Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Corporate Social Responsibility, Stakeholder Risk, and Idiosyncratic Volatility

Rocco Ciciretti
DEF and **CEIS** – Tor Vergata, and **RCEA** – Rimini

Staffetta SRI delle Università - Settimana SRI
Novembre 6, 2014

My co-Authors:

Becchetti Leonardo, University of Roma *Tor Vergata*
Iftekhar Hasan, *Fordam* Univerisity

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

The Idea of the Paper

- Explore the nexus between Idiosyncratic volatility (*IV*) and Corporate social responsibility (CSR)

- *IV* it is positively correlated with aggregate *Net CSR*, and it is negatively correlated with a CSR specific (*Stakeholder*) risk factor.

- Our results document that the above nexus may contribute to explain the underpricing puzzle of the *IV* literature, while helping to better understand what *IV* actually measures.

Rocco Ciciretti
DEF - University of Roma Tor Vergata

Dataset

- Firm level: US listed firms
- Time period: 1992 - 2010
- I/B/E/S database: forecast and actual Earnings Per Share
- RiskMetrics-KLD: CSR scores
- COMPUSTAT: firm characteristics

Total number of observations are 25,033 with 4383 unique companies.

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Dependent Variables

Idiosyncratic Volatility measures the quality of firm specific information, measured as the component of stock return variability not explained by market portfolio stock returns.

IV is defined as follows: $\log\left(\frac{1-R_{i,T}^2}{R_{i,T}^2}\right)$

where $R_{i,T}^2$ captures the percentage of the variation in the weekly (t) return of firm i explained by the variation in the market (m) and industry (s) returns from the following estimation model:

$$r_{i,s,t} = \alpha_i + \beta_{i,m} r_{m,t} + \beta_{i,s} r_{s,t} + \varepsilon_{i,s,t}$$

where $r_{i,s,t}$ is the firm i in industry s week (t) return; $r_{m,t}$ is the market (m) weekly return; $r_{s,t}$ is the industry (s) weekly return.

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Independent Variables (1)

StakeholderRisk is the sum of the following RiskMetrics-KLD items: COM-con-A, COM-con-B, COM-con-C, COM-con-D, COM-con-X, DIV-con-A, DIV-con-X, EMP-con-B, EMP-con-X, ENV-con-X, HUM-con-D, HUM-con-F, HUM-con-G, HUM-con-X, PRO-con-A, PRO-con-D, PRO-con-E, PRO-con-X

NetCSR variables is the difference between all strengths and concerns in the RiskMetrics-KLD items

Size is proxied by firm total assets (in million dollars)

Leverage is the ratio between firm total debt and its equity book value

R&DtoAsset is the ratio between R&D expenditures and total assets

Year Dummies for time control

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Independent Variables (2)

The Median Absolute Forecast Error (*MAFE*) across firm i is defined as the median of the following equation:

$$AFE_{T,h}^{i,j} = \frac{|\mathrm{E}[EPS]_{T,h}^{i,j} - EPS_T^i|}{P_{T-1}^i}$$

where $AFE_{T,h}^{i,j}$ is the absolute difference between the earnings per share for firm i forecasted by analyst j in the fiscal year T at h distance (in days) from the release date - $\mathrm{E}[EPS]_{T,h}^{i,j}$ - and the released earnings per share - EPS_T^i - scaled by the share price at the end of the previous year - P_{T-1}^i.

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Research Hypothesis

CSR implies a departure from standard profit maximization toward a more complex strategy of stakeholder satisfaction.

This implies that CSR companies have reduced flexibility in responding to negative productivity shocks with a reduction of the well-being of the mentioned stakeholders in order to maintain their target earnings.

The consequence is that their earnings are less predictable or less likely to follow stock market dynamics.

Our prediction is that CSR should increase *IV*, even though this does not make CSR stocks riskier, given that CSR offers protection from a specific form of risk related to conflicts with stakeholders.

$H_{A(1)}$: ***StakeholderRisk*** has a negative impact on ***IV***.

$H_{A(2)}$: ***NetCSR*** has a positive impact on ***IV***.

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Estimation Strategy

$$IV_{i,T} = \alpha_0 + \alpha_1 StakeholderRisk_{i,T-1} + \alpha_2 Size_{i,T-1} + \alpha_3 Leverage_{i,T-1} + \alpha_4 MAFE_{i,T-1}$$
$$+ \alpha_5 R\&DtoAsset_{i,T-1} + \alpha_6 NetCSR_{i,T-1} + \sum_{l}^{19} \beta_l \, DYear_l + u_i + \varepsilon_{i,T}$$

We control for firm fixed effects which capture all firm specific time invariant components and time effects ($DYear$) to control for time increasing trend.

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Rocco Ciciretti
SEFeMEQ Dept.

Descriptive Statistics

	Obs	Mean	St. Dev.	Min	Max
IV	25,033	.7843	1.19	-6.4230	14.4598
StakeholderRisk	21,052	.5826	1.11	0	11
MAFE	9,349	.0271	.17	0	9.2648
Size	23,069	10847.4	64,317.33	.9790	2,187,631
Leverage	22,998	.88	15.45	0	1,784.17
R&DtoAsset	23,069	.035	.10	0	7.79
NetCSR	25,033	-.51	2.08	-14	13

In the regression model ***Size*** is used (divided by 1,000,000).

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Results (Main Specification)

	(1)	(2)	(3)	(4)
StakeholderRisk	-0.223*** *(.0071)*	-0.238*** *(.0105)*	-0.224*** *(.0104)*	
Size	-0.001*** *(.0001)*	-0.001*** *(.0002)*	-0.001*** *(.0002)*	-0.003*** *(.0002)*
Leverage	0.002*** *(.0004)*	0.001** *(.0004)*	0.001** *(.0004)*	0.002*** *(.0005)*
MAFE		0.293*** *(.0789)*	0.307*** *(.0778)*	0.360*** *(.0806)*
R&DtoAsset			1.959*** *(.1343)*	2.007*** *(.1279)*
NetCSR				0.063*** *(.0051)*
Year Dummies	YES	YES	YES	YES
Constant	-2.359*** *(.4694)*	0.693*** *(.1014)*	0.617*** *(.1002)*	0.917*** *(.1501)*
Obs	19,435	7,825	7,825	8,908
F-test Fixed eff. (p-value)	21.54 (0.00)	48.71 (0.00)	52.11 (0.00)	525.6 (0.00)
F-test Good fit (p-value)	71.86 (0.00)	138.38 (0.00)	153.91 (0.00)	90.60 (0.00)

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Results (subsample split 1992-2005)

	(1)	(2)	(3)	(4)
StakeholderRisk	-0.220*** *(.0084)*	-0.251*** *(.0129)*	-0.227*** *(.0127)*	
Size	-0.001*** *(.0001)*	-0.001*** *(.0003)*	-0.001*** *(.0003)*	-0.004*** *(.0003)*
Leverage	0.002*** *(.0004)*	0.001** *(.0004)*	0.001** *(.0004)*	0.003*** *(.0005)*
MAFE		0.256*** *(.0750)*	0.275*** *(.0729)*	0.352*** *(.0767)*
R&DtoAsset			2.168*** *(.1416)*	2.312*** *(.1390)*
NetCSR				0.055*** *(.0067)*
Year Dummies	YES	YES	YES	YES
Constant	0.354*** *(.0795)*	0.671*** *(.0169)*	0.562*** *(.0179)*	1.186*** *(.2021)*
Obs	10,484	4,129	4,129	4,397
F-test Fixed eff. (p-value)	70.66 (0.00)	186.18 (0.00)	206.97 (0.00)	196.30 (0.00)
F-test Good fit (p-value)	125.91 (0.00)	128.94 (0.00)	155.87 (0.00)	86.53 (0.00)

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Results (subsample split 2006-2010)

	(1)	(2)	(3)	(4)
StakeholderRisk	-0.229*** *(.0125)*	-0.221*** *(.0177)*	-0.217*** *(.0176)*	
Size	-0.002*** *(.0002)*	-0.001*** *(.0003)*	-0.001*** *(.0003)*	-0.004*** *(.0003)*
Leverage	0.014 *(.0113)*	0.003 *(.0184)*	0.014 *(.0186)*	0.048** *(.01849)*
MAFE		1.054** *(.4234)*	1.052** *(.4223)*	0.465 *(.2878)*
R&DtoAsset			1.317*** *(.2998)*	1.399*** *(.2542)*
NetCSR				0.069*** (.0077)
Year Dummies	YES	YES	YES	YES
Constant	-1.483*** *(.4385)*	0.403*** *(.2297)*	0.668** *(.2292)*	0.897*** *(.2267)*
Obs	8,951	3,696	3,696	4,511
F-test Fixed eff. (p-value)	9.42 (0.00)	15.32 (0.00)	15.67 (0.00)	23.55 (0.00)
F-test Good fit (p-value)	36.65 (0.00)	43.83 (0.00)	39.92 (0.00)	33.10 (0.00)

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Results (subsample of large companies)

	(1)	(2)	(3)	(4)
StakeholderRisk	-0.130*** *(.0074)*	-0.147*** *(.0109)*	-0.147*** *(.0109)*	
Size	-0.001*** *(.0001)*	-0.001*** *(.0002)*	-0.001*** *(.0002)*	-0.002*** *(.0002)*
Leverage	0.002*** *(.0004)*	0.001*** *(.0004)*	0.001*** *(.0004)*	0.002*** *(.0004)*
MAFE		0.267*** *(.0799)*	0.268*** *(.0799)*	0.307*** *(.0817)*
R&DtoAsset			0.269 *(.4140)*	-1.110** *(.4165)*
NetCSR				0.058*** *(.0053)*
Year Dummies	YES	YES	YES	YES
Constant	-1.451** *(.5682)*	0.377*** *(.0795)*	0.374*** *(.0797)*	0.403*** *(.0822)*
Obs	10,586	4,641	4,641	4,919
F-test Fixed eff. (p-value)	10.06 (0.00)	33.84 (0.00)	33.80 (0.00)	35.66 (0.00)
F-test Good fit (p-value)	28.27 (0.00)	52.73 (0.00)	44.01 (0.00)	35.78 (0.00)

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Results (subsample of small companies)

	(1)	(2)	(3)	(4)
StakeholderRisk	-0.023 *(.0234)*	-0.111** *(.4048)*	-0.095** *(-0404)*	
Size	-0.679*** *(.0255)*	-0.665*** *(.431)*	-0.602*** *(.0451)*	-0.598*** *(.0436)*
Leverage	0.057*** *(.0080)*	0.016 *(.0120)*	0.019 *(.0120)*	0.035** *(.0126)*
MAFE		0.577** *(.2223)*	0.556** *(.2216)*	0.309 *(.1918)*
R&DtoAsset			0.675*** *(.1461)*	0.535*** *(.1411)*
NetCSR				0.022** *(.0113)*
Year Dummies	YES	YES	YES	YES
Constant	1.062 *(.7180)*	1.439*** *(.0307)*	1.353*** *(.0358)*	1.425*** *(.0338)*
Obs	8,849	3,184	3,184	3,989
F-test Fixed eff. (p-value)	15.32 (0.00)	46.71 (0.00)	47.77 (0.00)	43.03 (0.00)
F-test good.fit (p-value)	34.47 (0.00)	68.49 (0.00)	59.41 (0.00)	47.41 (0.00)

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Conclusion

- **The interest on the determinants of *Idiosyncratic Volatility* has recently grown in parallel with the discovery that ex ante exposure to *IV* is correlated with ex post lower stock returns. A likely rationale is that the *IV* variable is correlated to some unobserved risk factors.**

- **We document that *IV* is negatively correlated with a main CSR risk factor (*StakeholderRisk*) and positively related with *NetCSR*.**

- **These CSR dimensions may account for part of the unobservable risk factor which is behind the underperformance of high *IV* portfolios.**

- **These findings are consistent with our theoretical hypothesis that CSR implies lower flexibility in responding to negative productivity shocks with a reduction of stakeholders' well-being making returns of CSR stocks less predictable (or less likely to follow stock market dynamics).**

Rocco Ciciretti
DEF - University of Roma Tor Vergata

event-studies.blogspot.com

Thank you

Comments are welcome