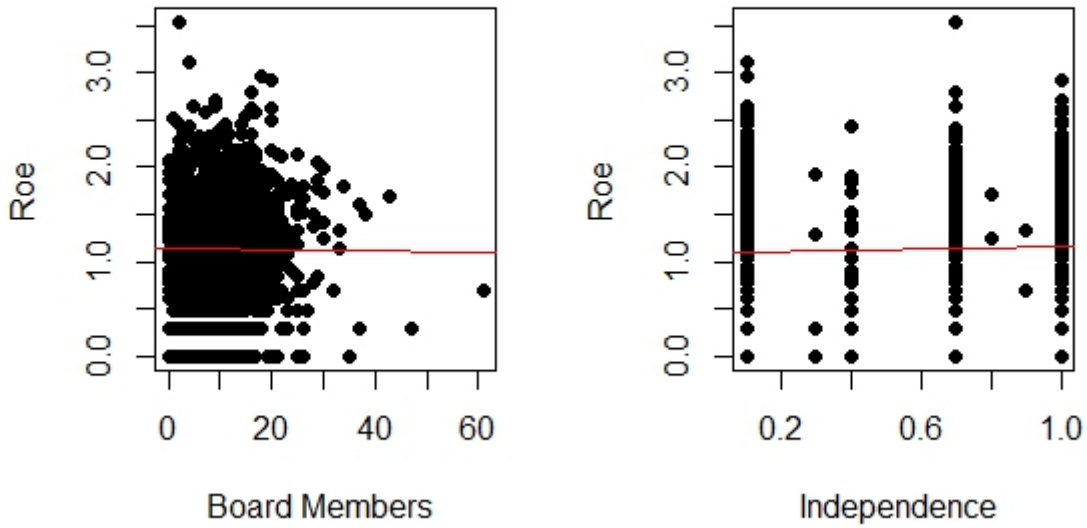
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Intermediate solution

Set	raw coverage	consistency
$Board* \sim Dividend* \sim Capital* \sim Owner$	0.100056	0.803496
$Capital* \sim Assets* \sim Owner* \sim Employees$	0.079859	0.792577
$\sim Dividend * Capi* \sim Assets* \sim Prop_{fsct}$	0.078974	0.792300
$\sim Board* \sim Dividend * Assets* \sim Owner* \sim Emplo_{fct}$	0.088390	0.783703
$\sim Board* \sim Dividend * Capi * Assets* \sim Employees$	0.101799	0.789776
$Board* \sim Capital * Assets * Owner$	0.150485	0.806918

solution coverage: 0.339929
solution consistency: 0.751561

Figure 1: Scatter plot



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