

Corporate Social Responsibility and Meaningful Share Repurchases

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Abstract

Purpose - This paper investigates the relation between corporate social responsibility, firm maturity, and share repurchases that reduce the outstanding shares by 1% or more in a year (meaningful share reductions).

Design/methodology/approach – The article builds two hypotheses that are tested empirically in a life-cycle model through the analysis of 13,484 observations covering the period from 2006 - 2010. The empirical tests are conducted using both univariate statistics and multivariate panel logistic regression.

Findings – The evidence supports the hypothesis that firms executing meaningful share reductions are more mature. Consistent with Rakotomavo (2012), the results show that firms included in social responsibility indexes (with high CSR) are more mature. Furthermore, even after controlling for maturity, size, and profitability, firms in social responsibility indexes (with high CSR) are more likely to execute meaningful share repurchases. This evidence supports the hypothesis that firms with more corporate social responsibility are more likely to execute meaningful share reduction (via stock repurchases).

Practical Implications – The evidence in this study supports the hypothesis of Rakotamavo (2012) that CSR is positively related to firm maturity. In addition, the results imply that firms in social responsibility indexes (with more corporate social responsibility) are more likely to mitigate the problems of diffuse ownership by significant stock repurchases, which reduce the number of common shares outstanding.

Originality/value – This is the first paper that specifically investigates the relation between CSR and share repurchases.

Keywords Stock repurchases, Corporate social responsibility, Payout policy, Firm maturity

Paper Type Research Paper

Corporate Social Responsibility and Meaningful Share Reductions

1. Introduction

A growing approach in the academic literature on corporate social responsibility (CSR) is to focus on the relation of CSR to key financial decisions rather than focusing on overall financial performance. One strain of that literature examines the relations between CSR and corporate distributions. The papers of Rakotomavo (2012), Benlemlih (2014), and Cheung *et al.* (2016) investigate the relation CSR and dividend policy. However, there are appear to be no studies that investigate the relation between and stock repurchases. This is puzzling since stock repurchases are now the largest form of corporate distributions (Skinner, 2008; Straehl and Ibbotson, 2017). This study attempts to fill this gap in the literature by examining the relation between CSR and stock repurchases.

The first question any study of stock repurchases must answer is how to determine that a firm has conducted a stock repurchase. A common approach is to draw a sample of firms that announce a stock repurchase. This is problematic for the purpose of this study since share repurchase announcements are non-binding. Frequently firms do not complete the entire announced repurchase, and some firms do not repurchase any of the announced shares (Stephens and Weisbach, 1998). Even firms that complete the full announced repurchase may not achieve a reduction in the number of outstanding shares as repurchases are offset by stock issuance for employee compensation plans. Therefore, this study restricts the investigation to cases where firms reduce the outstanding shares by 1% or more in a year (meaningful share reductions). This sample restriction is similar to Hauser and Thornton (2017b).

The sample consists of U.S. firms which have non-missing annual data values for dividends and financials from Compustat as well as return data from CRSP over the 2006-2010 time period. Following the prior literature, financial firms and utilities are excluded. The proxies for corporate social responsibility are binary variables that are assigned a value of one if the firm is included in a Social Index in year t , and zero otherwise. Three Social Indices are used: the FTSE4Good US Select Index, the Calvert Large Cap Core Responsible Index, and the MSCI KLD 400 Social Index. The study employs a panel logit model to estimate the probability that a firm conducts a meaningful share reduction while controlling for firm effects and year effects. The Rakotomavo (2012) study of CSR and dividends uses one measure of firm maturity - the earned capital ratio. This study uses that measure of maturity; but, similar to Hauser and Thornton (2017a) it also includes two other measures taken from the payout literature - firm age, and firm risk.

The results extend the conclusions of Rakotomavo (2012) and show a positive relation between firm maturity and CSR. Specifically, firms included in Social Responsibility Indexes are larger, more mature (as measured by earned capital ratio, firm age, and firm risk), more profitable, and more levered. Both univariate and multivariate results show that meaningful share reduction is significantly and positively related to firm maturity, even when several definitions of firm maturity (firm age, earned capital ratio, and risk) are considered. The study posits that firms that highly value their reputation and sustainability (with high CSR) will address the problems of diffuse ownership via stock repurchases. Panel logistic regressions, find that indeed meaningful share reduction is positively related to CSR even after controlling for maturity, size, profitability, and growth opportunities.

The remainder of this paper is structured as follows. Section 2 reviews the existing literature and evidence to develop the hypothesis relating CSR and meaningful share reduction. Section 3 presents the sample data and methodology upon which the empirical tests are based. Section 4 describes the univariate sample results and the multivariate panel logit regression results. Section 5 concludes.

2. Literature Review and Hypothesis Development

2.1 Dividend policy and the life-cycle

One of the most comprehensive explanations for corporate distribution policy is the maturity or life-cycle hypothesis (DeAngelo and DeAngelo (2007)). Our read of the literature indicates that the life-cycle hypothesis is more fully developed in the dividend literature than the repurchase literature. For that reason we first briefly review the life-cycle dividend literature before turning to the repurchase literature.

In their empirical investigation defining the characteristics of dividend payers, Fama and French (2001) discuss the impact of new listings on the population of firms. Although they imply a firm life-cycle with the discussion of new listings not having the characteristics of dividend payers, Fama and French (2001) do not discuss or test life-cycle variables. Rather, Grullon *et al.* (2002) formalize the discussion of the maturity hypothesis and dividend policy. Grullon *et al.* (2002) suggest that dividends convey information about changes in a firm's life-cycle.¹ They postulate that changes in dividends indicate a firm's transition from a high growth phase to a mature

¹ The concept of a firm life-cycle with growth stages is generally attributed to Mueller (1972).

phase. The key variable that Grullon *et al.* (2002) utilize to define the firm maturity is systematic risk.

When Julio and Ikenbeery (2004) test the maturity hypothesis and explain disappearing and reappearing dividends, they use firm age as the variable to define the firm maturity. Julio and Ikenberry (2004) find support for the maturity hypothesis as firm age is related to the probability that a firm pays dividends. DeAngelo *et al.* (2006) use a different variable to define the firm's life cycle, the earned capital ratio. Their results show that a firm's propensity to pay dividends is significantly related to the earned capital ratio. Hoberg and Prabhala (2009) regard risk as a proxy for firm maturity and show that the firm's probability of paying a dividend is greater when the risk is lower.

2.2 Repurchases and the life-cycle

Grullon and Michaely (2004) argue that firms that are moving from a high growth phase of their life-cycle to a lower growth phase are more likely to conduct share repurchases. Their evidence supports this view. Repurchasing firms experience a reduction in systematic risk and cost of capital; and, the reaction to repurchase announcements is more positive for firms that are more likely.

Empirical tests of the life-cycle hypothesis for repurchases are relatively scarce. Yu and Jiang (2010) investigate the life cycle and share repurchases in the Taiwan stock market, using cluster analysis following the method of Anthony and Ramesh (1992) to study the *determinants* of repurchasing decisions in different phases of the life-cycle. Liang *et al.* (2013) apply the life-cycle model to the motives for share repurchases in a sample of repurchase announcements.

Their measure of life-cycle stage is firm age. They find that motives vary by life-cycle stage. For young firms the motive for repurchases tends to be undervaluation, while older firms announce repurchases to payback excess free cash flow to shareholders.

2.3 Share repurchases and dividend substitution

The literature on share repurchases and dividend substitution provides somewhat mixed evidence. DeAngelo *et al.* (2000) note that share repurchases have diminished but not eliminated the use of special dividends. Likewise, Jagannathan *et al.* (2000) provide evidence that firms use dividends to distribute permanent cash flows and share repurchases to distribute temporary cash flows. Likewise, the survey results of Brav *et al.* (2005) suggest that managers view stock repurchases as more flexible than dividends. In fact, Dittmar and Field (2015) report that managers can time the market using repurchases as firms can repurchase stock at a lower price than the average market price. Alternatively, Grullon and Michaely (2002) conclude that share repurchases and dividends are substitutes as firms that payout less dividends than predicted tend to repurchase more. Jiang *et al.* (2013) show that managers consider both payout mechanisms; consequently, dividends and share repurchases are treated as substitutes.

2.3 Meaningful share reductions

As most share repurchases are open-market repurchases, we must note that the announcement of and Weisbach (1998) report that less than 82% of announced repurchases are actually executed. Yook (2010) discusses the importance of actual repurchases as he finds that firms that actually repurchase shares experience long-term abnormal returns. Kahle (2002) shows that managers execute repurchases for personal motives when executives have large numbers of options

outstanding. Ford (2014) documents that firms which reduce the shares outstanding by as little as 1% over a 12 month period generate excess returns over 20, 10 and 5 year holding periods. Hauser and Thornton (2017b) shows that the propensity to execute stock repurchases that reduce outstanding shares by 5% or more is positively related to firm maturity.²

2.4 CSR and firm maturity

Rakotomavo (2012) shows that firms with greater investments in CSR are more mature, as measured by the earned capital ratio, and more profitable. These results imply that mature firms with accumulated financial capacity invest in CSR, thus, CSR investment is effected by firms that can afford it. Benlemlih (2014) and Cheung *et al.* (2016) show a positive relation between CSR and higher dividend payouts. Generally, firms with higher dividend payouts are more mature.

Our research specifically investigates if firms that execute meaningful share reductions follow the DeAngelo *et al.* (2006) life-cycle model. Our life-cycle premise is that young firms with high growth opportunities will issue shares to raise capital; while mature firms with lower growth opportunities will distribute earnings as stock repurchases. Our first hypothesis is:

- H1. Firms with increased maturity as measured by firm age, earned capital ratio, and risk are more likely to execute meaningful share reduction (via share repurchases), after controlling for profitability, size, and growth opportunities.

² Robustness tests in Hauser and Thornton (2017b) show similar results for repurchases that reduce shares by 1%.

2.5 CSR and share reduction

Cheng *et al.* (2014) show that superior CSR performance leads to better access to finance. Although it is not their primary research indicator variable, Cheng *et al.* (2014) use a “No Repurchase Indicator” variable as a robustness test to confirm that firms with better CSR performance have lower capital constraints.

The problems of diffuse corporate ownership have been discussed in the literature since Berle and Means (1933). Jensen and Meckling (1976) discuss the agency problems associated with diffuse ownership. Rozeff (1982) shows that corporate dividend payout policy is related to the degree of diffuse ownership. Based on the arguments of Jensen (1986), Rozeff (1982), and Easterbrook (1984), stock repurchases then provide a means for controlling the agency costs of free cash flow.

This research specifically investigates if CSR is related to meaningful share reductions. Our premise is that meaningful share reductions mitigate the issue of “tragedy of the commons” and the agency problems associated with diffuse corporate ownership. The reduction in common shares outstanding concentrates ownership in the firm and reduces “tragedy of the commons” behavior. Firms that are more concerned with sustainability and reputation will address the problems with diffuse corporate ownership via stock repurchases; consequently, firms with increased social responsibility are more likely to execute meaningful share reduction (via share repurchases), regardless of firm maturity. This becomes our second hypothesis:

H2. Firms with increased corporate social responsibility are more likely to execute meaningful share reduction (via share repurchases), even after controlling for maturity, profitability, size, and growth opportunities.

3. Data and methodology

3.1 Data sample

This research focuses on the 2006-2010 time period.³ To be included in the sample, a firm must have non-missing annual data values for dividends and financials from Compustat, as well as return data from CRSP. Following the prior literature, we exclude financial firms and utilities by excluding those firms with Standard Industrial Classification (SIC) codes in the intervals of 4900-4949 and 6000-6999. The analysis only considers NYSE, NASDAQ, and AMEX industrial firms that have Center for Research in Security Prices (CRSP) share codes of 10 or 11 and that are incorporated in the United States according to Compustat. These restrictions eliminate ADRs, closed-end funds, ETFs, and real estate investment trusts (REITs). Following DeAngelo *et al.* (2006), firms with negative total equity are removed from the sample.

3.2 Dependent variable

In this study, the dependent variable is the firm's status in year t as a meaningful share reducing firm. Thus, the dependent variable is a dummy variable that is assigned a value of one if the firm conducts a meaningful share reduction in year t , and zero otherwise. Table 1 summarizes the definitions of this and subsequently discussed variables.

³ Since the models require prior growth rates, the data series actually begins in 2005.

3.3 Maturity variables

Prior research shows that firm age, the retained earnings to total assets (**RE/TA**), and risk significantly explain a firm's dividend policy when tested individually. Julio and Ikenberry (2004) test the maturity hypothesis with the logarithm of the firm age. They show that the firm's propensity to pay dividends increases with the logarithm of the firm age; consequently, we follow Julio and Ikenberry (2004) and use **firm age** for this dimension of maturity. The proxy for firm age is the number of years that the firm is in existence in the CRSP database.

DeAngelo *et al.* (2006) test the maturity or life-cycle hypothesis with the earned capital ratio with the retained earnings to total equity ratio (RE/TE) and with the retained earnings to total asset ratio (RE/TA). They show that the propensity to pay dividends increases with higher values of RE/TE or RE/TA as these variables characterize the firm's "financial" stage in the life cycle. Following DeAngelo *et al.* (2006), we use the retained earnings to total assets (**RE/TA**) for this dimension of maturity.

Hoberg and Prabhala (2009) regard risk as a proxy for firm maturity. Although Hoberg and Prabhala (2009) and use standard deviations for measures of idiosyncratic risk and systematic risk, we use the **standard deviation of the firm's monthly returns** as done by Ferris *et al.* (2009) for the measure of total risk and the proxy for this dimension of firm maturity . Inasmuch that each of these maturity variables captures a different perspective of a firm's maturity, we include firm age, RE/TA, and risk as maturity variables in our life-cycle regression models.

3.4 Control variables

We include the following control variables: current ROA, as the measure of profitability; the market to book ratio (M/B) to capture growth opportunities as well as a measure of valuation;

the sales growth rate as an alternative measure of growth opportunities; and, the NYSE market capitalization percentile as the measure of firm size; total liabilities to total asset ratio, (TL/TA), as a measure of leverage, and the cash to total asset ratio, (Cash/TA) to control for funds available to conduct a repurchase.

3.5 CSR variables

As a proxy for corporate social responsibility, we denote a binary, explanatory variable that is assigned a value of one if the firm is included in a Social Responsibility Index in year t , and zero otherwise. For robustness, we include three different CSR variables based on the FTSE4Good US Select Index, the Calvert Large Cap Core Responsible Index, and the MSCI KLD 400 Social Index⁴.

3.6 Panel logit model

In the dividend life-cycle literature, Fama and French (2001), Julio and Ikenberry (2004), DeAngelo *et al.* (2006), and Hoberg and Prabhala (2009) use the Fama and MacBeth (1973) time series averages of the annual cross-sectional logit coefficients. Instead, we follow the method used by Hauser (2013) who uses a panel logistic regression to investigate the decision to pay dividends and the decision to cut dividends. In this study, the panel logit model provides a

⁴ The FTSE4Good US Select Index is a socially responsible investment (SRI) index of US stocks that excludes companies with certain business activities such as weapons, tobacco, gambling, alcohol, nuclear power, and adult entertainment. Additionally, in order to be included companies must meet a series of stringent environmental and social criteria in areas including environmental management, labor rights, human rights, health and safety, and diversity.

The Calvert U.S. Large Cap Core Responsible Index (CALCOR) is composed of companies that meet Calvert's responsible investment principles and are selected from the universe of companies included in the S-Network U.S. Equity Large/Mid-Cap 1000 Index.

The MSCI KLD 400 Social Index is a capitalization weighted index of 400 US securities that provides exposure to companies with outstanding Environmental, Social and Governance (ESG) ratings and excludes companies whose products have negative social or environmental impacts. The parent index is MSCI USA IMI, an equity index of large, mid and small cap companies. The Index is designed for investors seeking a diversified benchmark comprised of companies with strong sustainability profiles while avoiding companies incompatible with values screens. Launched in May 1990 as the Domini 400 Social Index, it is one of the first SRI indexes. Constituent selection is based on data from MSCI ESG Research.

model for the probability that a firm conducts a meaningful share reduction while controlling for firm effects and year effects.

4. Empirical results

4.1 Summary statistics

In this section we report the findings of the empirical investigation of corporate payout policy by firms in Social Responsibility Indexes. We begin by examining the summary statistics of the full data sample compared to firms in the Social Responsibility Indexes, which we report in Table 2. Compared to all firms in the sample, firms in Social Responsibility Indexes are more mature by all definitions of maturity, confirming our first hypothesis. From Table 2, we see that the median CRSP age of firms in the Social Responsibility Indexes are larger than the all firm sample. Likewise the median earned capital ratio of firms in the Social Responsibility Indexes is larger further indicating the greater financial maturity. The median standard deviation of monthly returns is lower for firms in the Social Responsibility Indexes indicating lower risk (and more maturity). These results confirm the prior literature which reports a negative relation between firm risk and CSR (Luo and Bhattacharya, 2009; Oikonomou *et al.* , 2010; Jo and Na, 2012; Nguyen and Nguyen, 2015). Somewhat related to firm maturity, we also find that the median size as measured by the NYSE Percentile is much larger for firms in the Social Responsibility Indexes than in the all firm sample.

In other key differences in Table 2 between firms in the Social Responsibility Indexes and all firms is that firms in the Social Responsibility Indexes are more profitable as measured by both the median ROA and median ROE. Firms in the Social Responsibility Indexes have a higher

median M/B ratio indicating higher growth potential. We find that firms in the Social Responsibility Indexes are more levered as measured by the higher median total liabilities to total assets ratio. This is consistent with the results of Attig *et al.* (2013) and El Ghouli *et al.* (2011) who find that firms with high CSR rankings have higher credit ratings, which would indicate an incentive to use more leverage. Overall our results confirm the findings of Rakotomavo (2012) who shows that firms investing highly in CSR tend to be larger, more profitable, and more mature.

In terms of corporate distributions, we find that firms in the Social Responsibility Indexes are more likely to pay a dividend. This is expected since firms in the Social Responsibility Indexes have the typical characteristics of dividend payers – more mature firms, large firm size, and more profitable. Likewise, we find that firms in the Social Responsibility Indexes are more likely to execute repurchases and meaningfully reduce shares. This is expected since firms in the Social Responsibility Indexes have the typical characteristics of firms that meaningfully reduce shares – more mature firms.

In order to review the characteristics of the firms in the Social Responsibility Indexes in more detail, we sort the dividend payers into those dividend payers that are not in the Social Responsibility Index from those payers that are in the Social Responsibility Index and report these results in Table 3. Similar to the full sample results, dividend payers in the Social Responsibility Indexes are more mature than dividend paying firms not in the Social Responsibility Index. Again the median CRSP age and median earned capital ratio for dividend payers in the Social Responsibility Indexes are significantly higher, while the median standard

deviation of monthly returns is significantly lower for dividend payers in the Social Responsibility Indexes. Likewise, dividend paying firms in the Social Responsibility Indexes are significantly larger in size than dividend payers not in the Social Responsibility Indexes.

In other key differences, we find that dividend payers in the Social Responsibility Indexes are significantly more profitable as measured by both the median ROA and median ROE. Dividend paying firms in the Social Responsibility Indexes have a higher median M/B ratio indicating higher growth potential. Although a higher M/B ratio is not a typical characteristic of dividend payers, Hauser and Thornton (2015) show that the most mature dividend payers indeed have higher M/B ratios. We find that dividend paying firms in the Social Responsibility Indexes are more levered as measured by the higher median total liabilities to total assets ratio.

In terms of corporate dividend policy, we find that dividend payers in the Social Responsibility Indexes have no significant difference in median dividend payout ratio than dividend payers not in the Social Responsibility Indexes, which supports the results of Rakotomov(2012) who shows that CSR investment does not subtract from dividend payments. Table 3 shows that dividend payers in the Social Responsibility Indexes have a higher median dividend growth rate and a lower median dividend yield. Dividend payers in the Social Responsibility Indexes are more likely to be dividend growers and less likely to cut the dividend. Consistent with Benlemlih (2014) and Cheung *et al.* (2016) we find dividend payers in the Social Responsibility Indexes pay significantly higher dividends per share. In terms of corporate share repurchase policy, we find that dividend payers in the Social Responsibility Indexes have negative median share growth rates while dividend payers not in the Social Responsibility Indexes have positive median

share growth rates. Table 3 shows that dividend payers in the Social Responsibility Indexes are significantly more likely to execute meaningful share reductions.

Next, we sort the non-dividend payers into those non-payers that are not in the Social Responsibility Index from those non-payers that are in the Social Responsibility Index and report these results in Table 4. Similar to the full sample results, non-payers in the Social Responsibility Indexes are more mature, larger in size, more profitable, and are more levered. In terms of corporate share repurchase policy, we find that non-dividend payers in the Social Responsibility Indexes have significantly lower median share growth rates. Table 4 shows that non-payers in the Social Responsibility Indexes are significantly more likely to execute meaningful share reductions.

In summary, our univariate results support the prior literature that firms with high CSR tend to be larger, more profitable, and more mature. Interestingly our univariate results indicate that there is no significant difference in the dividend payout ratios between dividend paying firms in the Social Responsibility Indexes and dividend paying firms that are not in the Social Responsibility Indexes. Finally, we find that both dividend payers and non-dividend payers in the Social Responsibility Indexes have lower median share growth rates and are more likely to execute Meaningful Share Reduction.

4.2 Panel logit regressions for Meaningful Share Reduction

To investigate if there is a relation between Meaningful Share Reduction, maturity, and CSR in a multivariate setting, Table 5 reports the results of four specifications of a panel logit regression.

The dependent variable in all specifications equals one if the firm conducted a Meaningful Share Reduction (i.e. reduced the outstanding shares by 1% or more) in that firm year and zero otherwise. The first specification includes the maturity variables and control variables, but does not include CSR variables. The other three specifications introduce the three CSR variables one at a time. The first finding in Table 5, is that for two of the three maturity variables the probability of being a firm that executes Meaningful Share Reduction increases with increasing maturity (lower risk and higher earned capital). The coefficient on firm age is although positive in all specifications but not statistically significant. The results in Table 5 support Hypothesis 1. Mature firms are more likely to conduct a meaningful share reduction.

All three of the CSR variables in Table 5 are statistically significant and contribute positively to the likelihood of conducting a meaningful share reduction. Even after controlling for firm maturity, profitability, size, and growth potential in the panel logit regressions, being in a Social Responsibility Index still significantly increases the probability of being a firm that executes Meaningful Share Reduction. These results hold for all three of the Social Responsibility Indexes investigated and confirm our second hypothesis. Based on the univariate results and these panel logit regressions on Meaningful Share Reduction, we conclude that there is a significant, positive relation between CSR and meaningful corporate share repurchase policy.

The coefficients on the control variables in Table 5 are statistically significant in all specifications. We find that increasing the firm size increases the probability that a firm executes Meaningful Share Reduction. Since mature firms tend to be larger this result provides additional support for Hypothesis 1. Other characteristics that increase the probability that a firm

meaningfully reduces shares are higher profitability and higher cash ratios. Consistent with the life cycle model, lower M/B ratios and lower sales growth rates increase the probability of Meaningful Share Reduction.

4.3 Robustness tests

Our research method is based on having robustness testing as we investigate three Social Responsibility Indexes, the FTSE4Good Index, the Calvert Responsible Index, and the KLD Index, and find similar results across all Social Responsibility Indexes which proxy for CSR.

Based on an endogeneity, one could argue that the relation between CSR and corporate share repurchases is simply that only firms that can afford to pay corporate distributions invest in CSR. To address endogeneity concerns in our result that there is a significant relation between CSR and corporate share repurchases, we subset the data sample and investigate only non-dividend paying firms. Generally the life-cycle hypothesis would indicate that non-dividend paying firms would be less mature firms with more growth opportunities and would have fewer funds available for corporate distributions or CSR investments. Consequently, we perform panel logit regressions only for non-dividend paying firms with the status as a firm with Meaningful Share Reduction as the dependent variable and report the results in Table 6. Based on the results in Table 6, we find that the probability of being a firm that executes Meaningful Share Reduction increases with increasing maturity (lower risk and higher earned capital). Related to maturity, we find that increasing the firm size also increases the probability that a firm executes Meaningful Share Reduction. Other characteristics that increase the probability that a firm meaningfully reduces shares are higher profitability and higher cash ratios similar to the full

sample results. Consistent with the life cycle model, lower M/B ratios increase the probability of Meaningful Share Reduction. However, even after controlling for firm maturity, profitability, size, and growth potential in the panel logit regressions, being in a Social Responsibility Index still significantly increases the probability of being a non-dividend paying firm that executes Meaningful Share Reduction. We conclude that there is a significant, positive relation between CSR and corporate share repurchase policy, and the results are robust even to non-dividend paying firms with fewer funds available for investments in CSR.

Since our definition of Meaningful Share Reduction of 1% is somewhat arbitrary, we perform robustness tests where we consider a 5% or greater reduction in common shares outstanding. To investigate if there is a relation between Meaningful Share Reduction and CSR based on a 5% reduction in shares, we perform panel logit regressions with the status as a firm with Meaningful Share Reduction as the dependent variable and report the regression results in Table 7. Based on the results in Table 7, we find that the probability of being a firm that executes a 5% Share Reduction increases with lower risk, lower M/B ratios, and lower sales growth rates. Higher profitability, higher cash ratios, larger size, and higher leverage increase the probability that a firm reduces shares by 5%. Even after controlling for firm maturity, profitability, size, and growth potential in the panel logit regressions, being in the FTSE 4Good U.S. Select Index and the Calvert Responsible Index still significantly increases the probability of being a firm that executes a 5% Share Reduction. Based on the robustness tests, we find a significant, positive relation between CSR and meaningful share reduction and the results are robust to the choice of Social Responsibility index, endogeneity, and definition of meaningful share reduction.

5. Summary and conclusions

In this research we study the relation between corporate social responsibility (CSR) and meaningful share reduction. Our results extend the findings of Rakotomavo (2012) showing that mature firms tend to invest more in CSR. Specifically we report that larger, more mature, more profitable, and more levered firms are more likely to be included in Social Responsibility Indexes. Extending Rakotomavo's (2012) findings, we show that firm maturity seems to be positively related to CSR. Both our univariate and multivariate results show that meaningful share reduction is significantly and positively related to firm maturity, even when several definitions of firm maturity (firm age, earned capital ratio, and risk) are considered, which supports our first hypothesis.

In our second hypothesis, we consider the premise that meaningful share repurchases which reduce the common shares outstanding are “shareholder friendly” and reduce the problems of diffuse ownership. We posit that firms that highly value their reputation and sustainability will address the problems of diffuse ownership via significant stock repurchases. In panel logistic regressions, we find that firms included in Social Responsibility Indexes (with high CSR) are more likely to execute meaningful share repurchases even after controlling for maturity, size, profitability, and growth opportunities.

These results contribute to the literature and our understanding of CSR on key financial decisions; namely this paper is the first to specifically examine the relation between CSR and share repurchases. In addition to extending the literature on the relation between firm maturity and CSR, we find evidence for a relation between CSR and share reduction. While we find

evidence that there is a positive relation between CSR and meaningful share reductions, future research might extend these findings to more cases of share repurchases.

References

Anthony, J. H., and Ramesh, K. (1992), Association between accounting performance measures and stock prices: A test of the life cycle hypothesis. *Journal of Accounting and Economics*, 15(2), 203-227.

Attig, N., El Ghouli, S., Guedhami, O. and Suh, J. (2013) “Corporate social responsibility and credit ratings”, *Journal of Business Ethics*, Vol 117 No. 4, pp. 679 – 694.

Benlemlih, Mohammed, (2014), Why Do Socially Responsible Firms Pay More Dividends? Available at SSRN: <https://ssrn.com/abstract=2566876> or <http://dx.doi.org/10.2139/ssrn.2566876>

Berle, A., and Means, G., (1933), *The Modern Corporation and Private Property*. New York: Mcmillan

Brav, A., Graham, J. R., Harvey, C. R., and Michaely, R. (2005), Payout policy in the 21st century. *Journal of Financial Economics*, 77(3), 483-527.

Cheng, B., Ioannou, I., and Serafeim, G. (2014), Corporate social responsibility and access to finance. *Strategic Management Journal*, 35(1), 1 - 23

Cheung, A, Hu M., and Schwiebert, J. (2016), Corporate social responsibility and dividend policy. Accounting and Finance. Advanced online publication. doi:10.1111/acfi.12238

DeAngelo, H., and L. DeAngelo, (2007), Payout Policy Pedagogy: What matters and Why. *European Financial Management* 13, 11-27.

DeAngelo, H., DeAngelo, L., and Skinner, D. J. (2000), Special dividends and the evolution of dividend signaling. *Journal of Financial Economics*, 57(3), 309-354.

DeAngelo, H., DeAngelo, L., and Skinner, D. J. (2004), Are dividends disappearing? Dividend concentration and the consolidation of earnings. *Journal of Financial Economics*, 72(3), 425-456.

DeAngelo, H., L. DeAngelo, and R. Stulz, (2006), Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. *Journal of Financial Economics* 81, 227- 254.

Dittmar, A. K. (2000), Why Do Firms Repurchase Stock?. *The Journal of Business*, 73(3), 331-355.

Dittmar, A. (2008), Corporate cash policy and how to manage it with stock repurchases. *Journal of Applied Corporate Finance* 20, 22-34.

Dittmar, A., and Field, L. C. (2015), Can managers time the market? Evidence using repurchase price data. *Journal of Financial Economics*, 115(2), 261-282.

Easterbrook, F. H. (1984), Two agency-cost explanations of dividends. *The American Economic Review*, 650-659.

El Ghouli, S., Guedhami, O., Kwok, C. and Mishra, D. (2011), “Does corporate social responsibility affect the cost of capital?”, *Journal of Banking & Finance*, Vol 35 No 9, pp. 2388 – 2406.

Fama, E., and K. French , (2001), Disappearing dividends: Changing firm characteristics or lower propensity to pay? *Journal of Financial Economics* 60, 3-44.

Fama, E., and J. MacBeth, (1973), Risk, return, and equilibrium: empirical tests. *Journal of Political Economy* 81, 607 – 636.

Ferris, S. P., N. Sen, and E. Unlu, (2009), An international analysis of dividend payment behavior. *Journal of Business Finance & Accounting* 36, 496 – 522.

Ford Equity Research, (2014), Share buyback. <http://www.fordequity.com/docs/default-source/previousite/sharebuyback0413AEC5F21500FB.pdf?sfvrsn=2>. Accessed September 8, 2015.

Grullon, G., and D. L. Ikenberry, (2000), What do we know about stock repurchases? *Journal of Applied Corporate Finance*, 13(1), 31-51.

Grullon, G., and R. Michaely, (2002), Dividends, share repurchases and the substitution hypothesis. *Journal of Finance* 57, 1649-1684.

Grullon, G., and R. Michaely, (2004), The information content of share repurchase programs. *Journal of Finance* 59, 651-679.

Grullon, G., R. Michaely, and B. Swaminathan, (2002), Are dividend changes a sign of firm maturity? *Journal of Business* 75, 387- 424.

Hauser, R. (2013), Did dividend policy change during the financial crisis? *Managerial Finance* 39, 584 – 606.

Hauser, R and Thornton, J. H. (2015), “Firm Maturity and the Dividend Puzzle”, *Financial Decisions*, Vol 27 No 2, Article 2 pp. 1- 27.

Hauser, R. and Thornton, J. H. (2017a), “Dividend Policy and Corporate Valuation,” *Managerial Finance* 43, 663-678.

Hauser, R. and Thornton, J. H. (2017b), “Which firms conduct meaningful share reductions?” Working Paper.

Hoberg, G., and N. R. Prabhala, (2009), Disappearing dividends, catering, and risk. *The Review of Financial Studies* 22, 79-116.

Hsieh, J., Wang, Q., and Baker, H. K. (2009), Stock Repurchases: Theory and Evidence, Part 1 and Part 2. In H. K. Baker, Ed., *Dividends and Dividend Policy*, (John Wiley and Sons, Inc., Hoboken, New Jersey).

Ikenberry, D., Lakonishok, J., and Vermaelen, T. (1995), Market underreaction to open market share repurchases. *Journal of financial economics*, 39(2), 181-208.

Jagannathan, M., Stephens, C. P., and Weisbach, M. S. (2000), Financial flexibility and the choice between dividends and stock repurchases. *Journal of financial Economics*, 57(3), 355-384.

Jensen, M. (1986), Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review* 76, 323-329.

Jensen, M., and Meckling W. (1976), Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics* 3(4), 305 – 360.

Jiang, Z., Kim, K. A., Lie, E., and Yang, S. (2013), Share repurchases, catering, and dividend substitution. *Journal of Corporate Finance*, 21, 36-50.

Jo, H., and Na, H. (2012), Does CSR reduce firm risk? Evidence from controversial industry sectors, *Journal of Business Ethics* 110, 441 – 456.

Julio, B., and D. Ikenberry, (2004), Reappearing dividends. *Journal of Applied Corporate Finance* 16, 89-100.

Kahle, K. M. (2002), When a buyback isn't a buyback: open market repurchases and employee options. *Journal of Financial Economics*, 63(2), 235-261.

Liang, B., K. Chan, W. Lai, and Y. Wang, (2013), Motivation for repurchases: A life cycle explanation. *Journal of Financial Services Research* 43, 221-242,

Luo, X., and Bhattacharya, C. (2009), The debate over doing good: corporate social performance, strategic marketing levers, and firm-idiosyncratic risk. *Journal of Marketing* 73, 198 – 213.

Mueller, D. (1972), A life cycle theory of the firm. *Journal of Industrial Economics* 20, 199-219.

Nguyen, P., and Nguyen, A. (2015) “The effect of corporate social responsibility on firm risk”, *Social Responsibility Journal*, Vol. 11 No. 2, pp. 324 -339.

Oikonomou, I., Brooks, C., and Pavelin, S. (2012), The impact of corporate social performance on financial risk and utility: A longitudinal analysis. *Financial Management*, 41: 483–515.

Rakotomavo, M. (2012), Corporate investment in social responsibility versus dividends? *Social Responsibility Journal*, 8(2), 199 – 207.

- Rozeff, M. S. (1982), Growth, beta and agency costs as determinants of dividend payout ratios. *Journal of financial Research*, 5(3), 249-259.
- Skinner, D. J. (2008), The evolving relation between earnings, dividends, and stock repurchases. *Journal of Financial Economics*, 87(3), 582-609.
- Straehl, P. U., and Ibbotson, R. G. (2017), The long-run drivers of stock returns: Total payouts and the real economy. *Financial Analysts Journal* 73(3), 1 – 21.
- Stephens, C. P., and Weisbach, M. S. (1998), Actual share reacquisitions in open-market repurchase programs. *The Journal of Finance*, 53(1), 313-333.
- Twu, M., (2010), Prior payment status and the likelihood to pay dividends: International evidence. *The Financial Review* 45, 785 – 802.
- Yook, K. C. (2010), Long-run stock performance following stock repurchases. *The Quarterly Review of Economics and Finance*, 50(3), 323-331.
- Yu, Y. M., and Jiang, S. J. (2010), Corporate life cycle and share repurchases: Evidence from the Taiwan Stock Market. *African Journal of Business Management*, 4(14), 3139-3149.

Table 1 Variable Definitions

Variable	Definition
Age	Time in years that the firm entity (Permno) has had Price data available in the CRSP database.
Std Dev of Returns	The standard deviation of monthly returns for the year t
RE/TE	Ratio of retained earnings to total shareholders' equity
RE/TA	Ratio of retained earnings to total assets
NYSE Percentile	The percentile ranking of firm's market equity. NYSE market equity capitalization percentile breakpoints provided at Dr. Kenneth R. French's website, http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html
Sales Growth Rate	Sales growth rate, which equals $(\text{sales } t / \text{sales } t-1) - 1$
Share Growth Rate	Share growth rate, which equals $(\text{shares outstanding } t / \text{shares outstanding } t-1) - 1$
Dividend Growth Rate	Dividend growth rate, which equals $(\text{dividends per share } t / \text{dividends per share } t-1) - 1$
ROA	Return on assets in current year t
ROE	Return on equity in current year t
Cash/TA	Cash to total asset ratio
TL/TA	Total liabilities to total asset ratio
Dividend Payout Ratio	Common dividends paid as a percentage of net income
Dividend Yield	Common dividends per share as a percentage of price per share
M/B	Book assets minus book equity plus market equity all divided by book assets. Where, Market Equity= Year closing price times shares outstanding and Book Equity= Stockholders Equity minus Preferred Stock plus Balance Sheet Deferred Taxes and Investment Tax Credit minus Post Retirement Asset. If Stockholder's Equity is not available, it is replaced by either Common Equity plus Preferred Stock Par Value or Assets minus Liabilities. Preferred Stock is Preferred Stock Liquidating Value or Preferred Stock Redemption
Meaningful Repurchase	A firm that effected a net reduction in shares outstanding by 1% or more in year t compared to the previous year t-1
CSR	Corporate Social Responsibility; a binary, explanatory variable that is assigned a value of one if the firm is included in the Social Index in year t, and zero otherwise. For robustness, we include CSR variables based on the FTSE4Good US Select Index, the Calvert Large Cap Core Responsible Index, and the MSCI KLD 400 Social Index.

Table 2. Summary Descriptive Statistics For All Firms Compared to Firms In Social Responsibility Indexes

Variable	All Firms	FTSE 4Good Index	Calvert Index	KLD Index
Median CRSP Age	14	21	20	27
Median Retained Earnings to Total Asset Ratio	0.1183	0.3113	0.3051	0.3241
Median Standard Deviation of Monthly Returns %	12.44	8.62	9.20	9.63
Median NYSE Percentile %	20	80	70	75
Median Return on Assets %	3.31	6.70	6.52	6.20
Median Return on Equity %	6.73	15.35	13.66	13.69
Median Sales Growth Rate %	7.02	7.14	7.47	5.56
Median Market to Book Ratio	1.47	1.8	1.77	1.61
Median Cash to Total Asset Ratio	0.138	0.1227	0.1227	0.1035
Median Total Liabilities to Total Asset Ratio	0.4493	0.5357	0.5209	0.5246
Median Share Growth Rate %	0.76	-0.59	-0.09	-0.20
% Dividend Payers	30.23	54.2	52.78	64.53
% Meaningful Share Repurchasers	19.99	45.9	41.51	40.29
n	13,484	1,013	1,961	1,122

Notes: For each year over 2006-2010, the sample consists of U.S.-incorporated, NYSE, NASDAQ, and AMEX-listed industrial firms with CRSP sharecodes 10 or 11 and nonmissing data on dividends, financial, and return data. We include only firms with positive total equity, and remove financials and utilities. The data are sorted based on the FTSE4Good US Select Index, the Calvert Large Cap Core Responsible Index, and the MSCI KLD 400 Social Index. Variable definitions appear in Table 1.

Table 3. Summary Descriptive Statistics For Dividend Paying Firms In Social Responsibility Indexes

Variable	FTSE 4Good Index			Calvert Index			KLD Index		
	Not Included	In Index	Z	Not Included	In Index	Z	Not Included	In Index	Z
Median CRSP Age	24	33	-6.2 ***	24	33	-8.8 ***	23	37	-13.8 ***
Median Retained Earnings to Total Asset Ratio	0.35	0.36	-3.1 **	0.34	0.36	-3.9 **	0.34	0.37	-4.2 ***
Median Standard Deviation of Monthly Returns	9.86%	7.59%	12.0 ***	10.12%	8.20%	11.9 ***	10.69%	8.84%	9.6 ***
Median NYSE Percentile %	35	85	-24.9 ***	30.00	75.00	-30.1 ***	35.00	80.00	-24.6 ***
Median Return on Assets %	5.71	7.46	-5.7 ***	5.45	7.27	-8.7 ***	5.40	6.84	-5.9 ***
Median Return on Equity %	12.12	16.99	-9.1 ***	11.63	15.99	-11.0 ***	11.42	15.54	-8.6 ***
Median Sales Growth Rate %	4.94	5.94	-1.4	4.96	5.75	-0.7	3.87	4.44	-0.9
Median Market to Book Ratio	1.46	1.77	-8.4 ***	1.43	1.75	-11.9 ***	1.38	1.61	-8.6 ***
Median Cash to Total Asset Ratio	0.08	0.08	0.0	0.08	0.08	0.3	0.09	0.08	2.0 **
Median Total Liabilities to Total Asset Ratio	0.51	0.57	-6.5 ***	0.50	0.56	-6.9 ***	0.51	0.56	-5.9 ***
Median Dividend Payout Ratio %	25.00	23.03	0.8	24.86	24.66	0.6	24.46	27.37	-1.1
Median Dividend Growth Rate %	4.24	7.95	-4.6 ***	3.83	6.50	-3.4 ***	3.22	5.53	-2.3 **
Median Dividend Yield %	1.81	1.51	4.9 ***	1.84	1.59	6.6 ***	1.95	1.86	2.6 **
% Dividend Growers	66.80	75.96	-4.6 ***	65.77	74.69	-19.0 ***	63.86	72.65	-4.6 ***
% Dividend Cutters	23.19	19.31	2.1 **	23.48	20.29	-4.3 **	25.60	22.65	1.6 *
Median Dividend Per Share \$	0.42	0.48	-3.4 ***	0.40	0.54	-8.2 ***	0.40	0.61	-10.0 ***
Median Share Growth Rate %	0.22	-0.96	-9.4 ***	0.26	-0.81	11.2 ***	0.25	-0.55	9.0 ***
% Meaningful Share Repurchasers	28.44	49.73	-3.9 ***	26.21	46.28	-21.6 ***	27.02	43.65	-8.1 ***
n	3,527	549		3,041	1035		2,457	724	

Notes: For each year over 2006-2010, the sample consists of dividend paying, U.S.-incorporated, NYSE, NASDAQ, and AMEX-listed industrial firms with CRSP sharecodes 10 or 11 and nonmissing data on dividends, financial, and return data. We include only firms with positive total equity, and remove financials and utilities. The data are sorted based on the FTSE4Good US Select Index, the Calvert Large Cap Core Responsible Index, and the MSCI KLD 400 Social Index. Variable definitions appear in Table 1. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *. Z statistics are based on hypothesis of equal medians.

Table 4. Summary Descriptive Statistics For Non-paying Firms In Social Responsibility Indexes

Variable	FTSE 4Good Index			Calvert Index			KLD Index		
	Not Included	In Index	Z	Not Included	In Index	Z	Not Included	In Index	Z
Median CRSP Age	11	16	-10.3 ***	11	15	-14.7 ***	12	17	-13.8 ***
Median Retained Earnings to Total Asset Ratio	-0.05	0.21	-13.6 ***	-0.07	0.21	-19.3 ***	-0.05	0.21	-4.2 ***
Median Standard Deviation of Monthly Returns	14.07%	9.89%	15.5 ***	14.27%	10.56%	18.5 ***	14.79%	10.96%	9.6 ***
Median NYSE Percentile %	10.00	80.00	-34.2 ***	10.00	65.00	-46.1 ***	10.00	65.00	-24.6 ***
Median Return on Assets %	1.24	6.10	-13.4 ***	0.92	5.81	-18.8 ***	0.98	4.95	-5.9 ***
Median Return on Equity %	2.36	12.62	-14.7 ***	1.79	11.24	-19.0 ***	1.88	10.15	-8.6 ***
Median Sales Growth Rate %	8.34	8.82	-1.1	8.21	9.64	-2.1 **	6.98	7.20	-0.9
Median Market to Book Ratio	1.43	1.84	-8.4 ***	1.42	1.82	-11.7 ***	1.35	1.61	-8.6 ***
Median Cash to Total Asset Ratio	0.18	0.18	0.8	0.18	0.20	-0.4	0.18	0.17	2.0 **
Median Total Liabilities to Total Asset Ratio	0.41	0.48	-5.8 ***	0.41	0.46	-6.0 ***	0.42	0.45	-5.9 ***
Median Share Growth Rate %	1.27	0.22	12.9 ***	1.30	0.51	-14.0 ***	1.11	0.51	9.0 ***
% Meaningful Share Repurchasers	13.73	41.38	-16.5 ***	12.79	36.18	-14.4 ***	14.90	34.17	-8.1 ***
n	8,944	464		8,482	926		6,960	398	

Notes: For each year over 2006-2010, the sample consists of non-dividend paying, U.S.-incorporated, NYSE, NASDAQ, and AMEX-listed industrial firms with CRSP sharecodes 10 or 11 and nonmissing data on dividends, financial, and return data. We include only firms with positive total equity, and remove financials and utilities. The data are sorted based on the FTSE4Good US Select Index, the Calvert Large Cap Core Responsible Index, and the MSCI KLD 400 Social Index. Variable definitions appear in Table 1. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *. Z statistics are based on hypothesis of equal medians.

Table 5 Panel Logit Analysis for the Probability of executing Meaningful Share Repurchases

Variable								
Constant	-1.6981	***	-1.6797	***	-1.6650	***	-1.5366	***
	(-11.71)		(-11.60)		(-11.50)		(-9.73)	
RE/TA	0.1305	***	0.1324	***	0.1266	***	0.1254	***
	(3.91)		(3.98)		(3.86)		(3.61)	
Age	0.0030		0.0037		0.0035		0.0025	
	(1.32)		(1.61)		(1.51)		(1.01)	
Std Dev Returns	-3.8434	***	-3.7761	***	-3.8596	***	-3.9462	***
	(-8.17)		(-8.05)		(-8.20)		(-7.80)	
Size, NYSE Percentile	2.1273	***	1.8411	***	1.6696	***	1.6903	***
	(14.69)		(11.84)		(10.43)		(10.15)	
Sales growth rate, SGR	-0.8287	***	-0.8194	***	-0.7909	***	-0.5004	***
	(-7.22)		(-7.15)		(-6.92)		(-4.52)	
Profitability, ROA	0.0218	***	0.0221	***	0.0220	***	0.0182	***
	(7.72)		(7.84)		(7.82)		(6.39)	
Market to book ratio, M/B	-0.3037	***	-0.2966	***	-0.2999	***	-0.3519	***
	(-8.42)		(-8.24)		(-8.33)		(-8.43)	
Cash to Asset ratio, CA/TA	0.6627	***	0.6410	***	0.6410	***	0.7732	***
	(3.24)		(3.14)		(3.15)		(3.48)	
Total Liabilities to Total Assets ratio, TL/TA	0.2393		0.2365		0.2604		0.3690	*
	(1.29)		(1.27)		(1.40)		(1.84)	
FTSE 4GOOD US Select Index			0.5596	***				
			(4.83)					
Calvert Responsible Index					0.5990	***		
					(6.32)			
MSCI KLD 400 Index							0.3695	***
							(3.18)	

Notes: For each year over 2006-2010, the sample consists of U.S.-incorporated, NYSE, NASDAQ, and AMEX-listed industrial firms with CRSP sharecodes 10 or 11 and nonmissing data on dividends, financial, and return data. We include only firms with positive total equity, and remove financials and utilities. Variable definitions appear in Table 1. The panel logit analysis indicates the probability of a firm executing Meaningful Share Repurchases, which is a firm that reduced its shares outstanding by more than 1% in year t. We present the estimated coefficient with the t-value listed below in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.

Table 6 Panel Logit Analysis for the Probability of Non-dividend paying, Meaningful Share Repurchases

Variable								
Constant	-1.8556	***	-1.8010	***	-1.7789	***	-1.6395	***
	(-9.41)		(-9.13)		(-8.99)		(-7.73)	
RE/TA	0.1304	***	0.1364	***	0.1306	***	0.1297	***
	(3.71)		(3.86)		(3.75)		(3.51)	
Age	0.0083	*	0.0079	*	0.0069		0.0076	
	(1.75)		(1.66)		(1.45)		(1.51)	
Std Dev Returns	-3.0873	***	-3.0704	***	-3.1087	***	-3.4704	***
	(-5.41)		(-5.39)		(-5.44)		(-5.66)	
Size, NYSE Percentile	2.3589	***	1.9004	***	1.6307	***	1.9846	***
	(10.71)		(7.75)		(6.40)		(7.88)	
Sales growth rate, SGR	-0.6893	***	-0.6761	***	-0.6521	***	-0.4344	***
	(-5.27)		(-5.20)		(-5.03)		(-3.54)	
Profitability, ROA	0.0128	***	0.0131	***	0.0131	***	0.0103	***
	(4.47)		(4.58)		(4.59)		(3.53)	
Market to book ratio, M/B	-0.4009	***	-0.3873	***	-0.3895	***	-0.4288	***
	(-8.32)		(-8.06)		(-8.08)		(-7.79)	
Cash to Asset ratio, CA/TA	0.8248	***	0.8088	***	0.7947	***	0.8494	***
	(3.33)		(3.27)		(3.21)		(3.15)	
Total Liabilities to Total Assets ratio, TL/TA	-0.2312		-0.2323		-0.2075		-0.1578	
	(-0.95)		(-0.95)		(-0.85)		(-0.60)	
FTSE 4GOOD US Select Index			0.8178	***				
			(4.16)					
Calvert Responsible Index					0.8574	***		
					(5.61)			
MSCI KLD 400 Index							0.3438	*
							(1.71)	

Notes: For each year over 2006-2010, the sample consists of U.S.-incorporated, non-dividend paying, NYSE, NASDAQ, and AMEX-listed industrial firms with CRSP sharecodes 10 or 11 and nonmissing data on dividends, financial, and return data. We include only firms with positive total equity, and remove financials and utilities. Variable definitions appear in Table 1. The panel logit analysis indicates the probability of a firm executing Meaningful Share Repurchases, which is a firm that reduced its shares outstanding by more than 1% in year t. We present the estimated coefficient with the t-value listed below in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.

Table 7 Panel Logit Analysis for the Probability of 5% Meaningful Share Repurchases

Variable						
Constant	-2.8296	***	-2.8150	***	-2.7000	***
	(-14.96)		(-14.87)		(-12.87)	
RE/TA	0.0727	*	0.0659	*	0.0714	*
	(1.84)		(1.70)		(1.69)	
Age	-0.0065	**	-0.0070	**	-0.0076	**
	(-2.35)		(-2.54)		(-2.49)	
Std Dev Returns	-4.0359	***	-4.1318	***	-4.1703	***
	(-6.18)		(-6.30)		(-5.89)	
Size, NYSE Percentile	0.7529	***	0.6768	***	0.8788	***
	(4.02)		(3.51)		(4.38)	
Sales growth rate, SGR	-1.3189	***	-1.2995	***	-1.0190	***
	(-7.59)		(-7.48)		(-5.62)	
Profitability, ROA	0.0321	***	0.0320	***	0.0283	***
	(7.74)		(7.72)		(6.53)	
Market to book ratio, M/B	-0.3125	***	-0.3177	***	-0.3634	***
	(-6.25)		(-6.36)		(-6.17)	
Cash to Asset ratio, CA/TA	1.2146	***	1.2179	***	1.2202	***
	(4.81)		(4.84)		(4.37)	
Total Liabilities to Total Assets ratio, TL/TA	1.2272	***	1.2457	***	1.2663	***
	(5.41)		(5.50)		(5.09)	
FTSE 4GOOD US Select Index	0.5367	***				
	(3.94)					
Calvert Responsible Index			0.4839	***		
			(4.20)			
MSCI KLD 400 Index					0.0801	
					(0.56)	

Notes: For each year over 2006-2010, the sample consists of U.S.-incorporated, NYSE, NASDAQ, and AMEX-listed industrial firms with CRSP sharecodes 10 or 11 and nonmissing data on dividends, financial, and return data. We include only firms with positive total equity, and remove financials and utilities. Variable definitions appear in Table 1. The panel logit analysis indicates the probability of a firm executing Meaningful Share Repurchases, which is a firm that reduced its shares outstanding by more than 5% in year t. We present the estimated coefficient with the t-value listed below in parentheses. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.