



SOCIAL PERFORMANCE AND FINANCIAL PERFORMANCE RELATIONSHIP OF COMPANIES: INVESTIGATING THE CAUSAL LINK

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Abstract

The study examines causal association between the social performance, financial performance +and size of select 37 Nifty companies for the period 2010-11 to 2014-15 employing Toda Yamamoto Granger Causality approach. The results of the study found financial performance (ROE) to Granger cause size (Log of total assets), association between CFP - CSP and CSP - Size were not found to be significant.

Keywords : Social performance, financial performance, size, granger causality and Toda Yamomoto test

INTRODUCTION

The number of studies undertaken on the social and financial performance relationship of companies which is regarded as the most questioned area of CSR (Angelidis et. al., 2008) is overwhelming and the number is still growing as researchers are trying to traverse the unexplored territories of this area by employing different research models, different variable measurement techniques, data analysis methods and more in their quest to add to the already existing literature on the subject. But the review of the existing literature on corporate social performance and financial performance relationship has revealed that number of studies exploring the causal link between social performance variables and financial performance variables is very scant and whatever little work that is done in this regard suffers from poor research design, inappropriate statistical method and inadequacies in data which makes the findings of those studies less valuable (Bird et al., 2006).

The present study examines the causal association between the social performance and financial performance of the select Indian companies to determine if social performance precedes financial performance or if financial performance precedes social performance employing Toda Yamamoto test as to the best of my knowledge this test has not been employed in the previous studies to assess the causal association between social performance and financial performance relationship. Hence the study makes a unique contribution to the existing literature on social and financial performance relationship.

Webb (2005) found a positive causal relationship between capital structure (leverage) and certain CSR measures and a lower cost of debt financing for firms with strong levels of CSR. The study employed agency theory on a panel data set of over 3000 firms studied during the period from 1993-2000. Nelling and Webb (2006) found little evidence of causality between financial and social performance that focus on stakeholder management. The results of their study also indicated that strong stock market performance results leads to greater firm investment for employee relations, but CSR activities do not influence financial performance. Makni et. al. (2009) investigated the causal link between CSP and CP of 179 Canadian public firms employing CSP measures of Canadian Social Investment Database for years 2004 and 2005 using Granger causality approach. The study found no significant relationship between composite measure of a firm's CSP and CFP,





except for market returns. Goss and Roberts (2007) investigated the strategic use of CSR investments by firms with companies investing more in CSR when they are challenged with environmental, social and governance concerns using Granger causality to determine the temporal sequencing of these investments. Tyagi (2012) employed pair-wise Granger Causality tests on a panel of 215 firms listed on S&P ESG 500 India index from 2005 to 2010 to examine the direction of causality of variables. The study found significant association between social and financial performance variables.

DATA

The dataset of the study comprised of financial and social performance data of select 37 Nifty companies. Social performance data for the study was collected using content analysis technique by constructing a dichotomous index which was divided into seven sections each representing a social performance dimension viz. Business Ethics, Transparency and Disclosure (BET&D), Community Relations (CR), Customer and Product related Performance (C&P), Employee Relations (EMP), Environmental Performance (ENV), Responsible Procurement (RP) and Human Rights (HR). The index was constructed after a detailed study of the indices of Ameer and Othman (2012); Ahmad, N., Sulaiman, N. And Siswantoro, D. (2003); Clarkson, M.B.E. (1991), Clarkson, M.B.E. (1995), Hackston, D., and Milne, M.J. (1996); Hopkins (1997), Deloitte RESPECT Index Edition (2014); KLD ESG scores and Business Responsibility Report framework given by SEBI in particular. The data was collected from annual reports, sustainability reports, business responsibility report and other company publications for the period 2010-11 to 2014-15. A composite score of the social performance of the company was calculated by aggregating the social performance score from different dimensions. Return on Equity (ROE) was taken as proxy for financial performance whereas log of total assets as proxy for size.

METHODOLOGY

A Granger – Causality test is performed to give results that can be used to draw conclusions that if events in the past can cause events in the future, or predict movements in the future (Gujarati, 2003). In other words in case of two time series variables x and y, x is said to granger-cause y if y can be better predicted using the histories of both x and y than it can be using the history of y alone (Giles, 2011). But the findings of Granger causality technique to be valid it is necessary that the variables are non-stationary and co-integrated (Engel and Granger, 1987). To overcome the shortcomings of this technique Toda and Yamamoto (1995) and Dolado and Lutkepohl (1996) introduced a Modified Wald Test Statistic (MWALD) based on augmented VAR modelling (Shakya, 2015). Toda and Yamamoto granger causality test is valid irrespective of whether a series is I(0), I(1) or I(2), non-cointegrated or cointegrated of any uninformed order (Wolde-Rufael, 2005).

The study employed Toda Yamamoto (1995) approach which allows non stationary variables in a standard Granger causality test to examine the causal relationship between financial performance, social performance and size. The Toda Yamamoto test examines the following equations:

$$ROE_{it} = \alpha_{1i} + \sum_{p=1}^K \beta_{1i,p} ROE_{i,t-p} + \sum_{p=1}^K \gamma_{1i,p} CSP_{i,t-p} + \sum_{p=1}^K \delta_{1i,p} LTA_{i,t-p} + \epsilon_{1i,t} \quad (1)$$

$$CSP_{it} = \alpha_{2i} + \sum_{p=1}^K \beta_{2i,p} ROE_{i,t-p} + \sum_{p=1}^K \gamma_{2i,p} CSP_{i,t-p} + \sum_{p=1}^K \delta_{2i,p} LTA_{i,t-p} + \epsilon_{2i,t} \quad (2)$$

$$LTA_{it} = \alpha_{3i} + \sum_{p=1}^K \beta_{3i,p} ROE_{i,t-p} + \sum_{p=1}^K \gamma_{3i,p} CSP_{i,t-p} + \sum_{p=1}^K \delta_{3i,p} LTA_{i,t-p} + \epsilon_{3i,t} \quad (3)$$

Where K is the number of lags that adequately models the dynamic interaction between the financial performance (ROE), social performance (CSP) and size (Log of Total Assets) of each company i ($i= 1, \dots, N$) at time t ($t = 1, \dots, T$). The method involves a Modified Wald statistics for testing the significance of a vector autoregressive VAR model by introducing m additional lags which are the maximum order of integration of the variables.

RESULTS

Descriptive Statistics

The financial performance values of the companies for the period under study show a moderately decreasing trend while the social performance values indicate an increasing trend, the volatility in the social





performance values is more than the financial performance variables while the deviations in the value of the total assets of the companies is negligible.

Table 1: Descriptive Statistics

Statistics	ROE	CSP	LTA
Mean	18.740	69.267	10.530
Median	14.970	74.400	10.561
Maximum	48.230	91.670	12.894
Minimum	1.930	22.020	9.041
Std. Dev.	13.518	16.631	0.906
Observations	185	185	185
Pearson Correlation			
ROE	1		
CSP	0.044	1	
LTA	-0.338**	0.358**	1

The Pearson product-moment correlation coefficients indicate a positive but not significant association between social performance and financial performance variable whereas a significant negative association between financial performance and size and a significant positive association between social performance and size which shows that size is an important factor influencing both social and financial performance of the companies.

Panel Data Analysis

The dynamic Granger Causality analysis involves determining the stationarity of the variables to determine the order of integration of the variables for which unit root test are to be performed.

Unit Root Test

To determine stationarity of variables, Levin Lin Chu (LLC) test, Augmented Dicky Fuller (ADF) –Fisher Chi Square test and PP Fisher Chi Square test were conducted. The null hypothesis of these tests assumes that the panel has a unit root whereas the alternate hypothesis assumes that the panel is stationary. The results of these tests are given below:

Table 2: Results of Panel Unit Root Test

Series ROE				
Null Hypothesis: Unit Root				
	At Level		At First Differenced	
Method	Statistic	Prob.	Statistic	Prob.
Leivn Lin Chu test	-15.4232	0.0000**	-30.9334	0.0000**
ADF-Fisher Chi Square test	76.3930	0.2270	131.064	0.0000**
PP-Fisher Chi Square test	100.179	0.0068**	154.886	0.0000**
Series CSP				
Null Hypothesis: Unit Root				
	At Level		At First Differenced	
Method	Statistic	Prob.	Statistic	Prob.
Leivn Lin Chu test	-17.8997	0.0000**	-13.4501	0.0000**
ADF-Fisher Chi Square test	66.7380	0.7131	84.8101	0.1833
PP-Fisher Chi Square test	108.621	0.0054**	90.3278	0.0954
Series LTA				
Null Hypothesis: Unit Root				



Method	At Level		At First Differenced	
	Statistic	Prob.	Statistic	Prob.
Leivn Lin Chu test	-11.2809	0.0000**	-69.3218	0.0000**
ADF-Fisher Chi Square test	77.5018	0.3677	120.920	0.0005**
PP-Fisher Chi Square test	132.550	0.0000**	144.019	0.0000**

*indicate significance at 1% level

The results of the unit root tests indicate that at level some variables are stationary while others have a unit root whereas at first differenced all the variables are stationary.

Cointegration Test

The results of the above tests indicate that the variables are stationary at first differenced i.e. financial performance, social performance and size are I(1). Based on the tests results, a test of cointegration of the variables can be undertaken.

Table 3: Results of Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.503629	36.03867	29.79707	0.0084
At most 1	0.237111	10.12271	15.49471	0.2714
At most 2	0.002940	0.108952	3.841466	0.7413
None *	0.503629	36.03867	29.79707	0.0084

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4: Results of Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.503629	36.03867	29.79707	0.0084
At most 1	0.237111	10.12271	15.49471	0.2714
At most 2	0.002940	0.108952	3.841466	0.7413
None *	0.503629	36.03867	29.79707	0.0084

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Results of the Trace test and Maximum Eigenvalue test indicate one cointegrating equation at 0.05 level indicating long run association between the variables.

Table 5: VAR Lag Order Selection Criteria

Endogenous variables: ROE CSP LTA						
Exogenous variables: C						
Lag	Log L	LR	FPE	AIC	SC	HQ
0	-330.6604	NA	13658.33	18.03570	18.16631	18.08174
1	-138.3421	343.0542	0.680800	8.126600	8.649060	8.310792
2	-104.4066	55.03058	0.178877	6.778734	7.693039*	7.101069
3	-88.90464	22.62444*	0.129375*	6.427278*	7.733428	6.887757*
4	-82.32726	8.532819	0.155424	6.558230	8.256225	7.156853

* indicates lag order selected by the criterion

Table 5 Indicates the maximum lag length to be used in a standard VAR model may differ depending on the criteria used. Sequential modified LR test statistic (each test at 5% level), Final prediction error, Akaike





information criterion and Hannan-Quinn information criterion indicated maximum lag length as three. Four out of six criteria given in the table indicate three lags. Hence K=3 was decided as the maximum lag.

Table 6: Results of Trivariate Granger causality test using Toda Yamamoto Framework

Dependent Variable: ROE			
Excluded	Chi-sq	df	Prob.
CSP	5.378017	3	0.1461
LTA	6.142998	3	0.1049
All	10.33175	6	0.1114
Dependent Variable: CSP			
Excluded	Chi-sq	df	Prob.
ROE	5.024237	3	0.1700
LTA	2.644151	3	0.4498
All	7.172115	6	0.3052
Dependent Variable: LTA			
Excluded	Chi-sq	df	Prob.
ROE	12.12952	3	0.0070
CSP	4.073523	3	0.2536
All	15.35549	6	0.0177

The results of the Trivariate Granger causality test using Toda Yamamoto Framework show that CSP does not granger causes ROE as the Wald statistic is not significant hence the null hypothesis of non causality cannot be rejected. Similarly for the other relationships the null hypothesis is not significant indicating non causality between the given variables except for the Wald statistic for ROE is significant at 1percent level for LTA indicating ROE granger causes LTA.

CONCLUSION

In the present study, Toda Yamamoto approach to Granger causality was applied to the research variables to examine if there exist any causal association between the variables. The study found that ROE the proxy for financial performance granger causes Log of Total Assets, the proxy for size while no causal association was found between ROE and CSP and CSP and LTA.

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