Will Financial Performance Influence CSR Disclosure?

--Empirical Evidence from 422 Chinese A-listed firms

by

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Abstract

The inquiry of interactive relationship between Corporate Social Responsibility (CSR) and Corporate Financial Performance (CFP), which has long been controversial, could be traced back to 1970s. The paper used 422 firms that successively published Corporate Social Responsibility Report during 2012-2014 as sample to examine the influence of corporate financial performance on CSR disclosure. The empirical analysis has following results: 1) profitability has a significant positive impact on CSR disclosure. 2)The expectation of growth has a quadratic effect. As sales growth gradually increases to a certain value, the company's willingness to invest in CSR also increases. After sales growth reaches this critical point, companies are more and more reluctant to fulfill CSR as growth continues to increase. 3) Profitability and growth of previous year have no influence on current year's social performance disclosure. The findings echo the managerial opportunism hypothesis and available fund hypothesis Preston and O'Bannon (1997) proposed. We hope our discoveries could help stakeholders understand the motives and implications CSR investments.

Introduction

Since 1980s, media, government and the public have been increasingly concerned of the environmental and social consequence of corporate operation activities. Ecological scandals, employee welfare exploration and negative social responsibility news release attract considerable publicity. Investors have easy access to detailed CSR ranking reports published by myriad organizations. As a result, CSR has evolved to appear on the evitable agenda for corporate governance (Porter and Kramer 2006).

Corporates actively get involved in CSR activities for a variety of reasons, such as risk management consideration (Eisingerich and Ghardwaj 2011), brand differentiation enhancement (Fry et al. 1982; Griffin and Vivari 2009), "triple bottom line" achievement which refers to the balance of "people, planet and profit" (Elkington 1994), or expectation of reduced scrutiny. Despite the desire to earn a positive reputation, most firms invest in fragmented philanthropic activities instead of thinking of how CSR proposition could be integrated to their value chain. Some pioneering firms, like Nestle and Clarins, that closely

tied a social issue to business have turned out to benefit society while reinforcing strategy (Porter and Kramer 2006).

In China, CSR is a recent notion that draws considerable attention and swiftly goes popular over the decades. Fast economic growth, loose fiscal policy and more liberal market transformation catalyze crowd craze for commercial success. Absence of effective supervision, however, provides convenience for shady corporate activities. Poisonous baby milk, fake lamb product made from stray cats, industrial effluent secretly injected to underground water floor … all kinds of vicious incidents diminish trust from customers. To save reputation and differentiate from venal peers, companies get actively engaged in CSR initiatives. The global expansion of Chinese MNEs also facilitates Chinese firms to join the international trend of CSR investment (Msika et al. 2016).

Although the public hold companies to account for social consequences of their activities, lots of firms are reluctant to fulfill social responsibility. Social responsibility is often viewed as "a cost, a constraint, or a charitable deed" for winners (Porter and Kramer 2006). Some researchers try to prove that good CSR strategy could yield better financial performance either from a theoretical perspective or in an empirical approach, but the conclusion frequently gets refuted in developing market. In this paper, we would like to investigate whether current financial performance influences current CSR fulfillment or the influence is deferred.

Literature Review

The inquiry of interactive relationship between CSR and CFP (corporate financial performance) could be traced back to 1970s. The majority of researchers find a significant positive relationship. Margolis and Walsh (2003) reviewed 109 papers since 1972 on this topic and found 54 positive, 28 insignificant and 7 negative results. 20 papers did not give explicit discoveries. For example, Waddock and Graves (1997) used the CSR scores ranked by KLD as measurement of CSR disclosure, ROA and return on sales as measurement of CFP. They find that firms with better financial performance in the current year are more likely to have better CSR disclosure next year. Since 2005, Chinese researchers also started to investigate in this problem. Shen(2005), Yang and Yin(2009), Tian(2009) and Zhang(2013) have reported positive relationship findings.

Different voices come out as public interest in CSR increases. For example, Ingram and Frazier(1983) choose 79 American companies in chemicals and oil industry as empirical research sample, and find that CFP has a weak negative impact on CSR disclosure. Controlling corporate size and industry, Cowen et al.(1987) find that profitability has no significant influence on CSR disclosure. Researchers from China (Li 2006, Wen and Fang 2008) also find a negative relationship between CSR and CFP. Rowley and Berman (2000) believe the underlying logic connecting CSR-FP varies with specific cases, and the inquiry of their correlation "provides only a small piece of descriptive puzzle". van Beurden and Gossling (2008) use meta-analysis to review 34 typical papers since 1990 and find 23 positive, 2 negative and 6 no correlation conclusions.

Broad Question and Hypothesis

The shareholder vs. stakeholder discussion, first proposed by Friedman (1978) and Freeman (1983) respectively, has long been a debatable one. traditional liberal economists believe the only shareholders of the company are important. CSR investment is miscellaneous, or even detrimental under this "profit maximization first" scheme. Stakeholder theory instead argues that there are many other parties involved in corporate operation and the success of a firm depends largely on its capacity to manage relationships with a variety of stakeholders. The stakeholder view of strategy integrates both a resource-based view and a market-based view, and adds a socio-political level. CSR investment adds value to the enterprise because it helps companies create more harmonious relationship with employees, clients and governments. Researches and discussions on CSR increase over the years as stakeholder theory get well acknowledged by the public.

In this paper, we investigate whether FP could influence CSR disclosure. The direction of this correlation remains discrepant. Below are three most prevailing hypotheses:

1) Positive (or negative) synergies hypothesis. Social and financial performance are synergic, but we can't detect the lead-lag causality from available statistical data.

2) Available funds hypothesis. Preston and O'Bannon (1997) point out that although firms may wish to fulfill CSR, their actual behavior depends on the resources available. Firms with better financial performance are more capable of funding discretionary projects, including CSR initiatives. To avoid from adverse selection, firms may actively disclose

social performance and therefore distinguish themselves from less profitable companies that cannot afford CSR investment.

3) Managerial opportunism hypothesis. Agency cost is a common issue. Managers may pursue their own interest to the detriment of shareholders and other stakeholders (Williamson 1985, Weidenbaum and Vogt 1987). When compensation scheme is closely linked to short-term financial performance, managers may reduce CSR investment even if financial performance is strong in order to seize more bonus from the good time. When financial performance is bad, however, managers may attempt to offset or justify the disappointing situation by investing in conspicuous CSR programs.

In reality it usually takes time to see the substantial change in CSR fulfillment as a result of financial performance fluctuation. It takes time for the company to assimilate the information and relocate resources. Within the lag time there seems little variation in CSR performance. After lag period when the management decision is finally made, significant change in CSR fulfillment can be caught. Therefore, we have the following two hypotheses to test:

H1: For Chinese A-listed firms, financial performance has a significant influence on CSR disclosure

H2: Financial Performance has inter-temporal influence on CSR disclosure

Data Source and Variables

Sample selection

We choose the dataset from Chinese A-listed companies non-financial service companies that incessantly provided CSR reports during 2012-2014. Removing ST* stocks and companies missing relevant financial information, we retain 422 observations for each of the three years. CSR is provided by RKS, and all other data are extracted from Wind.

Variables

1) CSR: To measure corporate social performance, we use CSR index reports provided by RKS. RKS is an authorized third-party CSR rating agency that focuses on Chinese public companies. RKS created the MCT system to rate public companies based on weighted score of Macrocosm (30%), Content (50%) and Technology (20%). Chinese researchers generally recognize the credibility of RKS reports and RKS rating index are widely used in this field (Zhu 2011, Zhou 2012).

2) ROA: return on total assets. One of the most used measurement of financial performance is Tobin's Q. We don't use it here because Chinese stock market is immature and too volatile. The accounting-based ROA is a better measurement here compared to Tobin's Q (Yin et al. 2014)

3) unEBIT: EBIT margin with earning management effect removed. Considering that earning management skills are widely used in financial reporting, ROA may not be a good proxy of financial performance. We follow basic Jones model to eliminate the influence of earning management and use unEBIT as another measurement of financial

performance in contrast of ROA. unEBIT is calculated as follows:

$$\frac{TA_{i,t}}{Asset_{i,t-1}} = \alpha_0 \frac{1}{Asset_{i,t-1}} + \beta_1 \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{Asset_{i,t-1}}$$

$$DA = \frac{TA_{i,t}}{Asset_{i,t-1}} - (\widehat{\alpha_0} \frac{1}{Asset_{i,t-1}} + \widehat{\beta_0} \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + \widehat{\beta_2} \frac{PPE_{i,t}}{Asset_{i,t-1}})$$

$$unEBIT_{i,t} = \frac{EBIT_{i,t}}{Asset_{i,t}} - DA$$

TA = Net profit – Net cash flow from operating

$\triangle$ Sales = Current sales – Sales of previous year

PPE: property, plant & equipment

4) Salesgrow: sales growth rate, as proxy of growth. $\frac{\Delta Sales}{Sales_{t-1}}$

5) Control variables are selected with unidirectional backwards method. We choose the optimal subset of independent variables that derive largest p and smallest t values. Set significant level to be 0.1. Delete independent variables from OLS if its p value is larger than 0.1. the remaining independent variables, namely our control variables, are: nature, size, lev, vol, sensitivity, year.

Nature = 1 if government has control over 20% of the total shares; otherwise nature=0

Size = natural logarithm of Asset

Lev = Debt/Asset

Vol = 1 if the company voluntarily published CSR report for the year; otherwise vol =0.

Sensitivity = 1 if the company belongs to social performance sensitive industry, i.e. mining, food & beverage, metallurgy, chemicals, petro, coal, electricity, construction

materials, pharmacy, textile, tannery (Zhang 2012); otherwise sensitivity = 1

Year is a set of dummy variables. Y2014 = 1 if the observation is in year 2014, Y2013 if the observation is in year 2013, and Y2014 = Y2013 = Y2012 if the observation is in year 2012.

Table 1 Variables Overview

VARIABLES	NAME	EXPLANATION
EXPLAINED	CSR	CSR rating from RKS report
EXPLANATORY	ROA	Return on assets
	unEBIT	Calculated using Jone's Model, Regression on three years' panel data
	Salesgrow	Sales growth rate
CONTROL	nature	1: government has control over 20% of shares 0: else
	size	Ln(asset)
	lev	Debt/Asset
	vol	1: the firm voluntarily published CSR report for the year 0:else
	sensitivity	1: the firm is in CSR sensitive industry 0: else
	year	Y2014=1: year 2014 Y2013=1: year 2013 else: year 2012

Descriptive Statistics

Table 2. Descriptive Statistics of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
CSR	1,266	40.66367	12.1214	18.4788	87.94775
ROA	1,266	6.160008	5.891655	−61.8455	43.5657
unEBIT	1,266	8.210427	13.46849	−168.7932	52.0411
salesgrow	1,266	8.220638	24.79546	−70.3139	304.3258
size	1,266	23.37813	1.394155	20.3261	28.50877
leverage	1,266	54.19361	18.99516	5.723	103.7263

Table 3.　Pearson Correlation Matrix of Key Variables

	CSR	ROA	unEBIT	salesg~w	size	leverage	nature	Vol	sensit~y	Y2013	Y2014
CSR	1.0000										
ROA	0.0410	1.0000									
unEBIT	0.0693	0.0464	1.0000								
salesgrow	0.0069	0.2151	0.0250	1.0000							
size	0.4911	0.0075	0.0535	0.0636	1.0000						
leverage	0.0940	-0.3970	-0.0038	0.0686	0.4272	1.0000					
nature	0.1543	-0.0601	-0.0055	-0.0598	0.1759	-0.0422	1.0000				
Vol	-0.1048	-0.0692	-0.0544	0.0124	-0.3005	-0.0319	-0.1473	1.0000			
sensitivity	0.1723	0.0897	-0.0115	-0.0486	0.1155	-0.0622	0.0395	0.0056	1.0000		
Y2013	-0.0147	0.0100	-0.0090	0.0921	0.0008	0.0029	0.0000	-0.0126	-0.0000	1.0000	
Y2014	0.1318	-0.0533	0.0503	-0.1010	0.0556	-0.0003	0.0000	0.0214	-0.0000	-0.5000	1.0000

The mean of CSR is 40.66, indicating room for improvement. According to Table 2, there are some outliers in the distribution of ROA, unEBIT, salesgrow and leverage, so we replace the largest 1% and smallest 1% values.

Table 3 displays correlation coefficients of major variable. CSR is positively correlated with EBIT margin on 0.05 significant level (double) and ROA on 0.01 significant level (double). CSR is also significantly correlated with size, leverage, government control, whether the company voluntary reported social performance, industry sensitivity and year dummy. There is no perfect multicollinearity in key variables.

Methodology

Firstly, assuming homoscedasticity, we use OLS with year dummies to examine whether corporate financial performance influences social performance because we are interested in the sign of coefficients associated with Vol, leverage, size, sensitivity and nature. Then we adopt fixed effect transformation to do the robustness test.

1) Do following OLS regressions to examine how financial performance influence CSR

disclosure

$$CSR = \beta_0 + \beta_1 ROA + \beta_2 size + \beta_3 lev + \beta_4 nature + \beta_5 vol + \beta_6 sen + \beta_7 Year + \varepsilon \quad (1)$$

$$CSR = \beta_0 + \beta_1 unEBIT + \beta_2 size + \beta_3 lev + \beta_4 nature + \beta_5 vol + \beta_6 sen + \beta_7 Year + \varepsilon \quad (2)$$

$$CSR = \beta_0 + \beta_1 salesgrow + \beta_2 size + \beta_3 lev + \beta_4 nature + \beta_5 vol + \beta_6 sen + \beta_7 Year + \varepsilon \quad (3)$$

2) Test if quadratic relationship exists

$$CSR = \beta_0 + \beta_1 ROA + \beta_2 ROA^2 + \beta_3 size + \beta_4 lev + \beta_5 nature + \beta_6 vol + \beta_7 sen + \beta_8 Year + \varepsilon \quad (4)$$

$$CSR = \beta_0 + \beta_1 unEBIT + \beta_2 unEBIT^2 + \beta_3 size + \beta_4 lev + \beta_5 nature + \beta_6 vol + \beta_7 sen + \beta_8 Year + \varepsilon \quad (5)$$

$$CSR = \beta_0 + \beta_1 salesgrowth + \beta_2 salesgrowth^2 + \beta_3 size + \beta_4 lev + \beta_5 nature + \beta_6 vol + \beta_7 sen + \beta_8 Year + \varepsilon \quad (6)$$

3) To eliminate the impact of endogeneity & test if current year's financial performance influences next year's CSR disclosure, test inter-temporal effects with one-year lag.

$$CSR = g_0 + g_1 ROA_{t-1} + g_2 size + g_3 lev + g_4 nature + g_5 vol + g_6 sen + g_7 Year + \varepsilon \quad (7)$$

$$CSR = g_0 + g_1 unEBIT_{t-1} + g_2 size + g_3 lev + g_4 nature + g_5 vol + g_6 sen +$$

$$g_7 Year + \varepsilon \quad (8)$$

$$CSR = g_0 + g_1 salesgrow_{t-1} + g_2 size + g_3 lev + g_4 nature + g_5 vol + g_6 sen +$$

$$g_7 Year + \varepsilon \quad (9)$$

$$CSR = h_0 + h_1 ROA_{t-1} + h_2 ROA_{t-1}^2 + h_3 size + h_4 lev + h_5 nature + h_6 vol +$$

$$h_7 sen + g_8 Year + \varepsilon \quad (10)$$

$$CSR = h_0 + h_1 unEBIT_{t-1} + h_2 unEBIT_{t-1}^2 + h_3 size + h_4 lev + h_5 nature +$$

$$h_6 vol + h_7 sen + g_8 Year + \varepsilon \quad (11)$$

$$CSR = h_0 + h_1 salesgrow_{t-1} + h_2 salesgrow_{t-1}^2 + h_3 size + h_4 lev + h_5 nature +$$

$$h_6 vol + h_7 sen + g_8 Year + \varepsilon \quad (12)$$

4) Considering individual heterogeneity in our panel data, adopt FE transformation to do a robustness test.

$$C\ddot{S}R_{i,t} = \gamma_1 R\ddot{O}A_{i,t} + \gamma_2 s\ddot{i}ze_{i,t} + \gamma_3 l\ddot{e}v_{i,t} + \gamma_4 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (13)$$

$$C\ddot{S}R_{i,t} = \gamma_1 un\ddot{E}BIT_{i,t} + \gamma_2 s\ddot{i}ze_{i,t} + \gamma_3 l\ddot{e}v_{i,t} + \gamma_4 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (14)$$

$$C\ddot{S}R_{i,t} = \gamma_1 sales\ddot{g}row_{i,t} + \gamma_2 s\ddot{i}ze_{i,t} + \gamma_3 l\ddot{e}v_{i,t} + \gamma_4 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (15)$$

$$C\ddot{S}R_{i,t} = \gamma_1 R\ddot{O}A^2{}_{i,t} + \gamma_2 R\ddot{O}A_{i,t} + \gamma_3 s\ddot{i}ze_{i,t} + \gamma_4 l\ddot{e}v_{i,t} + \gamma_5 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (16)$$

$$C\ddot{S}R_{i,t} = \gamma_1 un\ddot{E}BIT^2{}_{i,t} + \gamma_2 un\ddot{E}BIT_{i,t} + \gamma_3 s\ddot{i}ze_{i,t} + \gamma_4 l\ddot{e}v_{i,t} + \gamma_5 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (17)$$

$$C\ddot{S}R_{i,t} = \gamma_1 sales\ddot{g}row^2{}_{i,t} + \gamma_2 sales\ddot{g}row_{i,t} + \gamma_3 s\ddot{i}ze_{i,t} + \gamma_4 l\ddot{e}v_{i,t} + \gamma_5 v\ddot{o}l_{i,t} + \ddot{u}_{i,t}$$

$$(18)$$

$$C\ddot{S}R_{i,t} = \gamma_1 R\ddot{O}A_{i,t-1} + \gamma_2 s\ddot{i}ze_{i,t} + \gamma_3 l\ddot{e}v_{i,t} + \gamma_4 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (19)$$

$$C\ddot{S}R_{i,t} = \gamma_1 un\ddot{E}BIT_{i,t-1} + \gamma_2 s\ddot{i}ze_{i,t} + \gamma_3 l\ddot{e}v_{i,t} + \gamma_4 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (20)$$

$$C\ddot{S}R_{i,t} = \gamma_1 sales\ddot{g}row_{i,t-1} + \gamma_2 s\ddot{i}ze_{i,t} + \gamma_3 l\ddot{e}v_{i,t} + \gamma_4 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (21)$$

$$C\ddot{S}R_{i,t} = \gamma_1 R\ddot{O}A^2_{i,t-1} + \gamma_2 R\ddot{O}A_{i,t-1} + \gamma_3 s\ddot{i}ze_{i,t} + \gamma_4 l\ddot{e}v_{i,t} + \gamma_5 v\ddot{o}l_{i,t} + \ddot{u}_{i,t} \quad (22)$$

$$C\ddot{S}R_{i,t} = \gamma_1 un\ddot{E}BIT^2_{i,t-1} + \gamma_2 un\ddot{E}BIT_{i,t-1} + \gamma_3 s\ddot{i}ze_{i,t} + \gamma_4 l\ddot{e}v_{i,t} + \gamma_5 v\ddot{o}l_{i,t} + \ddot{u}_{i,t}$$

(23)

$$C\ddot{S}R_{i,t} = \gamma_1 sales\ddot{g}row^2_{i,t-1} + \gamma_2 sales\ddot{g}row_{i,t-1} + \gamma_3 s\ddot{i}ze_{i,t} + \gamma_4 l\ddot{e}v_{i,t} + \gamma_5 v\ddot{o}l_{i,t} +$$

$$\ddot{u}_{i,t} \quad (24)$$

* $\ddot{y}_{i,t}$ denotes $\left(y_{i,t} - \bar{y}_i\right)$

Empirical Result

1) Empirical results for equation (1) ~ (3) are shown in App. 1-3 in appendix.

   There is no significant correlation between CSR and ROA, but on 0.1 significance level (double), CSR disclosure is positive correlated with EBIT margin. Since unEBIT serves as the proxy of profitability with earning management effect removed, we can say that current profitability has a positive influence on CSR disclosure. Social performance and current sales growth are not significantly correlated.

2) Empirical results for equation (4) ~ (6) are shown in App. 4-6 in appendix.

   Adding the quadratic terms does not change the conclusions we draw for profitability. Neither ROA square nor ROA is significantly correlated with CSR. unEBIT is

positively correlated with CSR on 0.05 significance level, but unEBIT square is not significant. The expectation of growth, however, show a quadratic effect. CSR is negatively correlated with sales growth square and positively correlated with sales growth. Critical value is around 26.90%. Namely, when current sales growth is below 26.90%, companies are more likely to fulfill social responsibility if sales growth increases. When current sales growth is above 26.90%, companies are less likely to fulfill CSR if sales continues growing.

3) Empirical results for equation (7) ~ (12) are shown in App. 7-12 in appendix. With one-year lag, we lose one third of observations, and therefore one-year dummy variable can be removed. For ROA, unEBIT and sales growth, no significant correlation exists between them and CSR. But the quadratic terms are negatively correlated with CSR on 0.1 significant level.

4) Empirical results for equation (13) ~ (24) are shown in App. 13-24 in appendix.

For current FE regressions, i.e. equation (13) ~ (18), the conclusions we draw in step 1) still hold except for equation (6). That CSR is significantly correlated with the quadratic term of sales growth no longer holds if we assume individual heteroscedasticity.

Equation (19) ~ (24) serve as robust test for inter-temporal effect. Inter-temporal effect doesn't exist under individual heteroscedasticity assumption as none of the explanatory variables is significant. Combining with the empirical result we get in step 3), we can

infer that the the seemingly significant quadratic terms are more of a coincidence. Profitability and growth of previous year have no influence on current year's social performance disclosure.

Conclusion

1) Profitability has a significant positive impact on CSR. Highly profitable firms usually have better social performance. Available fund hypothesis is verified here.

2)The expectation of growth has a quadratic effect. As sales growth gradually increases to a certain value (around 26.90% in our sample dataset) , the company's willingness to invest in CSR also increases. After sales growth reaches this critical point, companies are more and more reluctant to fulfill CSR as growth continues to increase. Before the critical point, available funds hypothesis dominates. Firms actively engage in social performance to distinguish themselves from other slow-growth firms and to reduce information-asymmetry. After the critical point, managerial opportunism hypothesis dominates. Managers take advantage of the strong performance to increase their own benefits and reduce CSR expenditure.

3) Profitability and growth of previous year have no influence on current year's social performance disclosure.

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Appendix

App. 1 Regression Result of equation (1)

Source	SS	df	MS		
Model	53157.7781	8	6644.72227		
Residual	132706.598	1,257	105.574064		
Total	185864.376	1,265	146.928361		

Number of obs	=	1,266
F(8, 1257)	=	62.94
Prob > F	=	0.0000
R-squared	=	0.2860
Adj R-squared	=	0.2815
Root MSE	=	10.275

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ROA	-.0207699	.0632716	-0.33	0.743	-.1448996	.1033598
size	4.639364	.2558149	18.14	0.000	4.137493	5.141235
leverage	-.0817649	.0194136	-4.21	0.000	-.1198516	-.0436782
nature	1.859479	.7808553	2.38	0.017	.3275558	3.391402
sensitivity	2.785197	.6691471	4.16	0.000	1.472428	4.097965
Vol	1.557658	.6922991	2.25	0.025	.1994689	2.915847
Y2013	1.242423	.7081483	1.75	0.080	-.1468598	2.631706
Y2014	3.20249	.7120757	4.50	0.000	1.805502	4.599477
_cons	-67.38828	5.442173	-12.38	0.000	-78.06503	-56.71154

App 2. Regression Result of equation (2)

Source	SS	df	MS		
Model	53433.4395	8	6679.17994		
Residual	132430.937	1,257	105.354763		
Total	185864.376	1,265	146.928361		

Number of obs	=	1,266
F(8, 1257)	=	63.40
Prob > F	=	0.0000
R-squared	=	0.2875
Adj R-squared	=	0.2830
Root MSE	=	10.264

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
unEBIT	5.129837	3.107858	1.65	0.099	-.9673224	11.227
size	4.60162	.2498451	18.42	0.000	4.11146	5.091779
leverage	-.0780999	.0173439	-4.50	0.000	-.112126	-.0440738
nature	1.923348	.7725297	2.49	0.013	.407758	3.438937
sensitivity	2.796908	.6680136	4.19	0.000	1.486363	4.107452
Vol	1.611233	.6917228	2.33	0.020	.254175	2.968292
Y2013	1.229462	.7072214	1.74	0.082	-.158002	2.616927
Y2014	3.162225	.7100407	4.45	0.000	1.76923	4.555221
_cons	-66.90937	5.432528	-12.32	0.000	-77.56719	-56.25155

App 3. Regression Result of equation (3)

Source	SS	df	MS			
Model	53147.6048	8	6643.4506	Number of obs	=	1,266
Residual	132716.771	1,257	105.582157	F(8, 1257)	=	62.92
				Prob > F	=	0.0000
				R-squared	=	0.2859
				Adj R-squared	=	0.2814
Total	185864.376	1,265	146.928361	Root MSE	=	10.275

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
salesgrow	-.0014377	.0134676	-0.11	0.915	-.0278591	.0249838
size	4.623166	.2504466	18.46	0.000	4.131827	5.114506
leverage	-.0788632	.0173609	-4.54	0.000	-.1129228	-.0448037
nature	1.889987	.7748414	2.44	0.015	.3698623	3.410112
sensitivity	2.772394	.6695884	4.14	0.000	1.45876	4.086028
Vol	1.567708	.6922219	2.26	0.024	.2096708	2.925746
Y2013	1.252551	.7086264	1.77	0.077	-.1376699	2.642772
Y2014	3.215465	.7116652	4.52	0.000	1.819282	4.611647
_cons	-67.31623	5.44062	-12.37	0.000	-77.98992	-56.64253

App 4. Regression Result of equation (4)

Source	SS	df	MS			
Model	53250.3454	9	5916.70504	Number of obs	=	1,266
Residual	132614.031	1,256	105.584419	F(9, 1256)	=	56.04
				Prob > F	=	0.0000
				R-squared	=	0.2865
				Adj R-squared	=	0.2814
Total	185864.376	1,265	146.928361	Root MSE	=	10.275

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ROA2	-.0055188	.0058941	-0.94	0.349	-.0170822	.0060446
ROA	.0664504	.1126093	0.59	0.555	-.1544727	.2873735
size	4.622825	.2564365	18.03	0.000	4.119734	5.125916
leverage	-.0827727	.0194444	-4.26	0.000	-.1209198	-.0446256
nature	1.882712	.7812877	2.41	0.016	.3499389	3.415484
sensitivity	2.836835	.6714486	4.22	0.000	1.51955	4.154119
Vol	1.583372	.6928775	2.29	0.022	.2240472	2.942697
Y2013	1.238239	.7081971	1.75	0.081	-.1511407	2.627619
Y2014	3.207296	.7121291	4.50	0.000	1.810203	4.60439
_cons	-67.16811	5.447517	-12.33	0.000	-77.85535	-56.48088

App 5. Regression Result of equation (5)

Source	SS	df	MS			
Model	53580.8498	9	5953.42776			
Residual	132283.526	1,256	105.321279			
Total	185864.376	1,265	146.928361			

Number of obs = 1,266
F(9, 1256) = 56.53
Prob > F = 0.0000
R-squared = 0.2883
Adj R-squared = 0.2832
Root MSE = 10.263

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
unEBIT2	21.59944	18.2573	1.18	0.237	-14.21873	57.41762
unEBIT	8.766951	4.371182	2.01	0.045	.191327	17.34257
size	4.607872	.2498613	18.44	0.000	4.117681	5.098063
leverage	-.0780199	.0173412	-4.50	0.000	-.1120409	-.0439989
nature	1.922524	.7724072	2.49	0.013	.407173	3.437874
sensitivity	2.788947	.6679413	4.18	0.000	1.478543	4.09935
Vol	1.600324	.6916743	2.31	0.021	.2433599	2.957289
Y2013	1.280396	.7084185	1.81	0.071	-.1094175	2.67021
Y2014	3.248338	.7136495	4.55	0.000	1.848261	4.648415
_cons	-67.30525	5.441962	-12.37	0.000	-77.98159	-56.62891

App 6. Regression Result of equation (6)

Source	SS	df	MS			
Model	53932.4073	9	5992.48969			
Residual	131931.969	1,256	105.041377			
Total	185864.376	1,265	146.928361			

Number of obs = 1,266
F(9, 1256) = 57.05
Prob > F = 0.0000
R-squared = 0.2902
Adj R-squared = 0.2851
Root MSE = 10.249

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
salesgrow2	-.0009142	.0003344	-2.73	0.006	-.0015703	-.000258
salesgrow	.0312785	.0179919	1.74	0.082	-.0040189	.0665759
size	4.546801	.2513618	18.09	0.000	4.053666	5.039937
leverage	-.0747981	.0173801	-4.30	0.000	-.1088953	-.0407008
nature	1.900751	.7728646	2.46	0.014	.3845034	3.416999
sensitivity	2.771337	.6678715	4.15	0.000	1.46107	4.081604
Vol	1.675856	.6915796	2.42	0.016	.319077	3.032634
Y2013	1.14468	.7079102	1.62	0.106	-.2441364	2.533497
Y2014	3.187831	.7099123	4.49	0.000	1.795086	4.580576
_cons	-65.51199	5.466666	-11.98	0.000	-76.23679	-54.78719

App 7. Regression Result of equation (7)

Source	SS	df	MS			
Model	33400.4597	7	4771.49425	Number of obs	=	844
Residual	87985.9088	836	105.246302	F(7, 836)	=	45.34
				Prob > F	=	0.0000
				R-squared	=	0.2752
				Adj R-squared	=	0.2691
Total	121386.369	843	143.99332	Root MSE	=	10.259

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ROA	.0110399	.074681	0.15	0.883	-.1355445	.1576243
size	4.583188	.3126914	14.66	0.000	3.969436	5.196941
leverage	-.0793418	.0238437	-3.33	0.001	-.1261425	-.0325412
nature	1.711144	.9536611	1.79	0.073	-.1607069	3.582996
sensitivity	2.314737	.8213484	2.82	0.005	.70259	3.926885
vol	.9477458	.8456213	1.12	0.263	-.7120444	2.607536
Y2013	-1.987152	.7079633	-2.81	0.005	-3.376747	-.5975577
_cons	-62.27177	6.702622	-9.29	0.000	-75.42772	-49.11583

App 8. Regression Result of equation (8)

Source	SS	df	MS			
Model	33610.5716	7	4801.51024	Number of obs	=	844
Residual	87775.7969	836	104.994972	F(7, 836)	=	45.73
				Prob > F	=	0.0000
				R-squared	=	0.2769
				Adj R-squared	=	0.2708
Total	121386.369	843	143.99332	Root MSE	=	10.247

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
unEBIT	4.974178	3.497166	1.42	0.155	-1.890079	11.83844
size	4.579147	.3071994	14.91	0.000	3.976175	5.18212
leverage	-.0796991	.0216025	-3.69	0.000	-.1221005	-.0372976
nature	1.74091	.9457936	1.84	0.066	-.1154994	3.597319
sensitivity	2.310172	.8174312	2.83	0.005	.7057137	3.914631
vol	.9944877	.8442953	1.18	0.239	-.6626999	2.651675
Y2013	-1.962796	.7068415	-2.78	0.006	-3.350189	-.5754034
_cons	-62.14117	6.691778	-9.29	0.000	-75.27583	-49.00651

App 9. Regression Result of equation (9)

Source	SS	df	MS		
Model	33406.2343	7	4772.31918		
Residual	87980.1343	836	105.239395		
Total	121386.369	843	143.99332		

Number of obs	=	844
F(7, 836)	=	45.35
Prob > F	=	0.0000
R-squared	=	0.2752
Adj R-squared	=	0.2691
Root MSE	=	10.259

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
salesgrow	-.0043177	.015588	-0.28	0.782	-.0349139	.0262784
size	4.597198	.3080893	14.92	0.000	3.992478	5.201917
leverage	-.0807611	.0216144	-3.74	0.000	-.1231859	-.0383362
nature	1.678847	.9478312	1.77	0.077	-.181561	3.539256
sensitivity	2.323253	.8183422	2.84	0.005	.717006	3.929499
vol	.9488448	.8448927	1.12	0.262	-.7095154	2.607205
Y2013	-1.993709	.7084692	-2.81	0.005	-3.384296	-.6031217
_cons	-62.38202	6.704292	-9.30	0.000	-75.54124	-49.2228

App 10. Regression Result of equation (10)

Source	SS	df	MS		
Model	33736.6557	8	4217.08197		
Residual	87649.7128	835	104.969716		
Total	121386.369	843	143.99332		

Number of obs	=	844
F(8, 835)	=	40.17
Prob > F	=	0.0000
R-squared	=	0.2779
Adj R-squared	=	0.2710
Root MSE	=	10.245

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ROA2	-.011682	.0065276	-1.79	0.074	-.0244944	.0011304
ROA	.2208305	.1389403	1.59	0.112	-.0518827	.4935437
size	4.548814	.3128704	14.54	0.000	3.934709	5.162919
leverage	-.0816267	.0238466	-3.42	0.001	-.128433	-.0348204
nature	1.799449	.9536844	1.89	0.060	-.0724518	3.671349
sensitivity	2.422498	.8224756	2.95	0.003	.8081356	4.036861
vol	1.015516	.845358	1.20	0.230	-.6437606	2.674792
Y2013	-1.975413	.7070629	-2.79	0.005	-3.363242	-.5875834
_cons	-62.01042	6.695402	-9.26	0.000	-75.15221	-48.86862

App 11. Regression Result of equation (11)

Source	SS	df	MS		Number of obs	=	844
					F(8, 835)	=	40.57
Model	33977.4396	8	4247.17995		Prob > F	=	0.0000
Residual	87408.929	835	104.681352		R-squared	=	0.2799
					Adj R-squared	=	0.2730
Total	121386.369	843	143.99332		Root MSE	=	10.231

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
unEBIT2	40.11901	21.43038	1.87	0.062	-1.944747	82.18276
unEBIT	12.56537	5.351317	2.35	0.019	2.06176	23.06899
size	4.593062	.3068303	14.97	0.000	3.990813	5.195312
leverage	-.0798636	.0215704	-3.70	0.000	-.1222022	-.0375251
nature	1.793913	.9448043	1.90	0.058	-.0605578	3.648383
sensitivity	2.249674	.8168489	2.75	0.006	.6463557	3.852993
vol	1.028633	.8432307	1.22	0.223	-.6264676	2.683734
Y2013	-2.056953	.7075749	-2.91	0.004	-3.445787	-.6681183
_cons	-62.8663	6.692994	-9.39	0.000	-76.00337	-49.72923

App 12. Regression Result of equation (12)

Source	SS	df	MS		Number of obs	=	844
					F(8, 835)	=	40.35
Model	33843.6208	8	4230.45261		Prob > F	=	0.0000
Residual	87542.7477	835	104.841614		R-squared	=	0.2788
					Adj R-squared	=	0.2719
Total	121386.369	843	143.99332		Root MSE	=	10.239

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
salesgrow2	-.0007188	.0003519	-2.04	0.041	-.0014096	-.0000281
salesgrow	.028226	.0222695	1.27	0.205	-.0154848	.0719368
size	4.534991	.309011	14.68	0.000	3.928462	5.141521
leverage	-.0777796	.0216228	-3.60	0.000	-.1202211	-.0353381
nature	1.692652	.9460623	1.79	0.074	-.1642875	3.549592
sensitivity	2.315022	.8168041	2.83	0.005	.7117912	3.918252
vol	1.045403	.8446184	1.24	0.216	-.6124222	2.703227
Y2013	-1.890615	.7089281	-2.67	0.008	-3.282106	-.4991248
_cons	-61.05175	6.72323	-9.08	0.000	-74.24816	-47.85533

App 13. Regression Result of equation (13)

```
Fixed-effects (within) regression          Number of obs     =      1,266
Group variable: ID                         Number of groups  =        422

R-sq:                                      Obs per group:
    within  = 0.1348                                   min =          3
    between = 0.2609                                   avg =        3.0
    overall = 0.2490                                   max =          3

                                           F(4,840)          =      32.72
corr(u_i, Xb)  = -0.4561                   Prob > F          =     0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ROA	-.0761584	.0512235	-1.49	0.137	-.1766995	.0243828
size	8.339975	.7336668	11.37	0.000	6.899939	9.78001
leverage	-.0477292	.0288144	-1.66	0.098	-.1042858	.0088274
Vol	.578824	.7835211	0.74	0.460	-.959065	2.116713
_cons	-151.4074	16.882	-8.97	0.000	-184.5433	-118.2715
sigma_u	11.278465					
sigma_e	3.8324066					
rho	.89648865	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(421, 840) = 20.20          Prob > F = 0.0000
```

App 14. Regression Result of equation (14)

```
R-sq:                                      Obs per group:
    within  = 0.1360                                   min =          3
    between = 0.2619                                   avg =        3.0
    overall = 0.2501                                   max =          3

                                           F(4,840)          =      33.06
corr(u_i, Xb)  = -0.4444                   Prob > F          =     0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
unEBIT	2.649076	1.440329	1.84	0.066	-.1779905	5.476144
size	8.186991	.7324979	11.18	0.000	6.74925	9.624732
leverage	-.040526	.0282201	-1.44	0.151	-.0959161	.0148641
Vol	.6979221	.7826973	0.89	0.373	-.83835	2.234194
_cons	-148.7373	16.8898	-8.81	0.000	-181.8885	-115.5861
sigma_u	11.19632					
sigma_e	3.8297424					
rho	.89525457	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(421, 840) = 20.19          Prob > F = 0.0000
```

App 15. Regression Result of equation (15)

```
R-sq:                                           Obs per group:
     within  = 0.1337                                      min =           3
     between = 0.2606                                      avg =         3.0
     overall = 0.2487                                      max =           3

                                                F(4,840)         =       32.42
corr(u_i, Xb)  = -0.4553                        Prob > F         =      0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
salesgrow	-.0071344	.0065909	-1.08	0.279	-.0200711	.0058022
size	8.278134	.7324238	11.30	0.000	6.840538	9.715729
leverage	-.0358179	.0284136	-1.26	0.208	-.0915879	.0199521
Vol	.6552648	.7832051	0.84	0.403	-.882004	2.192534
_cons	-151.0432	16.88869	-8.94	0.000	-184.1921	-117.8942
sigma_u	11.275684					
sigma_e	3.8347722					
rho	.89632826	(fraction of variance due to u_i)				

F test that all u_i=0: F(421, 840) = 20.17   Prob > F = 0.0000

App 16. Regression Result of equation (16)

```
R-sq:                                           Obs per group:
     within  = 0.1363                                      min =           3
     between = 0.2620                                      avg =         3.0
     overall = 0.2501                                      max =           3

                                                F(5,839)         =       26.48
corr(u_i, Xb)  = -0.4517                        Prob > F         =      0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ROA2	.0048567	.0040211	1.21	0.227	-.0030359	.0127494
ROA	-.1348211	.0705793	-1.91	0.056	-.2733539	.0037116
size	8.351272	.7335261	11.39	0.000	6.91151	9.791033
leverage	-.0536007	.0292138	-1.83	0.067	-.1109414	.00374
Vol	.6193905	.7840269	0.79	0.430	-.919494	2.158275
_cons	-151.3167	16.87756	-8.97	0.000	-184.4439	-118.1895
sigma_u	11.242192					
sigma_e	3.8313604					
rho	.89594019	(fraction of variance due to u_i)				

F test that all u_i=0: F(421, 839) = 20.21   Prob > F = 0.0000

App 17. Regression Result of equation (17)

```
R-sq:                                              Obs per group:
     within  = 0.1369                                     min =          3
     between = 0.2615                                     avg =        3.0
     overall = 0.2498                                     max =          3

                                                   F(5,839)        =      26.61
corr(u_i, Xb)  = -0.4398                           Prob > F        =     0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
unEBIT2	-7.538197	8.133122	-0.93	0.354	-23.50185	8.425458
unEBIT	1.419964	1.957927	0.73	0.469	-2.423046	5.262975
size	8.129641	.735168	11.06	0.000	6.686656	9.572625
leverage	-.040109	.028226	-1.42	0.156	-.0955109	.0152929
Vol	.6594707	.7838616	0.84	0.400	-.8790893	2.198031
_cons	-147.3373	16.95862	-8.69	0.000	-180.6236	-114.051
sigma_u	11.170774					
sigma_e	3.8300637					
rho	.8948096	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(421, 839) = 20.18                 Prob > F = 0.0000
```

App 18. Regression Result of equation (18)

```
R-sq:                                              Obs per group:
     within  = 0.1339                                     min =          3
     between = 0.2602                                     avg =        3.0
     overall = 0.2483                                     max =          3

                                                   F(5,839)        =      25.95
corr(u_i, Xb)  = -0.4580                           Prob > F        =     0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
salesgrow2	.000072	.0001666	0.43	0.666	-.000255	.000399
salesgrow	-.0097624	.0089716	-1.09	0.277	-.0273718	.0078471
size	8.308872	.7362255	11.29	0.000	6.863812	9.753932
leverage	-.0358955	.0284279	-1.26	0.207	-.0916937	.0199028
Vol	.6603972	.7836746	0.84	0.400	-.8777959	2.19859
_cons	-151.7768	16.982	-8.94	0.000	-185.109	-118.4446
sigma_u	11.296486					
sigma_e	3.8366302					
rho	.89658049	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(421, 839) = 20.03                 Prob > F = 0.0000
```

App 19. Regression Result of equation (19)

```
R-sq:                                           Obs per group:
    within  = 0.1040                                    min =           2
    between = 0.2491                                    avg =         2.0
    overall = 0.2420                                    max =           2

                                                F(4,418)        =       12.13
corr(u_i, Xb)   = -0.4849                        Prob > F        =      0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ROA	-.0480037	.0670938	-0.72	0.475	-.1798871	.0838796
size	8.447973	1.250523	6.76	0.000	5.989876	10.90607
leverage	-.01052	.0396698	-0.27	0.791	-.0884972	.0674571
vol	.8155193	1.295238	0.63	0.529	-1.730473	3.361512
_cons	-154.7103	28.77223	-5.38	0.000	-211.2666	-98.154
sigma_u	11.656513					
sigma_e	3.28367					
rho	.92647808	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(421, 418) = 18.83              Prob > F = 0.0000
```

App 20. Regression Result of equation (20)

```
R-sq:                                           Obs per group:
    within  = 0.1083                                    min =           2
    between = 0.2503                                    avg =         2.0
    overall = 0.2433                                    max =           2

                                                F(4,418)        =       12.69
corr(u_i, Xb)   = -0.4708                        Prob > F        =      0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
unEBIT	2.555351	1.616739	1.58	0.115	-.6226002	5.733303
size	8.271869	1.247319	6.63	0.000	5.820069	10.72367
leverage	-.0054051	.0387355	-0.14	0.889	-.0815458	.0707356
vol	.8521836	1.288972	0.66	0.509	-1.681492	3.385859
_cons	-151.202	28.74386	-5.26	0.000	-207.7025	-94.70149
sigma_u	11.545589					
sigma_e	3.2759054					
rho	.92549196	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(421, 418) = 18.88              Prob > F = 0.0000
```

App 21. Regression Result of equation (21)

```
R-sq:                                            Obs per group:
    within  = 0.1030                                 min =          2
    between = 0.2494                                 avg =        2.0
    overall = 0.2423                                 max =          2

                                                 F(4,418)       =      12.00
corr(u_i, Xb)  = -0.4802                         Prob > F       =     0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
salesgrow	.0010756	.0076128	0.14	0.888	-.0138886	.0160398
size	8.370603	1.257081	6.66	0.000	5.899615	10.84159
leverage	-.0048493	.0388633	-0.12	0.901	-.0812412	.0715426
vol	.8777116	1.293026	0.68	0.498	-1.663933	3.419356
_cons	-153.5491	28.96999	-5.30	0.000	-210.4941	-96.60404
sigma_u	11.618991					
sigma_e	3.2856016					
rho	.92595703	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(421, 418) = 18.81              Prob > F = 0.0000
```

App 22. Regression Result of equation (22)

```
R-sq:                                            Obs per group:
    within  = 0.1041                                 min =          2
    between = 0.2493                                 avg =        2.0
    overall = 0.2422                                 max =          2

                                                 F(5,417)       =       9.69
corr(u_i, Xb)  = -0.4851                         Prob > F       =     0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ROA2	.0009364	.0053668	0.17	0.862	-.0096131	.0114858
ROA	-.0582404	.0891879	-0.65	0.514	-.2335542	.1170734
size	8.462248	1.254646	6.74	0.000	5.996029	10.92847
leverage	-.0113254	.0399832	-0.28	0.777	-.0899191	.0672683
vol	.8460525	1.308499	0.65	0.518	-1.726023	3.418128
_cons	-155.007	28.85582	-5.37	0.000	-211.728	-98.28602
sigma_u	11.656408					
sigma_e	3.2874849					
rho	.92631851	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(421, 417) = 18.73              Prob > F = 0.0000
```

App 23. Regression Result of equation (23)

```
R-sq:                                          Obs per group:
    within  = 0.1100                                  min =           2
    between = 0.2496                                  avg =         2.0
    overall = 0.2428                                  max =           2

                                               F(5,417)         =       10.31
corr(u_i, Xb)  = -0.4669                       Prob > F         =      0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
unEBIT2	-8.480689	9.267502	-0.92	0.361	-26.69753	9.736155
unEBIT	.936336	2.396875	0.39	0.696	-3.775128	5.6478
size	8.219138	1.248892	6.58	0.000	5.76423	10.67405
leverage	-.0058264	.0387458	-0.15	0.881	-.0819878	.070335
vol	.7730104	1.292123	0.60	0.550	-1.766876	3.312897
_cons	-149.8391	28.788	-5.20	0.000	-206.4268	-93.25145

sigma_u	11.523662				
sigma_e	3.2765428				
rho	.92520245	(fraction of variance due to u_i)			

```
F test that all u_i=0: F(421, 417) = 18.80              Prob > F = 0.0000
```

App 24. Regression Result of equation (24)

```
R-sq:                                          Obs per group:
    within  = 0.1066                                  min =           2
    between = 0.2508                                  avg =         2.0
    overall = 0.2438                                  max =           2

                                               F(5,417)         =        9.95
corr(u_i, Xb)  = -0.4686                       Prob > F         =      0.0000
```

CSR	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
salesgrow2	-.000221	.0001701	-1.30	0.195	-.0005554	.0001133
salesgrow	.0110275	.0107945	1.02	0.308	-.0101908	.0322459
size	8.249034	1.259527	6.55	0.000	5.773221	10.72485
leverage	-.0054484	.0388341	-0.14	0.888	-.0817834	.0708866
vol	.9801413	1.294366	0.76	0.449	-1.564153	3.524436
_cons	-150.6692	29.03089	-5.19	0.000	-207.7343	-93.60404

sigma_u	11.525984				
sigma_e	3.2828995				
rho	.92496172	(fraction of variance due to u_i)			

```
F test that all u_i=0: F(421, 417) = 18.73              Prob > F = 0.0000
```