KAIST COLLEGE OF BUSINESS
Graduate School of Green Growth

Performance of Socially Responsible Investment after adjusting Firm Size

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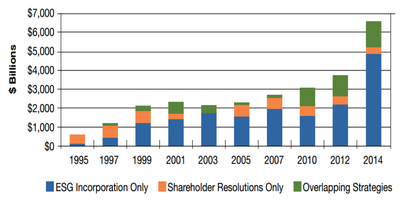
RESEARCH BACKGROUND

Introduction

. Corporate Social Responsibility (CSR)
: In recent years, CSR has emerged as a dominant theme in the business world. As CSR becomes a mainstream business activity, it is being promoted as a core area of management, next to marketing, accounting, or finance(Crane et al., 2008).

- Socially Responsible Investment (SRI)
  - Positive screening : Proactively investing in companies with good ESG practices
  - Exclusionary screening : Avoiding or divesting from companies with poor ESG practices
  - Full ESG integration : Explicitly including ESG risks and opportunities into all processes of investment analysis, decision-making, and portfolio construction
  - Thematic investing : Targeting specific themes such as climate change, water or human rights



SOURCE: US SIF Foundation.

Motivation

- Critics on Korean SRI funds
: Large firm tends to receive better ESG evaluation. Then SRI funds would be indifferent to conventional funds. About 80% of the stocks invested frequently by SRI funds are incorporated into KOSPI 200.
- Existing Literatures about SRI
: Comparing the performance of Socially responsible investments and conventional investments. They did not consider high correlation btw ESG factor and Firm size.

Article of SRI funds

LITERATURE REVIEW

Performance of SRI

- Rate of Return
: Whether paying a price for investing in socially responsible stock or obtaining superior returns
- Theory
:

Green Investor → Higher Demand on SRI → Low Return

- Empirical
  - No difference from conventional funds
    - Galema et al. (2008): risk-adjusted performance of SRI stocks is not significantly different from zero
    - Kurtz(1997), statman (2000), shank et al. (2005), Bauer (2005), Renneboog (2008)
  - Underperform
    - Hong and Kacperczyk (2007): Sin stocks have higher expected returns
    - El Ghoul et al. (2011): SRI firm experience lower equity cost
    - Belghitar et al. (2014): ethical investors pay a price for investing ethically
  - Higher excess return
    - Kempf and Osthoff (2007): abnormal return with simple long&short strategy
    - Chan et al. (2014): significant excess returns for our environmentally-friendly firms and their IPOs and SEOs
  - No one consider correlation between CSR score and firm size

- Risk
: Commonly measured by volatility of return
- Theory
:

Few Investor on non-SRI → Low Risk sharing Opportunity

- Empirical
  - Consensus on lower risk of socially responsible stocks
  - Lee and Faff (2009) : lower idiosyncratic risk
  - Nofsinger and Varma(2013): SRI funds outperform during period of market crises
  - Kim et al (2014) : mitigating effect of CSR on crash risk
  - No one consider correlation between CSR score and firm size

CSR & Firm Size

- Theory
: • Udayasankar (2008)
  - Thought experiment
  - U-shaped relationship between firm size and CSR participation
    Large-cap: scale of operation, scrutiny of stakeholders.
    Small-cap: Differentiation and resource access.
- McWilliams and Siegel (2001)
  - Supply and demand approach
  - Scale economies in the provision of CSR attributes
    → Positive correlation between firm size and the provision of CSR attributes.
  - Other factors : level of diversification, research and development, advertising, government sales, consumer income, labor market conditions, and stage in the industry life cycle
- Empirical
  - There is no empirical result on US stock.
  - Korean case (Lee, 2014)
    About 80% of the stocks invested by SRI funds are incorporated into KOSPI 200. Furthermore, top 10 stocks invested by SRI funds are large-cap stocks that fall within the market capitalization ranking 15th

HYPOTHESIS

Hypothesis Development

Hypothesis 1	Hypothesis 2
CSR score ∝ Firm size	Multicollinearity on previous literatures

Large-cap firm would get higher CSR score!

Actual CSR participation ∝ Firm size	Incentive : Brand reputation is more valuable Resource access : Room to participate CSR, both labor and capital Evolution process : Focus on growth > later, recognize necessity of CSR Scrutiny of many stakeholders
Bias on scoring	Ability to advertise their CSR activity Low visibility of small-cap → Difficulty on evaluating CSR score

Hypothesis 1	Hypothesis 2
CSR score ∝ Firm size	Multicollinearity on previous literatures

Low return	Larger firms have had smaller risk adjusted returns (Banz, 1981) Low return of SRI funds might be from large firms in their portfolio.
Indifferent return	CSR participation might be significant explanatory variable, but size, control variable, could capture it's explanation power.
Low risk	Large firms tends to be exposed to less risk. Low risk of SRI funds might be from large firms in their portfolio.

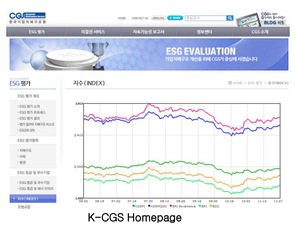
Research Issues

- Is there really positive correlation between CSR score and firm size?
  - It looks certain in Korea.
  - Common phenomenon in global?
- Is there scoring bias, which strengthen correlation?
  - If then, modeling to explain
- How to adjust size in CSR score?
- How the result about SRI performance changes as controlling firm size?
  - Find true relation between CSR participation and return distribution

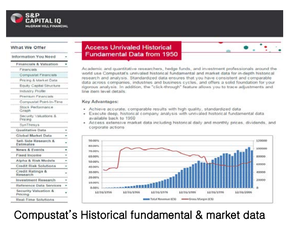
METHODOLOGY

Data

- CSR score
  - Global data : ASSET4 ESG data
  - Korea : EGS measures from the KCGS(한국기업지배구조원)
- Financial data
  - Compustat



K-CGS Homepage



Compustat's Historical fundamental & market data

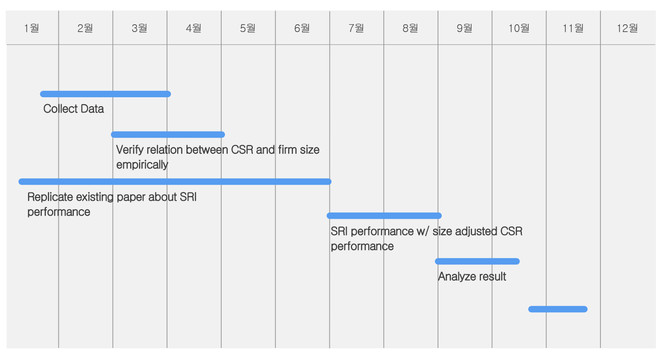
Measure

- Plan A
  1. Group by size
  2. For each group, calculate adjusted CSR score as follow

$$adj\ CSR\ score_{i,t} = \frac{(CSR\ score_{i,t} - Min\ CSR\ score\ for\ i's\ group\ in\ t)}{(Max\ CSR\ score\ for\ i's\ group\ in\ t - Min\ CSR\ score\ for\ i's\ group\ in\ t)}$$

$where\ i: firm, t: time$

- Plan B
  1. Run regression
     $$CSR\ score = \alpha + \beta \times \{Firm\ size\} + \varepsilon_t$$
  2. Estimate residual, which is CSR score without effect of firm size.
     And use it as a measure of size adjusted CSR score.

FUTURE PLAN

Timeline (2015)