Corporate Social Responsibility and Earnings Management: The impact of Product Market Competition.

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Abstract

We assess whether product market competition amplifies the negative relationship between ESG and earnings management. ESG engagement on its own is effective in mitigating earnings management. However, engagement in ESG practices is more important in limiting earnings management by the firm when competition is high. Disclosing ESG related information, irrespective of the actual ESG performance of the firm, also reduces earnings management when competition is high as managers voluntarily provide more information about the firm's operations.

Keywords: ESG, product market competition, earnings management, stakeholders

1.Introduction

The negative relationship between ESG and earnings management (Kim et al., 2012) suggests that firms engaging in ESG are less likely to manage earnings. However, the effects of product market competition on both sides of this relationship have largely been ignored. Firms in highly competitive markets often turn to ESG as a means to acquire a competitive advantage, such as higher market share or good reputation. This helps firms differentiate themselves and appear closer to stakeholders (Fombrun and Shanley, 1990; Dhaliwal et al., 2012). Moreover, product market competition impacts firms' earnings management decisions (Datta et al., 2013). As competition in the product market increases, firms' pricing ability and profitability decreases. Consequently, firms in highly competitive markets could engage in earnings management to enjoy more stable cash flow and stock returns (Peress, 2010) or to protect the managers' job by meeting targets (Tang and Chen, 2020). Earnings management is involved in numerous accounting scandals (Yu, 2008), such as the $2.1 billion restatement of Xerox's accounts in 2002 (Bergstresser and Philippon, 2006). Earnings management also leads to higher cost of capital (Botosan, 1997; Lang & Lundholm, 1996) and is considered as unethical accounting practice. As such, stakeholders rely on high ESG standards to limit such practices. Therefore, we address the question how product market competition amplifies the adverse effects of corporate social responsibility on earnings management.

Jensen (2005) argues that managers should make decisions by accounting for the interests of all stakeholders of the firm, which is known as stakeholder engagement. An engagement that is a morally neutral practice (Greenwood, 2007) but helps building lasting and mutually beneficial relationships with stakeholders (Maak, 2007; Eccles et al., 2014). Stakeholder engagement comes with integrating social and environmental issues in the firm's operations (Eccles et al., 2014), known as corporate social responsibility. In return of short-term allocation of resources to ESG engagement, the firm can experience higher financial

returns (Henisz et al., 2014) in the long-term. This is because firms develop intangible assets in the form of strong stakeholder relationships (Eccles et al., 2014), which then act as competitive advantages (Hillman and Keim, 2001) such as customer loyalty and corporate reputation.

Stakeholders use available financial information to determine their desired relationship with the firm (Eccles and Serafeim, 2014). Earnings management occurs when managers use their own judgement when it comes to financial reporting and structuring transactions (Healy and Whalen, 1999). This obscures firms' transparency in financial reporting, which falls within the definition of corporate social responsibility (Atkins, 2006). Firms that allocate resources in implementing ESG practices to meet stakeholders' ethical expectations are likely to constrain earnings management, driven by incentives to be honest, trustworthy, and ethical. Thereby, providing investors with more transparent and reliable financial information (Kim et al., 2012).

However, ESG implementation by those firms is influenced by the level of market competition. High competition acts as a pressure mechanism to managers (Alchian, 1950; Stigler, 1958; Schmidt, 1997) and forces them to make value increasing investment and financing decisions (Grossman and Hart, 1983). ESG then acts as a tool that helps firms stand out and achieve a competitive advantage (Jones, 1995) in the form of intangible assets like corporate reputation and bigger market share. Therefore, firms have incentives to engage in ESG when product competition is high, leading to a positive relationship between product market competition and ESG engagement.

While product market competition provides firms with incentives to adopt ESG practices to overcome competition, it also has a direct effect on financial reporting and earnings management decisions. Highly competitive business environment provides managers with incentives to manipulate earnings to influence stock prices (Shleifer, 2004). DeFond and Park

(1999) suggest that manager's incentives to "meet or beat" accounting earnings reported by other firms in the industry also encourages earnings management.

Earnings management can have value destroying effects for the firm (Huang et al., 2009), even bigger when investors are concerned about managerial opportunistic behaviour (Coles et al., 2006), with numerous accounting scandals around earnings management (Yu, 2008). Thus, we explore ESG's ability to mitigate earnings management when the firm is affected by the level of competition in the product market, in which firms have different incentives to engage in both ESG and earnings management practices.

We use a sample of U.S. firms, excluding financial and utilities firms, for the period 2002-2017. We do not restrict the sample by only including firms that have available ESG information, to assess whether having ESG credentials in the first place impacts the relationship between ESG and earnings management. We use product market fluidity index by Hoberg et al. (2014) to measure product market competition, while we also use alternative measures, product Vertical Integration Index by Hoberg et al. (2016), Herfindahl-Hirschman Index and product similarity index by Hoberg et al. (2014). The baseline results suggest that the level of competition faced by the firm significantly amplifies ESG's mitigating effects on earnings management. The results are also economically significant. A one standard deviation increase in ESG, for firms facing high competition, reduces earnings management by 0.90% using fluidity, and 0.34% using vertical integration as a measure of competition. If the firm is facing high competition in the product market, they are more inclined to stick to trustworthiness that comes with ESG investing and abstain from earnings management.

Because firm's engagement in earnings management also affects the firm's ESG performance (Bozzolan et al., 2015), there is potential endogeneity bias due to unobservable omitted variables. We use an instrumental variable approach using the industry average ESG

as an instrument. Firm's ESG choices are often correlated in the same industries. But industry-level ESG is not related to earnings management in the firm-level (Cao et al., 2019). We use the average ESG score for each industry-year pair as instrument for ESG. The results from the instrumental variable regression confirm the baseline results. Overall, high competition makes ESG a more effective hedge against earnings management practices by the firm.

Second, we identify a new exogenous shock that affects product market competition to perform a triple difference in differences approach with different variations of the tests. We use the introduction of a state-wide or city-wide ban or pricing mechanism of single use plastic bags in the retail industry to capture regional change in competition. The introduction of the ban of single use plastic bags in the retail `industry shifted competitive pressure from retail firms in unincorporated areas to incorporated areas of states that adopted the legislation. Therefore, the introduction of the ban created an industry-wide and state-wide adverse product competition shock. As the relevant ban legislation is staggered across different States it provides a robust setup to test our hypothesis.

Our contribution to the literature is threefold. First, we extent the line of research that identifies the causal effect of ESG on firms' engagement in earnings management. Consistent with prior literature (Kim et al., 2012), we find that firms with high ESG standards engage in less earnings management. However, no prior research examines this relationship when conditional on competition. As a second contribution, we introduce competition in the product market as a factor amplifying this association. Recent literature finds that product market competition is one of the many determinants of managers' propensity to engage in earnings management (Datta et al., 2013; Laksmana & Yang, 2014; Markarian & Santalo, 2014). We find that ESG is more effective in mitigating earnings management for firms facing significant competitive pressure, compared to firms in less competitive product markets. We use an IV approach to provide robust evidence of causality between earnings management, ESG and

competition, and perform a triple difference in differences approach. While most other studies use import tariff cuts as a shock to product market competition (Zhang, 2020; Rahman et al., 2021), we use a new exogenous shock on competition driven by regulatory changes in the retail industry. Third, we use a comprehensive sample of U.S. firms and not just those firms that have an ESG rating, to examine whether even disclosing ESG related information impacts earnings management by the firm, and how this association is affected by product market competition.

2. Literature Review and Hypothesis Development

2.1. Product market competition and ESG

Product market competition acts as a pressure mechanism that enforces discipline on risk averse and effort averse managers and mitigates agency problems (Alchian, 1950; Hart, 1983; Schmidt, 1997; Stigler, 1958). As competition in the market rises, it becomes increasingly difficult for managers to outperform or even rival their industry peers and related job loss of managers increases too. Consequently, effort averse managers need to work harder to protect their jobs and are inclined to make value maximization decisions in an effort to acquire a competitive advantage for their firms. When competition is high, ESG investments by the firm indicate managerial efforts to increase firm value and to protect manager's jobs, while there is a positive association between ESG and firm value when market competition is high (Jiao and Shi, 2014; Ryu et al., 2016). Adopting ESG practices, thus disclosing more information about the firm and its operations also results in reduced information asymmetry (Dhaliwal et al., 2012; Kim et al., 2012; Cho et al., 2013), thus lower cost of capital. Moreover, high ESG firms are perceived as being less risky by investors (Robinson et al., 2008; Starks, 2009) as ESG can act as a buffer in the event of poor financial performance by reducing firm risk (Godfrey, 2005; Luo and Battacharya, 2009). As a result, ESG firms benefit from lower cost of capital, ensuring cheaper financing for their operations (Sharfman and Fernando, 2008;

El Ghoul et al., 2011; Girerd-Potin et al., 2014; Ng and Rezaee, 2015), making it easier to compete with their industry peers.

Furthermore, firms are more likely to invest in ESG as a differentiation strategy when facing fierce competitive pressure (Siegel and Vitaliano, 2007; Fisman et al., 2008; Declerck and M'Zali, 2012; Fernández-Kranz and Santaló, 2010) in an effort to acquire a competitive advantage. Firms' ESG activities are often taken into account by customers who tend to be loyal to socially responsible firms, or even willing to pay a higher price (e.g., Sen and Bhattacharya, 2001; Bhattacharya and Sen, 2004; Kitzmueller and Shimshack, 2012). In competitive markets any competitive advantage results in higher market share and ESG helps firms to stand out when competition increases (Sheikh, 2018; Fisman et al., 2006). Competitive advantages derived from ESG investments can be in the form of customer loyalty, brand image and social capital, or even lower cost of capital for the firm (Sheikh, 2019). The lower cost of capital allows the firm to finance its projects at lower cost (Heinkel et al., 2001; El Ghoul et al., 2011). Moreover, competitive advantages result in bigger increase in cash flows when competition is high (Sheikh, 2019). As a result, firms are more likely to invest in ESG in more competitive markets (Fisman, Heal and Nair, 2008; Fisman et al., 2006; Harjoto and Jo, 2011; Declerck and M'Zali, 2012).

2.2. Product market competition and earnings management

Agency theory suggests an increase in product market competition results in more information being available to shareholders which can be used to more accurately monitor managers in comparison to their peers (DeFond and Park, 1999; Holmstrom,1982; Nalebuff and Stiglitz, 1983). This puts constant pressure on managers to "meet or beat" accounting earnings reported by competing firms (DeFond and Park, 1999). Consequently, it provides managers with incentives to manipulate earnings. Similar arguments that product market

competition encourages earnings management have been brought forward by many studies (Datta et al., 2013; Laksmana and Yang,2014; Markarian and Santalo, 2014).

Furthermore, earnings management engagement can also influence stock prices under high competition. Markarian and Santalo (2014) argue that when competition increases, engagement in earnings management induces higher returns in the stock market when reported earnings indicate the possession of a competitive advantage. Thus, managers have incentives to manipulate earnings to influence stock prices. Moreover, as the number of firms competing in an industry increases, funds from the capital markets that can be allocated to each firm decreases (Lemma et al., 2018). As a result, firms' incentives to secure funds and reduce the cost of capital leads them to increased disclosure in an effort to reduce information asymmetry (Diamond and Verrecchia, 1991). Hoberg and Phillips (2010) argue that firms reduce information asymmetry to obtain financing at more favourable rates. Therefore, this part of the literature suggests a negative relationship between product market competition and earnings management.

2.3. Effects of competition on the relationship between ESG and earnings management

Kim et al. (2012) find a negative relationship between ESG engagement and earnings manipulation and provide reasons that explain this relationship, other than ethical and social obligations. ESG is often a tool for building corporate reputation (Fombrun and Shanley 1990; Verschoor 2005; Linthicum et al. 2010). Consistent with a negative association between ESG and earnings management, firms use ESG to improve their reputation and abstain from earnings management to avoid damaging their reputation. Finance literature also finds evidence of a positive association between ESG and financial performance (Waddock and Graves 1997; Griffin and Mahon 1997; Roman et al. 1999). High ESG firms with superior financial performance have less incentives to engage in aggressive earnings management, meaning a negative relation between ESG and earnings management.

However, the effects of competition have largely been ignored. Firms do have incentives to engage in ESG, to abstain from managing earnings (Sheikh, 2018; Dhaliwal et al., 2012; Fisman et al., 2006; Fombrun and Shanley, 1990). Firms also have incentives to engage in earnings manipulation, for opportunistic or value maximization reasons (Laksmana and Yang,2014; Markarian and Santalo, 2014; Datta et al., 2013; DeFond and Park, 1999). However, the above are often observed under the assumption that competition is high. Therefore, product markets, as well as capital markets, can penalise firms that do not adhere to strict ESG standards (Flammer, 2013). If firms operate in low product competition industries, their customers' elasticity of demand for the firm's product is low. Thus, they enjoy more stable cash flows and stock returns compared to those facing significant market pressure (Peress, 2010). Consequently, they can afford to be penalised by the market for unethical behaviour like earnings manipulation or abstaining from ESG policies. Moreover, less competitors are able to take the firm' market share following its exposure and damage in reputation. In addition, as high ESG scores act as a buffer to their reputation (Godfrey, 2005; Luo and Battacharya, 2009), firms operating in low competition markets, have even more incentives to engage in earnings management. If this is true, then we expect to find significant negative relationship between ESG and earnings management if competition is high. Therefore, the following hypothesis is developed:

H: Product market competition amplifies the relationship between earnings management and ESG.

3. Empirical Framework

3.1 Sample and Data

We collect ESG data from Asset4 of Refinitiv (formerly known as Thomson Reuters) from 2002 to 2017. Asset4 collects data and scores firms on the ESG dimensions starting from

the fiscal year 2002[1]. We use the natural logarithm of the equally weighted score of the four pillars to proxy for ESG, and then break ESG down to those four individual components for robustness reasons. Data of US firms are collected from Compustat. Following prior literature (Boubaker et al., 2018; Sheikh, 2019) firms in the financial services sector (SIC 6000–6999) and utilities industries sector (SIC 4900–4999) are eliminated because of their special regulatory environment.

As firmly established in the earnings management literature (Cohen et al., 2008, Francis et al., 2008, Katmon and Farooque, 2015, Yu, 2008), the modified Jones model (1991) and the performance-matched discretionary accruals model of Kothari, Leone, and Wasley (2005) are used to estimate the absolute value of the discretionary accruals. Cohen et al. (2008) argue that the more meaningful measure of earnings management is the absolute level of discretionary accrual. The discretionary accruals in the absolute value as a proxy for the overall earnings management is used rather than the signed value in order to capture earnings management regardless of manager's income-increasing or decreasing incentives.

As a primary measure of competition, we use product market fluidity index of Hoberg et al. (2014) and Hoberg et al. (2016) to measure threats and instabilities arising from the actions of competitors. Greater fluidity represents increased threats and increased competition in the product markets. As a second measure of product market competition, we use the Fresard, Hoberg and Phillips (2016) vertical textual network industry relatedness classification, or vertical integration. Vertical integration is identified at the individual firm level by assessing

[1] It includes 900 evaluation points per firm, all primary data and publicly available. Typical sources include stock exchange filings, ESG and annual reports, and nongovernmental organization websites. These 900 evaluation points are then used as equally weighted inputs to calculate 250 key performance indicators (KPIs) that are further organized into 18 categories within four pillars of corporate social responsibility. These pillars are economic performance, environmental performance, social performance, and corporate governance.

the overlap between firms' product descriptions and the actual product words and descriptions used by the BEA in their input-output tables. Vertical integration is based on Herfindahl index.

We also use the Hoberg and Phillips (2014) text-based industry concentration index as measure of product market competition. They use 10-K text-based network industries (TNIC) classification to construct Herfindahl index (TNICHHI) of market power. A low HHI indicates that there are many firms in the industry, the average market share of each firm is low, and industry competition is fierce. A very high HHI value indicates that the industry includes only a few large firms that could easily dominate the market, and hence, industry competition is low. Since both Vertical Integration and HHI have an inverse relationship with product market competition (ie. Higher HHI means lower competition) we multiply all vertical integration and HHI observations with minus one to make a more intuitive interpretation of the results.

Lastly, we also use product similarity index of Hoberg et al. (2014) to measure product market competition. They calculate similarity scores by parsing the product descriptions from the firm 10Ks and forming word vectors for each firm to compute continuous measures of product similarity for every pair of firms.

To test our hypothesis, we use the following model:

$$EarningsManagement_{i,t} = a_{i,t} + b_1 ESG_{i,t} + b_2 High_Competition_{i,t} + b_3 ESG_{i,t} x High_Competition_{i,t} + \sum c_i X_{i,t-1} + \theta + \gamma + u_{i,t}$$

Where Earnings Management is the dependent variable as discretionary accruals in absolute values as we want to capture the extent of earnings management irrespective of income increasing or decreasing incentives. ESG captures corporate social responsibility as the natural logarithm of the weighted average of governance, economic, environmental, and social

performance. High_Competition is a binary variable that takes the value of one if the measure of product market competition, captured as fluidity, vertical integration, HHI and similarity, is higher than the industry-year average[2].

$X_{i,t}$ is a vector of the control variables of the model. We control for firm-level factors that prior literature identified as antecedents of firms' earnings management activity. These factors include firm-size (SIZE) (Dechow and Dichev, 2002), corporate profitability (ROA), firm's leverage (LEV), the market to book ratio (MB) (Dechow et al., 2011, Hribar and Nichols, 2007).

We also include market share (MRK_SHR) and financial distress (DISTRESS), a binary variable of big 4 audit (BIGAUD) as firms audited by one of the big4 auditing firms are less likely to manage earnings. We include an indicator variable for low marginal tax rate (LOW_MTR). A low marginal tax rate is assumed if the firm's marginal tax rate is below the statutory tax rate (Blouin et al., 2010). Lastly, we introduce a binary variable to account for firm's balance sheet bloat (BLOAT). θ and γ stand for year and industry fixed effects. All variables are defined in the appendix B, variable definition.

3.2 Summary Statistics

Table 1 presents the summary statistics for the sample. The mean value of Earnings management (EM) suggests that firms in the sample engage in earnings management on average by 10.51%. The lower 1% of firms engage in only 0.1% income increasing or income decreasing earnings management while the top 1% engage in 84.43%. The ESG score has a mean value of 50.2 and a standard deviation of 30.41. These results are consistent with prior

[2] We perform further robustness tests with alternative classifications of High and Low competition using the industry 75% and 90% percentile in table 12.

literature that used the same measure for ESG (Halbritter and Dorfleitner et al., 2015; Ferrell et al., 2016).

A very high vertical integration (VertInt) means the firm is vertically integrated, its products are vertically related to the other products sold by the same firm, and competition is low. It has a mean of 1.03% and Standard Deviation of almost 1%. The lower 1% of firms have a Vertical Integration score of 4.38%, which indicates very low competition, and the top 1% a Vertical Integration score of just 0.02% indicating very high competition. The measure Fluidity (Fluidity) measures the actions taken by competitors, and a high Fluidity score mean high competition. It has a mean of 6.81 with the lowest 1% of firms having Fluidity of just 1.57 and the top 1% having Fluidity of over 18.14.

Firms in the sample have a mean Market Share (MRK_SHR) of almost 1% (with a median close to zero)[3] and a mean value of ROA of -12%. The median value of ROA (median=1.72%) suggests a wide variation in corporate profitability. In the sample, only 2.8% of the firms are in financial distress, while 49.9% of the firms are audited by one of the big 4 Audit firms. For further analysis, descriptive statistics for firms facing high competition, low competition and no ESG data available are presented in Panels B, C and D respectively.

"Insert Table 1"

Table 2 presents the pearson correlation between the variables in the sample. Earnings management seems to have a significant weak negative correlation with ESG score. It also has weak positive significant correlations with all product market competition measures. This suggests that firms engaging in ESG activities abstain from earnings management, while competition encourages earnings management. Product market power measures vertical integration and HHI have been multiplied by minus one to make a more intuitive interpretation

[3] The median value of firms' market share in our sample is 0.0007.

of the results, which explains their positive correlations with product market competition measures, fluidity, and similarity. ESG score has negative significant correlations with competition measures HHI, vertical Integration, fluidity, and similarity, meaning that competition actually discourages ESG activities by the firm.

"Insert Table 2"

3.3 Baseline results

Table 3 reports results from regressions with industry and year fixed effects clustered at the firm level. Consistent with the theory presented in the hypothesis development section, we expect the coefficient of the interaction term between high competition and ESG to be negative. Panel A uses Fluidity as measure of product market competition. Columns (1), (3) and (5) show the results of the individual variables of interest without control variables. Columns (2), (4) and (6) show the individual variables of interest with the control variables of the model. Columns (1) and (2) show that the higher ESG engagement, the lower the firm's earnings management activities. Columns (3) and (4) indicate a positive association between high competition and firms' earnings management engagement. Column (5) suggests that ESG firms engage in 0.84% less earnings management through discretionary accruals. The effect is 1.37% stronger for firms in highly competitive markets.

After including firm-specific and earnings management specific control variables in column (6), ESG engagement by the firm mitigates earnings management if competition is high. Overall, the coefficients on high competition are positive and statistically significant meaning firms that operate in highly competitive markets tend to have higher engagement in earnings management practices. Moreover, the coefficient of the interaction term between ESG and high competition is negative and significant. The results suggest that the firm's engagement in ESG is more important in mitigating earnings management if competition is high.

Panel B is using Vertical Integration as the measure of product market competition. Consistent with results from panel A, ESG engagement is better in limiting earnings management under high competition in the product market.

"Insert Table 3"

4. Robustness Test

4.1 Endogeneity

From the baseline regressions presented above, it is shown that competition is a factor that affects ESG's ability to limit earnings management. However, the relationship between earnings management and corporate social responsibility can be endogenous. Jones (1995) argues that firms conducting business on the basis of trust and cooperation, being socially responsible, have an incentive to demonstrate a commitment to ethical behaviour, thus limiting earnings management. It is also firmly established in the literature that firm's engagement in earnings management practices also affects ESG performance of the firms (Bozzolan et al., 2015), thus the model suffers from endogeneity.

Following prior literature (Ferrell et al., 2016), we use an instrumental variable approach to remove the aforementioned bias, using the industry average ESG score as the instrument. Research shows it is an appropriate instrument as industry peers ESG performance systematically affects the firm's ESG policies (Cheng et al., 2014; Ioannou and Serafeim, 2014). The chosen instrument does not have a significant relation with the dependent variable (Earnings Management) satisfying the exclusion criterion[4]. It is also highly correlated with the

[4] We test whether the instrument is exogenous in our data using an industry-year fixed effects regression with and without controls. In both cases the instrument does not have a significant relationship with the dependent variable earnings management. Further evidence are provided in Appendix C.

ESG score of the firm[5] (coefficient of -0.95[6] using fluidity as a measure of product market), satisfying the relevance criterion.

Table 4 reports the results of an instrumental variable regression. Columns (1) and (4) report the first stage regression on the ESG score. Columns (2) and (5) report the second stage regression results without control variables. Consistent with baseline regression results, ESG firms engage in less earnings management while the coefficient of high product market competition is positive and statistically significant, meaning firms in highly competitive markets have more incentives to engage in earnings management. The interaction terms between ESG and high competition have statistically significant negative relationships with dependent variable.

Columns (3) and (6) report second stage regression results after controlling for firm specific and earnings management specific factors. With the endogeneity bias minimized, the results suggest that there is negative relationship between earnings management and ESG. Additionally, the results confirm that the effect is amplified in markets where product market competition is high. Firms incorporate competition in their decision making relevant to financial reporting quality and ESG policies. For firms operating in highly competitive markets, ESG engagement forces them to adopt strict standards when it comes to financial reporting. Moreover, if firms operate in absence of competitive pressure, they do not limit earnings management as much as part of their ESG strategy. The results are consistent using both fluidity and vertical integration as measures of product market competition.

"Insert Table 4"

[5] When calculating the average, the commands "rangestat" and "asrol" were used as well as manually, excluding the focal observation. The results remained consistent.
[6] The negative coefficient is the result of using the natural logarithm of the weighted average ESG score.

For robustness reasons, we run the same IV regressions using HHI index and Product Similarity as alternative measures of product market competition. The results are presented in Table 5. There is a positive statistically significant relation between earnings management and product market competition. The coefficients of the interaction terms between ESG and high product market competition are negative and statistically significant using both measures of competition in columns (2) and (5), consistent with the results of table 4, however not consistent after including control variables.

"Insert Table 5"

4.2 Pillars of Corporate Social Responsibility

To further examine the effects of product market competition on the relationship between earnings management and ESG, we break down the weighted average ESG score to its four individual pillars, governance score, economic score, environmental score, and social score, and run the same IV regressions using the four pillars instead of the ESG score. Table 6 reports the results using product market fluidity as a measure of competition in panel A. Columns (1), (2), (3) and (4) presents the second stage regression results for governance, economic, environmental, and social score, respectively. Firms' environmental and social policies engagement alone do not limit earnings management by the firm. Firms' governance and economic scores, however, are factors that adversely affects earnings management activities. We find no evidence to suggest that each pillar individually mitigates earnings management when the firm faces highly competitive pressure.

Panel B reports the results of a second stage regression using vertical integration as a measure for product market competition. Only the economic pillar of ESG on its own mitigates earnings management by the firm. Economic, environmental and social scores adversely affect earnings management when competition is high. The governance ESG pillar is not an element of ESG that has any effect on firm's earnings management decisions, irrespective of the level

of competition. The other three pillars of ESG are taken into account by managers when deciding on financial reporting, especially when the firm is facing high competition in the product market. When ESG is examined based on its four pillars, the results posit that just enjoying a good ESG performance is not as important in mitigating earnings management. However, ESG performance does matter when the firm faces significant competitive pressure.

"Insert Table 6"

4.3 The Halo Effect

The weighted average ESG score that is used as the measure of ESG can also be used to provide further results through the voluntary disclosure theory. Although this theory originally referred exclusively to the voluntary disclosure of financial information, it has also been applied to explain the voluntary disclosure of non-financial information (Bewley and Li, 2000, Clarkson et al., 2008). A firm enjoying superior sustainability performance, voluntarily discloses non-financial information to reveal the nature of its true performance and to (potentially) increase its market value (Clarkson et al., 2008). Dhaliwal et al. (2011) document that superior sustainability performers have significantly lower costs of equity capital when they publish a standalone sustainability report for the first time.

However, firms may provide high-quality information regarding topics that are favourable to themselves (superior performance) while disclosing only low-quality information on topics that may be detrimental to their interests (poor performance) (Hummel and Schlick, 2016). Irrespective of the quality of information, firms that disclose ESG related information expect certain benefits from it. In table 1, there are over 43,000 firm-year observations for each of the product market competition measures and over 55,000 firm-year observations for most of the other variables except ESG score. For the weighted average ESG score we get 9,404 firm-year observations for the same period.

This suggests that firms tend to signal their ability to be socially responsible, by providing more transparent ESG disclosures to construct an average ESG score. This provides them with the "Halo Effect". Stakeholders, such as suppliers and shareholder are more likely to establish cooperation with such firms. To test the halo effect through ESG disclosure, we create a binary variable (ESGscore) that takes the value of 1 if there is a weighted average ESG, and the value of 0 otherwise. Table 7 presents the results of an IV approach. Panel A uses product market fluidity as a measure of competition. Columns (1) and (3) report the results of the 1st stage regressions without and with control controls, respectively. The industry average ESG score is used again as the instrument. Columns (2) and (4) report the 2nd stage regression results. After controlling for firm and earnings management specific control variables, we find that firms disclosing ESG related information, engage in 1.85% more earnings management activities. However, after accounting for high level of competition, we find that firms disclosing ESG related information in highly competitive markets engage in less earnings management.

In panel B, vertical integration is used as a measure of competition. Columns (1) and (3) report 1st stage regression results, while columns (2) and (4) report 2nd stage regression. The results are consistent with those of Panel A. Overall, disclosing ESG related information leads to more earnings management. The rationale behind this is that ESG can act as a reputational buffer for firms, giving them incentives to risk extracting the benefits earnings management as well. However, there is no such option when competition is high, where managers need to decide on the trade-off between ESG and earnings management.

"Insert Table 7"

Overall, besides the actual ESG performance, firms' ability to disclose ESG related information also affects earnings management. Disclosing ESG information adds to the

transparency of the firm and can mitigate earnings management by the firm in the face of competition. In highly competitive markets, firms are more inclined to disclose information about their operations. If that information can be used by stakeholders (such as competitors or policymakers) to derive an ESG score, then firms have more incentives to abstain from earnings management. Moreover, firms disclosing such information in competitive markets are provided with the halo effect. They are, as a result, viewed as more reliable business partners, which can help build long term relationships, and constitute tools to counter product market competition.

4.4 Ban of single use plastic bags as an exogenous shock on product market competition

We exploit the implementation of the ban of single use plastic bags in the retail industry (SIC 5200-5999) across different states as an exogenous shock to product market competition and employ a triple difference-in-difference approach to establish the causal effect between ESG and earnings management depending on the level of competition. The ban can be either at the state level, led by the state of California in 2014 that decided to ban the use of single use plastic bags by all retailers in all incorporated areas, or in the local level, like the implementation of city-wide ban on plastic bags in Portland, Oregon in 2011.

As the ban was adopted by different states or city councils across different years, it is a powerful test for our hypothesis. Following a similar legislation enforcement only in Los Angeles County in 2011, a survey was conducted by the national center for policy analysis to determine the effects of the ban on sales and employment at the stores affected by the ban. It also tried to determine if consumers changed their shopping behaviour by increasing purchases at stores that could still offer plastic bags. The year following the ban, 60% of the stores that were not affected by the ban reported an increase in the number of customers, while store that were affected reported a decrease in customers (Villarreal and Feigenbaum, 2012). Thus, competition was shifted from affected areas to areas that were not included in the ban, making it an appropriate shock on competition in the retail industry.

We collect historic state of incorporation data from Spamann and Wilkinson (2019) to identify in which states the firms in the sample were incorporated. Next, we merge state of incorporation data with our existing sample containing the ESG score from Asset4, firm-level accounting data from Compustat and competition data from Hoberg et al. (2014) and Hoberg et al. (2016). As the ban was directed to the retail industry, we use retail firms to construct the treatment group. Finally, we create a binary variable which is equal to one if the firm is incorporated in a state that enforced the ban of single use plastic bags, or a pricing mechanism, following the law enforcement, zero otherwise.

Information regarding the states and cities that have implemented a ban or a pricing mechanism on the use of plastic bags in the retail industry is presented in Appendix A. A comparison of summary statistics between the treatment and control groups at the national level is presented in Table 8. Lastly, we estimate the following model:

$$
\begin{aligned}
EarningsManagement_{i,t} \\
&= a_{i,t} + c_1 Plastic_Ban_{i,t} \\
&+ c_2 Plastic_Ban_{i,t} x ESG_{i,t} x High_Competition_{i,t} + b_1 ESG_{i,t} \\
&+ b_2 High_Competition_{i,t} + b_3 ESG_{i,t} x High_Competition_{i,t} + \sum c_i X_{i,t-1} \\
&+ \theta + \gamma + u_{i,t}
\end{aligned}
$$

Earnings management, ESG High_Competition and the vector of control variables $X_{i,t-1}$ is as defined before in baseline regression. Plastic_Ban is a binary variable (DiDiD estimator), which is equal to one if the firm operates in the retail industry in a state that enforced regulation against the use of single use plastic bags following the implementation and zero otherwise. If ESG can mitigate the firm's engagement in earnings management when competition is high following industry-wide competition shocks, we expect a negative coefficient on the interaction term Plastic_BanxESGxHigh_Competition.

“Insert Table 8”

Table 9 reports the results from the triple difference in differences, where we include in the treatment group all firms in the retail industry across all states following the 2014 decision by the state of California to ban single use plastic bags. We use the chosen shock as California was the first state to impose a state-wide ban. We use product market fluidity as a measure of product market competition. Lastly, all firms with no ESG score from Asset4 are excluded from the sample for this test, to ensure comparability between treatment and control groups. Columns (1) and (2) report the estimates of the Plastic_Ban estimator, a binary variable that takes the value of one for firms in the treatment group, zero otherwise. The ban of single use plastic bags in the retail industry did not affect firms’ earnings management. Columns (3) and (4) report the estimates of the model presented above. The variable of interest is the triple interaction term (Plastic_BanxHighCompxESG).

The main hypothesis, that high competition amplifies the negative relationship between ESG and earnings management, continues to hold, with significant negative relationship between the interaction term HighCompxESG and earnings management and we find that ESG engagement mitigates earnings management by the firm when product market competition is high. Moreover, the effect is 0.57% stronger for firms in the treatment group, operating in the retail industry following the introduction of measures against the use of single use plastic bags from the state of California. The triple interaction term Plastic_BanxHighFluidityxESG is negatively correlated with the dependent variable and statistically significant.

“Insert Table 9”

Next, we repeat our estimations using a different treatment and control group. As a treatment group, we use only those firms in the retail industry incorporated in states that

enforced a state-wide or a local city ban or pricing mechanism following the event[7]. As different states adopted policies on single use plastic bags across different years, it is a more appropriate test for our hypothesis. The results are presented in table 10, using product market fluidity as a measure of competition. The estimates are consistent with those of the previous approach before including control variables. The triple interaction term Plastic_BanxHighFluidityxESG and the interaction HighFluidityxESG are negative and statistically significant suggesting that high competition amplifies the negative effects of ESG on earnings management.

"Insert Table 10"

Furthermore, we repeat the same approach using in the treatment group firms incorporated in the specific areas that adopted the regulation, without also including firms in parts of the state that did not enforce a regulation against that use of single use plastic bags. First, specific cities, counties or states that adopted the ban were identified in each state and matched with their respective Zip codes. Firms' incorporation Zip codes data were obtained from compustat (item addzip) and merged in our sample. Firms were then assigned in the treatment group if they are in the retail industry, addressed in a zip code that belongs to a city or county or state that adopted the regulation, following the event[8]. Firms incorporated in states that did not adopt relevant regulation at any level were excluded. This ensures more robust results due to close proximity, as firms in the control group are incorporated in neighbouring areas of those in the treatment group, in the same states[9].

[7] In states without a state-wide ban, and more than one city enforcing a ban on plastic bags, we use the first city regulation to determine the time of the event used as treatment for the whole state.
[8] The event could be either a ban on single use plastic bags, or a pricing mechanism, or a recycling program.
[9] Due to significant drop in observations in the sample, the binary variable for high competition was recalculated

The results are shown in table 11, using product market fluidity as a measure of competition. The estimates of the interaction terms Plastic_BanxHighFluidityxESG and HighFluidityxESG still hold, however before we include control variables.

"Insert Table 11"

Lastly, for robustness reasons we repeat the IV approach of the basic model using different classifications for High Competition. The results are presented in table 12. Panel A uses fluidity as a measure of competition and panel B uses vertical integration. In columns (1) and (2), high competition is calculated using the 75% percentile of competition instead of the mean like in the previous analysis. In columns (3) and (4) high competition is calculated using the 90% of fluidity and vertical integration as the benchmark. The results remain consistent.

"Insert Table 12"

Considered together, the additional tests presented in this section support earlier conclusions that product market competition significantly affects the relationship between earnings management and corporate social responsibility. More importantly, we find that highly competitive pressure, amplifies the effects of ESG engagement on firm's earnings management policies.

5. Conclusions

We use a sample of US firms over the 2002–2017 period to assess ESG's mitigating effect on firms' engagement in earnings management practices through product market competition. We extend the literature by investigating the relationship between earnings management and ESG driven by product market competition throughout the sample period as well as industry-wide competition shock. We also consider the potential reverse causality between ESG and earnings management.

We find that firms that operate in highly competitive markets engage more in earnings management practises, suggesting that the disciplinary power of product market competition provides managers with incentives to show superior financial results. More importantly, we find that significant competitive pressure in the product market effectively amplifies ESG's mitigating effects on earnings management. This suggests that high ESG standards are more effective in limiting earnings management by the firm when product market competition is high. These results stand up to various robustness checks, including addressing endogeneity concerns through a triple difference-in-difference analysis, an instrumental variable approach, as well as using alternative proxies of product market competition and classifications of high competition.

As part of additional analysis, we break down the proxy for ESG to its four individual pillars, governance, economic, environmental, and social, to examine the effects of each on earnings management, and how competition affects each relationship. We find that different pillars provide different incentives to abstain from earnings management, however, most relationships become negative under competitive pressure. Moreover, we examine the effects of disclosure of ESG related information on earnings management, and the effects of product market competition on this relationship, irrespective of high or low ESG score by the firm. We find that even disclosing ESG information, provides firms with incentives to limit earnings management under competitive pressure. Lastly, we employ a triple difference in differences approach in three individual tests. The baseline regression and robustness checks still hold using this approach.

Table 1. Summary Statistics

This table presents the descriptive statistics for the variables used in this study of all publicly traded U.S. firms in CRSP/Compustat between 2002 and 2017. We exclude financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) due to their special regulatory environment. Summary statistics for all sample firms, firms with high competition, firms with low competition, and firms without an ESG score are reported in Panels A, B, C, and D respectively. Firms are classified as high and low competition based on Tercile classification and using product market fluidity as a measure of competition. All variables are defined in the Appendix B. All continuous variables are winsorized at the 1% and 99% tails.

Panel A: All Firms

	N	Mean	Median	SD	1st Percentile	99th Percentile
EM	55090	0.1051	0.0556	0.1509	0.0010	0.8443
ESG scores	9404	50.2447	44.7900	30.4100	6.8000	97.0800
Fluidity	43761	6.8102	6.0459	3.6285	1.5778	18.1485
Vertical Integration	44208	-0.0103	-0.0071	0.0098	-0.0438	-0.0002
HHI	44185	-0.3137	-0.1975	0.2842	-1.0000	-0.0281
Similarity	44185	4.7209	1.6249	8.2902	1.0000	46.9208
MRK_SHR	55090	0.0098	0.0007	0.0327	0.0000	0.1630
ROA	55090	-0.1268	0.0172	0.9434	-2.4783	0.5028
SIZE	55090	5.4825	5.4648	2.2540	1.0339	10.7928
MB	49079	1.9535	1.1594	3.8035	-0.2874	13.7993
LEV	54462	0.2327	0.1330	0.3950	0.0000	1.5144
DISTRESS	55090	0.0287	0.0000	0.1669	0.0000	1.0000
LOW_MTR	55090	0.8726	1.0000	0.3335	0.0000	1.0000
BIGAUD	55090	0.4991	0.0000	0.5000	0.0000	1.0000
BLOAT	55090	0.2331	0.0000	0.4228	0.0000	1.0000

Panel B: High Competition Firms

	N	Mean	Median	SD	1st Percentile	99th Percentile
EM	32326	0.1240	0.0618	0.1758	0.0011	0.9570
ESG scores	4512	46.4792	37.8850	30.4143	6.3300	97.0800
Fluidity	20997	9.1818	8.4493	3.4972	3.8130	18.5095
Vertical Integration	21457	-0.0090	-0.0061	0.0088	-0.0437	-0.0004
HHI	21421	-0.2086	-0.1288	0.2129	-1.0000	-0.0251
Similarity	21421	7.6176	3.1801	10.8155	1.0000	55.5935
MRK_SHR	32326	0.0089	0.0004	0.0329	0.0000	0.1541
ROA	32326	-0.2056	-0.0060	1.1946	-3.2976	0.5871
SIZE	32326	5.2061	5.1548	2.3195	0.9369	10.7819
MB	27459	2.3340	1.2948	4.7314	-0.3071	17.3673
LEV	31973	0.2573	0.1242	0.4638	0.0000	1.8073
DISTRESS	32326	0.0416	0.0000	0.1998	0.0000	1.0000
LOW_MTR	32326	0.8952	1.0000	0.3063	0.0000	1.0000
BIGAUD	32326	0.4885	0.0000	0.4999	0.0000	1.0000
BLOAT	32326	0.2618	0.0000	0.4396	0.0000	1.0000

Panel C: Low Competition Firms

	N	Mean	Median	SD	1st Percentile	99th Percentile
EM	22764	0.0782	0.0487	0.0998	0.0009	0.4977
ESG scores	4892	53.7177	51.1100	29.9929	7.3000	97.0800
Fluidity	22764	4.6227	4.3268	2.0140	1.5778	10.7348
Vertical Integration	22751	-0.0115	-0.0081	0.0106	-0.0438	-0.0002
HHI	22764	-0.4126	-0.3161	0.3065	-1.0000	-0.0394
Similarity	22764	1.9951	1.2059	2.8287	1.0000	14.7806
MRK_SHR	22764	0.0111	0.0013	0.0324	0.0000	0.1725
ROA	22764	-0.0148	0.0384	0.3250	-1.0702	0.3843
SIZE	22764	5.8751	5.8658	2.0960	1.5839	10.8227
MB	21620	1.4702	1.0262	1.9978	-0.2556	8.2085
LEV	22489	0.1978	0.1418	0.2644	0.0000	0.9859
DISTRESS	22764	0.0102	0.0000	0.1007	0.0000	1.0000
LOW_MTR	22764	0.8404	1.0000	0.3662	0.0000	1.0000
BIGAUD	22764	0.5143	1.0000	0.4998	0.0000	1.0000
BLOAT	22764	0.1922	0.0000	0.3941	0.0000	1.0000

Panel D: No ESG Firms

	N	Mean	Median	SD	1st Percentile	99th Percentile
EM	45686	0.1157	0.0621	0.1605	0.0011	0.8896
Fluidity	34674	6.8758	6.1203	3.6191	1.5778	17.9340
Vertical Integration	34974	-0.0100	-0.0067	0.0096	-0.0438	-0.0002
HHI	34972	-0.3226	-0.2011	0.2921	-1.0000	-0.0285
Similarity	34972	4.7742	1.6377	8.0806	1.0000	44.3420
MRK_SHR	45686	0.0047	0.0004	0.0186	0.0000	0.0745
ROA	45686	-0.1594	0.0040	1.0254	-2.7179	0.5432
SIZE	45686	4.9087	4.9421	1.9342	0.9936	9.4372
MB	40584	1.9647	1.0973	3.9930	-0.3253	14.9811
LEV	45239	0.2296	0.1026	0.4208	0.0000	1.6113
DISTRESS	45686	0.0345	0.0000	0.1826	0.0000	1.0000
LOW_MTR	45686	0.8683	1.0000	0.3381	0.0000	1.0000
BIGAUD	45686	0.4634	0.0000	0.4987	0.0000	1.0000
BLOAT	45686	0.2264	0.0000	0.4185	0.0000	1.0000

Table 2. Correlation Matrix

This table presents the pearson correlation between the variables used in this study of all publicly traded U.S. firms in CRSP/Compustat between 2002 and 2017. We exclude financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) due to their special regulatory environment. All variables are defined in the Appendix B. All continuous variables are winsorized at the 1% and 99% tails.

	EM	ESG scores	Fluidity	Vertint	HHI	Similarity	MRK_SHR	ROA	SIZE	MB	LEV	DISTRESS	LOW_MTR	BIGAUD	BLOAT
EM	1														
ESG scores	-0.1751*	1													
Fluidity	0.1695*	-0.2115*	1												
Vertint	0.1295*	-0.1351*	0.2999*	1											
HHI	0.0213*	-0.1093*	0.4996*	0.1308*	1										
Similarity	0.1656*	-0.2261*	0.6762*	0.2433*	0.3429*	1									
MRK_SHR	-0.1142*	0.3607*	-0.0857*	-0.1234*	0.0139*	-0.0906*	1								
ROA	-0.3161*	0.1816*	-0.2372*	-0.1191*	-0.0765*	-0.2757*	0.0573*	1							
SIZE	-0.3661*	0.6175*	-0.0852*	-0.2093*	0.1351*	-0.1075*	0.4582*	0.1965*	1						
MB	0.2477*	-0.0916*	0.1752*	0.1308*	0.0735*	0.1843*	-0.0447*	-0.1972*	-0.1982*	1					
LEV	0.0607*	-0.0301*	0.0604*	-0.0696*	0.0481*	0.0315*	0.0342*	-0.0600*	0.0822*	0.2121*	1				
DISTRESS	0.2343*	-0.0134	0.0416*	0.0459*	-0.0097*	0.0278*	-0.0514*	-0.1298*	-0.2608*	0.1804*	0.1917*	1			
LOW_MTR	0.0821*	0.0066	0.1172*	0.0774*	0.0807*	0.0836*	-0.0190*	-0.0768*	-0.0449*	0.0476*	0.0462*	0.0595*	1		
BIGAUD	-0.1729*	-0.0192*	0.0486*	-0.0277*	0.1368*	0.0484*	0.1219*	0.0689*	0.3887*	-0.0774*	0.0266*	-0.1486*	-0.0125*	1	
BLOAT	0.0545*	-0.0159	0.0168*	-0.0441*	0.0083*	0.0533*	0.0781*	-0.0963*	0.0767*	0.0430*	0.0639*	0.0234*	0.0231*	0.0139*	1

Table 3. The Relationship between ESG and earnings management under competition

This table reports OLS estimates of ESG, competition, and earnings management. As an ESG measure, we use the natural logarithm of the weighted average ESG score from Asset4. The absolute value of firm's discretionary accruals is used as the dependent variable. High fluidity and high vertical integration are binary variables equal to one if the firm's fluidity (Fluidity) or vertical integration (VertInt) is higher that the industry-year average. To measure product market competition, we use two variables: (i) Fluidity (ii) Vertical Integration, by Hoberg and Phillips data library. All variables are defined in the Appendix B. All regressions include industry and year fixed effects. All control variables are lagged by one year. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

Panel A: Fluidity as a measure of competition

	(1) EM	(2) EM	(3) EM	(4) EM	(5) EM	(6) EM
ESG	-0.0164***	-0.0036*			-0.0084***	-0.0020
	(0.0026)	(0.0018)			(0.0019)	(0.0019)
HighFluidity			0.0420***	0.0113***	0.0602***	0.0139***
			(0.0021)	(0.0017)	(0.0098)	(0.0044)
ESGxHighFluidity					-0.0137***	-0.0024*
					(0.0025)	(0.0012)
MRK_SHR		0.0822**		0.3709***		0.0793**
		(0.0298)		(0.0402)		(0.0291)
ROA		-0.0194**		-0.0102		-0.0183**
		(0.0074)		(0.0069)		(0.0069)
SIZE		-0.0073***		-0.0220***		-0.0074***
		(0.0018)		(0.0008)		(0.0018)
MB		0.0063***		0.0064***		0.0061***
		(0.0016)		(0.0010)		(0.0016)
LEV		0.0089		0.0295***		0.0092
		(0.0061)		(0.0046)		(0.0063)
DISTRESS		-0.2026***		0.0660***		-0.1967***
		(0.0545)		(0.0141)		(0.0528)
LOW_MTR		0.0059***		0.0098***		0.0057**
		(0.0019)		(0.0023)		(0.0019)

BIGAUD		-0.0017		-0.0061***		-0.0017
		(0.0016)		(0.0018)		(0.0016)
BLOAT		0.0024		0.0135***		0.0022
		(0.0018)		(0.0022)		(0.0018)
Constant	0.1138***	0.1037***	0.0804***	0.1793***	0.0790***	0.0965***
	(0.0098)	(0.0123)	(0.0013)	(0.0043)	(0.0066)	(0.0122)
Observations	9,404	7,802	55,090	41,247	9,404	7,802
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0840	0.1388	0.0673	0.2426	0.0938	0.1403

Panel B: Vertical Integration as a measure of competition

	(1)	(2)	(3)	(4)	(5)	(6)
	EM	EM	EM	EM	EM	EM
ESG	-0.0164***	-0.0036*			-0.0093***	-0.0009
	(0.0026)	(0.0018)			(0.0026)	(0.0018)
HighVertInt			0.0394***	0.0062***	0.0481***	0.0199**
			(0.0023)	(0.0015)	(0.0091)	(0.0076)
ESGxHighVertInt					-0.0109***	-0.0045**
					(0.0022)	(0.0020)
MRK_SHR		0.0822**		0.3760***		0.0809**
		(0.0298)		(0.0396)		(0.0299)
ROA		-0.0194**		-0.0104		-0.0189**
		(0.0074)		(0.0070)		(0.0073)
SIZE		-0.0073***		-0.0221***		-0.0072***
		(0.0018)		(0.0008)		(0.0018)
MB		0.0063***		0.0064***		0.0061***
		(0.0016)		(0.0010)		(0.0016)
LEV		0.0089		0.0301***		0.0094
		(0.0061)		(0.0045)		(0.0062)
DISTRESS		-0.2026***		0.0670***		-0.2011***

		(0.0545)		(0.0141)		(0.0546)
LOW_MTR		0.0059***		0.0103***		0.0055**
		(0.0019)		(0.0022)		(0.0019)
BIGAUD		-0.0017		-0.0058***		-0.0017
		(0.0016)		(0.0018)		(0.0016)
BLOAT		0.0024		0.0142***		0.0023
		(0.0018)		(0.0023)		(0.0018)
Constant	0.1138***	0.1037***	0.0775***	0.1808***	0.0824***	0.0911***
	(0.0098)	(0.0123)	(0.0016)	(0.0046)	(0.0097)	(0.0156)
Observations	9,404	7,802	55,090	41,247	9,404	7,802
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0840	0.1388	0.0627	0.2414	0.0899	0.1400

Table 4. The Relationship between ESG and earnings management under competition.

This table presents the results of the IV approach, which estimates the relationship between ESG and firm's earnings management when facing high competition over the sample period of 2002-2017. The absolute value of firm's discretionary accruals is used as the dependent variable. High fluidity and high vertical integration are binary variables equal to one if the firm's fluidity (Fluidity) or vertical integration (VertInt) is higher that the industry-year average. To measure product market competition, we use two variables: (i) Fluidity (ii) Vertical Integration, by Hoberg and Phillips data library. *ESG* is the natural logarithm of the overall ESG score from Asset4 instrumented with the average ESG score for each industry-year pair. The results of the 1st stage are presented in column (1) and (4). Columns (2) and (5) report the results of 2nd stage regression without control variables. In columns (3) and (6) we show the 2nd stage regression results with control variables. All variables are defined in the Appendix B. All control variables are lagged by one year. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

	(1) ESG	(2) EM	(3) EM	(4) ESG	(5) EM	(6) EM
Industry_ESG	-0.9569***			-0.9587***		
	(0.0063)			(0.0063)		
ESG		-0.0083***	-0.0035**		-0.0084***	-0.0010
		(0.0015)	(0.0016)		(0.0015)	(0.0017)
ESGxHighFluidity		-0.0120***	0.0005			
		(0.0026)	(0.0026)			
HighFluidity		0.0538***	0.0029			
		(0.0102)	(0.0102)			
ESGxHighVertInt					-0.0107***	-0.0045**
					(0.0022)	(0.0020)
HighVertInt					0.0475***	0.0201**
					(0.0090)	(0.0080)
MRK_SHR	-0.3874***		0.0801***	-0.3867***		0.0811***
	(0.0332)		(0.0198)	(0.0329)		(0.0197)
ROA	0.0364***		-0.0180*	0.0380***		-0.0182*
	(0.0102)		(0.0104)	(0.0106)		(0.0104)
SIZE	0.0297***		-0.0075***	0.0295***		-0.0072***
	(0.0015)		(0.0013)	(0.0015)		(0.0012)
MB	0.0045***		0.0060***	0.0044***		0.0060***

	(0.0010)		(0.0014)	(0.0010)		(0.0014)
LEV	0.0176***		0.0096	0.0165***		0.0097
	(0.0058)		(0.0069)	(0.0058)		(0.0068)
DISTRESS	0.0983		-0.1933***	0.1130		-0.1954***
	(0.0892)		(0.0710)	(0.0867)		(0.0704)
LOW_MTR	0.0003		0.0058***	0.0006		0.0055***
	(0.0032)		(0.0019)	(0.0033)		(0.0019)
BIGAUD	0.0058**		-0.0017	0.0058**		-0.0018
	(0.0023)		(0.0015)	(0.0023)		(0.0015)
BLOAT	-0.0165***		0.0023	-0.0169***		0.0024
	(0.0025)		(0.0018)	(0.0025)		(0.0018)
Constant	3.3914***	0.1199***	0.1304***	3.4098***	0.1190***	0.1185***
	(0.0285)	(0.0130)	(0.0132)	(0.0297)	(0.0134)	(0.0133)
Observations	7,788	9,381	7,788	7,788	9,381	7,788
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.9836	0.0933	0.1400	0.9836	0.0896	0.1399

Table 5. The Relationship between ESG and earnings management under competition.

This table presents the results of the IV approach, which estimates the relationship between ESG and firm's earnings management when facing high competition over the sample period of 2002-2017. The absolute value of firm's discretionary accruals is used as the dependent variable. High similarity and high HHI are binary variables equal to one if the firm's product similarity (Similarity) or HHI (HHI) is higher that the industry-year average. To measure product market competition, we use two variables: (i) Similarity (ii) HHI index, by Hoberg and Phillips data library. *ESG* is the natural logarithm of the overall ESG score from Asset4 instrumented with the average ESG score for each industry-year pair. The results of the 1st stage are presented in column (1) and (4). Columns (2) and (5) report the results of 2nd stage regression without control variables. In columns (3) and (6) we show the 2nd stage regression results with control variables. All variables are defined in the Appendix B. All control variables are lagged by one year. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

	(1) ESG	(2) EM	(3) EM	(4) ESG	(5) EM	(6) EM
Industry_ESG	-0.9577***			-0.9576***		
	(0.0063)			(0.0063)		
ESG		-0.0086***	-0.0026*		-0.0077***	-0.0046**
		(0.0014)	(0.0014)		(0.0022)	(0.0023)
ESGxHighSimilarity		-0.0153***	-0.0025			
		(0.0028)	(0.0029)			
HighSimilarity		0.0654***	0.0134			
		(0.0112)	(0.0116)			
ESGxHighHHI					-0.0100***	0.0013
					(0.0028)	(0.0033)
HighHHI					0.0425***	-0.0033
					(0.0115)	(0.0132)
MRK_SHR	-0.3791***		0.0801***	-0.3808***		0.0836***
	(0.0326)		(0.0200)	(0.0329)		(0.0201)
ROA	0.0338***		-0.0177*	0.0362***		-0.0188*
	(0.0096)		(0.0104)	(0.0100)		(0.0106)
SIZE	0.0293***		-0.0073***	0.0297***		-0.0074***
	(0.0015)		(0.0013)	(0.0015)		(0.0013)
MB	0.0047***		0.0060***	0.0045***		0.0062***
	(0.0010)		(0.0014)	(0.0010)		(0.0014)

LEV	0.0183***		0.0095	0.0179***		0.0094
	(0.0058)		(0.0069)	(0.0059)		(0.0068)
DISTRESS	0.0869		-0.1915***	0.1055		-0.1974***
	(0.0861)		(0.0712)	(0.0823)		(0.0719)
LOW_MTR	0.0004		0.0058***	0.0001		0.0059***
	(0.0032)		(0.0019)	(0.0033)		(0.0019)
BIGAUD	0.0052**		-0.0017	0.0058**		-0.0017
	(0.0023)		(0.0015)	(0.0023)		(0.0015)
BLOAT	-0.0161***		0.0024	-0.0172***		0.0025
	(0.0025)		(0.0018)	(0.0025)		(0.0018)
Constant	3.3996***	0.1220***	0.1269***	3.4214***	0.1187***	0.1338***
	(0.0283)	(0.0131)	(0.0131)	(0.0294)	(0.0144)	(0.0149)
Observations	7,788	9,381	7,788	7,788	9,381	7,788
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	0.9837	0.0949	0.1400	0.9837	0.0869	0.1387

Table 6. The Relationship between pillars of ESG and earnings management under competition.

This table presents the results of the IV approach, which estimates the relationship between the four pillars of ESG (governance, environmental, economic, and social) and firm's earnings management when facing high competition over the sample period of 2002-2017. The absolute value of firm's discretionary accruals is used as the dependent variable. High fluidity and High vertical integration are binary variables equal to one if the firm's fluidity (Fluidity) or vertical integration (VertInt) is higher than the industry-year average. To measure product market competition, we use two measures: (i) Fluidity (ii) Vertical Integration, by Hoberg and Phillips data library. Each of the four pillars of *ESG* is the natural logarithm of the relevant ESG score from Asset4 instrumented with the average ESG score for each industry-year pair. Column (1) reports the 2nd stage regression for the firm's governance score. Column (2), (3) and (4) report the 2nd stage regression for the firm's economic, environmental, and social score respectively, all with control variables. All variables are defined in the Appendix B. All control variables are lagged by one year. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

Panel A: Fluidity as a measure of competition

	(1) EM	(2) EM	(3) EM	(4) EM
Gov	-0.00632*			
	(0.00331)			
GovxHighFluidity	0.00879			
	(0.00605)			
Eco		-0.00609***		
		(0.00138)		
EcoxHighFluidity		-0.000471		
		(0.00229)		
Env			9.98e-05	
			(0.00135)	
EnvxHighFluidity			-0.000291	
			(0.00206)	
Soc				-0.000659
				(0.00142)
SocxHighFluidity				0.00114
				(0.00229)
HighFluidity	-0.0317	0.00573	0.00621	0.00120
	(0.0259)	(0.00894)	(0.00786)	(0.00877)
MRK_SHR	0.0807***	0.0761***	0.0810***	0.0811***
	(0.0200)	(0.0195)	(0.0196)	(0.0197)
ROA	-0.0188*	-0.0161	-0.0185*	-0.0186*
	(0.0106)	(0.00998)	(0.0105)	(0.0106)
SIZE	-0.00837***	-0.00643***	-0.00853***	-0.00853***
	(0.00115)	(0.00112)	(0.00121)	(0.00125)
MB	0.00598***	0.00623***	0.00594***	0.00596***
	(0.00141)	(0.00142)	(0.00141)	(0.00141)
LEV	0.0101	0.00792	0.0101	0.0102
	(0.00678)	(0.00681)	(0.00685)	(0.00680)
DISTRESS	-0.198***	-0.185***	-0.197***	-0.198***

	(0.0718)	(0.0671)	(0.0717)	(0.0721)
LOW_MTR	0.00582***	0.00536***	0.00578***	0.00582***
	(0.00188)	(0.00183)	(0.00186)	(0.00187)
BIGAUD	-0.00166	-0.00188	-0.00173	-0.00173
	(0.00147)	(0.00146)	(0.00146)	(0.00146)
BLOAT	0.00257	0.00202	0.00269	0.00269
	(0.00177)	(0.00174)	(0.00177)	(0.00177)
Constant	0.150***	0.133***	0.125***	0.127***
	(0.0180)	(0.0130)	(0.0129)	(0.0130)
Observations	7,788	7,788	7,788	7,788
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.139	0.144	0.139	0.139

Panel B: Vertical integration as a measure of competition

	(1)	(2)	(3)	(4)
	EM	EM	EM	EM
Gov	-0.00185			
	(0.00335)			
GovxHighVertInt	-0.000995			
	(0.00474)			
Eco		-0.00349**		
		(0.00149)		
EcoxHighVertInt		-0.00504***		
		(0.00189)		
Env			0.00168	
			(0.00139)	
EnvxHighVertInt			-0.00323**	
			(0.00159)	
Soc				0.00200
				(0.00145)
SocxHighVertInt				-0.00436**
				(0.00179)
HighVertInt	0.00769	0.0211***	0.0147**	0.0190***
	(0.0202)	(0.00737)	(0.00600)	(0.00680)
MRK_SHR	0.0832***	0.0754***	0.0834***	0.0823***
	(0.0199)	(0.0193)	(0.0196)	(0.0196)
ROA	-0.0191*	-0.0161	-0.0191*	-0.0189*
	(0.0106)	(0.00991)	(0.0106)	(0.0105)
SIZE	-0.00830***	-0.00620***	-0.00839***	-0.00822***
	(0.00114)	(0.00110)	(0.00121)	(0.00123)
MB	0.00598***	0.00623***	0.00595***	0.00595***
	(0.00141)	(0.00142)	(0.00141)	(0.00141)
LEV	0.0101	0.00810	0.0101	0.0102
	(0.00678)	(0.00683)	(0.00679)	(0.00679)
DISTRESS	-0.200***	-0.187***	-0.201***	-0.200***
	(0.0720)	(0.0659)	(0.0719)	(0.0714)
LOW_MTR	0.00580***	0.00502***	0.00567***	0.00554***
	(0.00188)	(0.00183)	(0.00188)	(0.00188)

BIGAUD	-0.00172	-0.00191	-0.00176	-0.00177
	(0.00146)	(0.00146)	(0.00146)	(0.00146)
BLOAT	0.00279	0.00201	0.00294*	0.00282
	(0.00176)	(0.00173)	(0.00178)	(0.00177)
Constant	0.131***	0.121***	0.118***	0.115***
	(0.0184)	(0.0130)	(0.0129)	(0.0132)
Observations	7,788	7,788	7,788	7,788
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.139	0.144	0.139	0.139

Table 7. The Relationship between ESG disclosure and earnings management under competition.

This table presents the results of the IV approach, which estimates the relationship between disclosure of ESG information and firm's earnings management when facing high competition over the sample period of 2002-2017. The absolute value of firm's discretionary accruals is used as the dependent variable. High fluidity and vertical integration are binary variables equal to one if the firm's fluidity (Fluidity) or vertical integration (VertInt) is higher that the industry-year average. To measure product market competition, we use two variables: (i) Fluidity (ii) Vertical Integration, by Hoberg and Phillips data library. *ESGscore* is a binary variable equal to one if there is an overall ESG score from Asset4 instrumented with the average ESG score for each industry-year pair. The results of the 1st stage are presented in column (1) and (3). Columns (2) and (4) report the results of 2nd stage regression without and with control variables. All variables are defined in the Appendix B. All control variables are lagged by one year. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

Panel A: Fluidity as a measure of competition

	(1) ESGscore	(2) EM	(3) ESGscore	(4) EM
Industry_ESG	-0.0470***		-0.0569***	
	(0.0010)		(0.0014)	
ESGscore		-0.0448***		0.0185***
		(0.00122)		(0.00196)
ESGscorexHighFluidity		-0.0308***		-0.00807***
		(0.00195)		(0.00191)
HighFluidity		0.0433***		0.0131***
		(0.00133)		(0.00135)
MRK_SHR			-0.0980***	0.356***
			(0.0158)	(0.0184)
ROA			0.0002	-0.00777
			(0.0002)	(0.00492)
SIZE			0.0016***	-0.0237***
			(0.0001)	(0.000663)
MB			0.0005***	0.00614***
			(0.0001)	(0.000944)
LEV			-0.0016**	0.0309***
			(0.0007)	(0.00405)
DISTRESS			-0.0005	0.0638***
			(0.0011)	(0.00843)
LOW_MTR			0.00003	0.00932***
			(0.0006)	(0.00139)
BIGAUD			0.0027***	-0.00559***
			(0.0005)	(0.00120)
BLOAT			-0.0014**	0.0141***
			(0.0006)	(0.00198)
Constant	0.1679***	0.165***	0.2664***	0.199***
	(0.0050)	(0.0106)	(0.0066)	(0.0108)
Observations	54,838	54,838	41,125	41,125
Year Fixed Effects	Yes	Yes	Yes	Yes

Industry Fixed Effects	Yes	Yes	Yes	Yes
Adj R-squared	0.9843	0.088	0.9848	0.243

Panel B: Vertical integration as a measure of competition

	(1) ESGscore	(2) EM	(3) ESGscore	(4) EM
Industry_ESG	-0.0470***		-0.0569***	
	(0.0010)		(0.0014)	
ESGscore		-0.0398***		0.0171***
		(0.00134)		(0.00187)
ESGscorexHighVertInt		-0.0340***		-0.00496***
		(0.00186)		(0.00184)
HighVertInt		0.0412***		0.00707***
		(0.00129)		(0.00125)
MRK_SHR			-0.0924***	0.360***
			(0.0157)	(0.0185)
ROA			0.0002	-0.00787
			(0.0002)	(0.00496)
SIZE			0.0016***	-0.0237***
			(0.0001)	(0.000676)
MB			0.0005***	0.00623***
			(0.0001)	(0.000954)
LEV			-0.0016**	0.0316***
			(0.0007)	(0.00408)
DISTRESS			-0.0006	0.0652***
			(0.0011)	(0.00844)
LOW_MTR			0.00002	0.0100***
			(0.0006)	(0.00140)
BIGAUD			0.0028***	-0.00525***
			(0.0005)	(0.00121)
BLOAT			-0.0013**	0.0149***
			(0.0006)	(0.00200)
Constant	0.1687***	0.162***	0.2667***	0.200***
	(0.0050)	(0.0107)	(0.0066)	(0.0109)
Observations	54,838	54,838	41,125	41,125
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Adj R-squared	0.9843	0.084	0.9848	0.242

Table 8. Summary Statistics

This table presents the descriptive statistics for the control and treatment groups used in the difference in differences approach of publicly traded U.S. firms in CRSP/Compustat between 2002 and 2017. We exclude financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4949) due to their special regulatory environment. We also exclude firms with no ESG score from Asset4. Summary statistics for all firms in the control group are reported in Panel A. Summary statistics for all firms in the treatment group are reported in Panel B. Firms are assigned in the treatment group if they are in the retail industry (SIC does 5200-5999) following the 2014 ban of single use plastic bags in California. All variables are defined in the Appendix B. All continuous variables are winsorized at the 1% and 99% tails.

Panel A: Control group

	N	Mean	Median	SD	1st Percentile	99th Percentile
EM	9240	0.0536	0.0358	0.0708	0.0007	0.3391
ESG scores	9240	50.3693	45.0050	30.3732	6.8000	97.0800
Fluidity	8930	6.5773	5.7545	3.6702	1.5778	18.5095
Vertical Integration	9075	-0.0117	-0.0085	0.0106	-0.0438	-0.0002
HHI	9055	-0.2821	-0.1908	0.2493	-1.0000	-0.0272
Similarity	9055	4.5405	1.5716	9.0751	1.0000	56.2532
MRK_SHR	9240	0.0343	0.0093	0.0619	0.0000	0.2836
ROA	9240	0.0309	0.0572	0.2765	-0.7471	0.3265
SIZE	9240	8.2841	8.2430	1.4857	4.5780	11.9397
MB	8333	1.8876	1.3973	2.7287	0.1914	8.5742
LEV	9069	0.2466	0.2206	0.2221	0.0000	0.8835
DISTRESS	9240	0.0001	0.0000	0.0104	0.0000	0.0000
LOW_MTR	9240	0.8963	1.0000	0.3049	0.0000	1.0000
BIGAUD	9240	0.6715	1.0000	0.4697	0.0000	1.0000
BLOAT	9240	0.2646	0.0000	0.4411	0.0000	1.0000

Panel B: Treatment group

	N	Mean	Median	SD	1st Percentile	99th Percentile
EM	164	0.0485	0.0312	0.0606	0.0013	0.2996
ESG scores	164	43.2230	25.2350	31.7336	7.8900	94.5000
Fluidity	157	5.5681	5.1838	2.3490	2.4531	15.9134
Vertical Integration	159	-0.0073	-0.0067	0.0049	-0.0192	-0.0001
HHI	158	-0.1654	-0.0927	0.1901	-1.0000	-0.0326
Similarity	158	3.2612	2.1971	6.5687	1.0000	52.7118
MRK_SHR	164	0.0444	0.0135	0.0701	0.0008	0.3302
ROA	164	0.0794	0.0870	0.1162	-0.3211	0.3752
SIZE	164	7.4765	7.2617	1.4983	4.7861	11.4560
MB	162	2.5274	1.7555	2.2230	0.2670	11.1952
LEV	154	0.3363	0.2134	0.4758	0.0000	2.8015
DISTRESS	164	0.0000	0.0000	0.0000	0.0000	0.0000
LOW_MTR	164	0.7134	1.0000	0.4536	0.0000	1.0000
BIGAUD	164	0.7500	1.0000	0.4343	0.0000	1.0000
BLOAT	164	0.3110	0.0000	0.4643	0.0000	1.0000

Table 9. The Relationship between ESG and earnings management following a shock in the product market at national level.

This table presents the relationship between earnings management and ESG when firms face an industry wide product market shock, the ban of the use of single use plastic bags in the retail industry. Treatment firms are firms in the retail industry following the 2014 decision to ban single use plastic bags in California. Plastic_Ban is a binary variable that takes the value of one for firms in the treatment group following the shock, zero otherwise. The absolute value of firm's discretionary accruals is used as the dependent variable. High fluidity is a binary variable equal to one if the firm's fluidity (Fluidity) is higher that the industry-year average for year. To measure product market competition, we use product market Fluidity, by Hoberg and Phillips data library. ESG is the natural logarithm of the overall ESG score from Asset4. All variables are defined in Appendix B. All control variables are lagged by one year. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

	(1) EM	(2) EM	(3) EM	(4) EM
Plastic_Ban	-0.00680	-0.00305	0.00200	0.00374
	(0.00674)	(0.00581)	(0.00777)	(0.00694)
Plastic_BanxHighFluidityxESG			-0.00627***	-0.00579**
			(0.00189)	(0.00215)
HighFluidityxESG			-0.0137***	-0.00255**
			(0.00251)	(0.00119)
HighFluidity			0.0606***	0.0146***
			(0.00982)	(0.00431)
ESG			-0.00837***	-0.00191
			(0.00185)	(0.00185)
MRK_SHR		0.0832**		0.0782**
		(0.0299)		(0.0290)
ROA		-0.0200**		-0.0182**
		(0.00758)		(0.00690)
SIZE		-0.00852***		-0.00737***
		(0.00158)		(0.00177)
MB		0.00616***		0.00610***
		(0.00160)		(0.00163)
LEV		0.00967		0.00930
		(0.00598)		(0.00627)
DISTRESS		-0.207***		-0.196***
		(0.0550)		(0.0532)
LOW_MTR		0.00588***		0.00567**
		(0.00195)		(0.00191)
BIGAUD		-0.00165		-0.00170
		(0.00159)		(0.00158)
BLOAT		0.00290		0.00224
		(0.00183)		(0.00182)
Constant	0.0536***	0.100***	0.0788***	0.0962***
	(0.000628)	(0.0128)	(0.00643)	(0.0122)
Observations	9,404	7,802	9,404	7,802
Year Fixed Effects	Yes	Yes	Yes	Yes

Industry Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.058	0.138	0.094	0.141

Table 10. The Relationship between ESG and earnings management following a shock in the product market in states that adopted the regulation.

This table presents the relationship between earnings management and ESG when firms face an industry-state wide product market shock, the ban of the use of single use plastic bags in the retail industry. Treatment firms are firms in the retail industry that were incorporated in states that adopted the relevant ban regulation following the event during 2002-2017. Plastic_Ban is a binary variable that takes the value of one for firms in the treatment group following the shock, zero otherwise. The absolute value of firm's discretionary accruals is used as the dependent variable. High fluidity is a binary variable equal to one if the firm's fluidity (Fluidity) is higher that the industry-year average. To measure product market competition, we use Fluidity, by Hoberg and Phillips data library. ESG is the natural logarithm of the overall ESG score from Asset4. All variables are defined in Appendix B. All control variables are lagged by one year. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

	(1) EM	(2) EM	(3) EM	(4) EM
Plastic_Ban	-0.00732	-0.0106*	-0.00295	-0.00724
	(0.00549)	(0.00534)	(0.00606)	(0.00598)
Plastic_BanxHighFluidityxESG			-0.00444**	-0.00286
			(0.00206)	(0.00272)
HighFluidityxESG			-0.0139***	-0.00280**
			(0.00254)	(0.00120)
HighFluidity			0.0612***	0.0152***
			(0.00985)	(0.00434)
ESG			-0.00856***	-0.00216
			(0.00184)	(0.00187)
MRK_SHR		0.0846**		0.0802**
		(0.0300)		(0.0291)
ROA		-0.0200**		-0.0181**
		(0.00762)		(0.00692)
SIZE		-0.00856***		-0.00729***
		(0.00157)		(0.00176)
MB		0.00618***		0.00613***
		(0.00160)		(0.00163)
LEV		0.00970		0.00923
		(0.00592)		(0.00626)
DISTRESS		-0.207***		-0.196***
		(0.0548)		(0.0529)
LOW_MTR		0.00591***		0.00576***
		(0.00197)		(0.00192)
BIGAUD		-0.00162		-0.00171
		(0.00158)		(0.00157)
BLOAT		0.00285		0.00214
		(0.00183)		(0.00181)
Constant	0.0537***	0.101***	0.0797***	0.0965***
	(0.000645)	(0.0128)	(0.00645)	(0.0121)
Observations	9,359	7,760	9,359	7,760

Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.058	0.138	0.095	0.141

Table 11. The Relationship between ESG and earnings management following a shock in the product market in areas that adopted the regulation.

This table presents the relationship between earnings management and ESG when firms face an industry-zip-state wide product market shock, the ban of the use of single use plastic bags in the retail industry. Treatment firms are firms in the retail industry that were incorporated in areas (based on zip codes) or states that enforced a ban of single use plastic bags during 2002-2017. Plastic_Ban is a binary variable that takes the value of one for firms in the treatment group following the shock, zero otherwise. The control group is comprised of firms in the retail industry that are incorporated in the areas that did not adopt the ban of those same states. The absolute value of firm's discretionary accruals is used as the dependent variable. High fluidity and is a binary variable equal to one if the firm's fluidity (Fluidity) is higher than the industry-year average. To measure product market competition, we use Fluidity, by Hoberg and Phillips data library. ESG is the natural logarithm of the overall ESG score from Asset4. All variables are defined in Appendix B. All control variables are lagged by one year. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

	(1) EM	(2) EM	(3) EM	(4) EM
Plastic_Ban	-0.0126**	-0.0136**	-0.00687	-0.0109
	(0.00580)	(0.00583)	(0.00705)	(0.00786)
Plastic_BanxHighFluidityxESG			-0.00506**	-0.00204
			(0.00194)	(0.00262)
HighFluidityxESG			-0.0125***	-0.000245
			(0.00264)	(0.00114)
HighFluidity			0.0559***	0.00480
			(0.0103)	(0.00503)
ESG			-0.0111***	-0.00362*
			(0.00212)	(0.00177)
MRK_SHR		0.107***		0.104**
		(0.0358)		(0.0357)
ROA		-0.0169**		-0.0157**
		(0.00658)		(0.00617)
SIZE		-0.00983***		-0.00851***
		(0.00201)		(0.00230)
MB		0.00675***		0.00680***
		(0.00194)		(0.00197)
LEV		0.00794		0.00748
		(0.00682)		(0.00719)
DISTRESS		-0.201***		-0.194***
		(0.0500)		(0.0468)
LOW_MTR		0.00574**		0.00542**
		(0.00251)		(0.00252)
BIGAUD		-0.00125		-0.00125
		(0.00198)		(0.00198)
BLOAT		0.00464**		0.00390*
		(0.00186)		(0.00203)
Constant	0.0563***	0.110***	0.0912***	0.112***
	(0.000769)	(0.0162)	(0.00740)	(0.0142)

Observations	7,315	5,988	7,315	5,988
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.059	0.148	0.096	0.150

Table 12. The Relationship between ESG and earnings management under competition.

This table presents the results of the IV approach, which estimates the relationship between ESG and firm's earnings management when facing high competition over the sample period of 2002-2017. The absolute value of firm's discretionary accruals is used as the dependent variable. High fluidity and high vertical integration are binary variables equal to one if the firm's fluidity (Fluidity) or vertical integration (VertInt) is higher that the industry-year 75% of firms in columns (1) and (2) and higher than the 90% of firms in terms of competition in columns (3) and (4). To measure product market competition, we use two variables: (i) Fluidity (ii) Vertical Integration, by Hoberg and Phillips data library. *ESG* is the natural logarithm of the overall ESG score from Asset4 instrumented with the average ESG score for each industry-year pair. Columns (1) and (2) define High Competition at the 75th percentile without and with control variables. Columns (3) and (4) define High Competition at the 90th percentile without and with control variables. All variables are defined in the Appendix B. All control variables are lagged by one year. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

Panel A: Fluidity as a measure of competition

	(1) EM	(2) EM	(3) EM	(4) EM
ESG	-0.0100***	-0.0029**	-0.0119***	-0.0035**
	(0.0012)	(0.0014)	(0.0012)	(0.0014)
ESGxHighFluidity	-0.0157***	-0.0013	-0.0160***	0.0019
	(0.0033)	(0.0033)	(0.0048)	(0.0047)
HighFluidity	0.0703***	0.0118	0.0760***	0.0036
	(0.0132)	(0.0133)	(0.0185)	(0.0185)
MRK_SHR		0.0806***		0.0818***
		(0.0200)		(0.0203)
ROA		-0.0174*		-0.0175*
		(0.0104)		(0.0105)
SIZE		-0.0075***		-0.0075***
		(0.0013)		(0.0013)
MB		0.0059***		0.0060***
		(0.0014)		(0.0014)
LEV		0.0098		0.0097
		(0.0068)		(0.0068)
DISTRESS		-0.1928***		-0.1892***
		(0.0694)		(0.0708)
LOW_MTR		0.0055***		0.0057***
		(0.0018)		(0.0019)
BIGAUD		-0.0018		-0.0019
		(0.0015)		(0.0015)
BLOAT		0.0023		0.0023
		(0.0018)		(0.0017)
Constant	0.1267***	0.1294***	0.1358***	0.1312***
	(0.0129)	(0.0129)	(0.0128)	(0.0129)
Observations	9,381	7,788	9,381	7,788
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes

R-squared	0.0955	0.1405	0.0963	0.1408

Panel B: Vertical Integration as a measure of competition

	(1) EM	(2) EM	(3) EM	(4) EM
ESG	-0.0110***	-0.0030**	-0.0128***	-0.0025*
	(0.0012)	(0.0015)	(0.0012)	(0.0015)
ESGxHighVertInt	-0.0161***	-0.0033	-0.0190***	-0.0124**
	(0.0034)	(0.0031)	(0.0052)	(0.0051)
HighVertInt	0.0693***	0.0173	0.0760***	0.0498**
	(0.0135)	(0.0121)	(0.0204)	(0.0200)
MRK_SHR		0.0788***		0.0780***
		(0.0198)		(0.0198)
ROA		-0.0178*		-0.0188*
		(0.0104)		(0.0104)
SIZE		-0.0072***		-0.0072***
		(0.0013)		(0.0012)
MB		0.0060***		0.0060***
		(0.0014)		(0.0014)
LEV		0.0097		0.0090
		(0.0069)		(0.0067)
DISTRESS		-0.1954***		-0.2051***
		(0.0698)		(0.0716)
LOW_MTR		0.0056***		0.0057***
		(0.0019)		(0.0019)
BIGAUD		-0.0020		-0.0018
		(0.0015)		(0.0015)
BLOAT		0.0024		0.0025
		(0.0018)		(0.0018)
Constant	0.1325***	0.1284***	0.1399***	0.1265***
	(0.0129)	(0.0130)	(0.0129)	(0.0129)
Observations	9,381	7,788	9,381	7,788
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.0935	0.1397	0.0894	0.1398

Appendix A: History of plastic bags ban in the US used in triple Diff-in-Diff

State	City / County	Year	Type	Code
Alaska	Various	2010	Ban	AK
Arizona	Bisbee	2014	Pricing mechanism	AZ
California	Various	2012	Pricing mechanism / Ban	CA
Colorado	Various	2012	Pricing mechanism	CO
District of Columbia	Washington	2010	Pricing mechanism	DC
Hawaii	Big Island Hawaii	2013	Ban	HI
Illinois	State-wide	2016	Recycling Program	IL
Iowa	Marshall	2009	Ban	IA
Maine	Belfast	2012	Ban	ME
Maryland	Montgomery County	2012	Pricing mechanism	MD
Oregon	Portland	2011	Ban	OR
Washington	Various	2012	Pricing mechanism	WA
Delaware	State-wide	2009	Recycling Program	DE

Appendix B: Variable Definitions

Earnings Management	Absolute value of discretionary accruals.
Discretionary accruals	Difference between total accruals and the fitted normal accruals.
Total accruals	We run the following cross-sectional regression: $$\frac{TA_{it}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{\Delta Rev_{it}}{Assets_{i,t-1}} + k_3 \frac{PPE_{it}}{Assets_{i,t-1}} + \varepsilon_{it}$$ Where TA represents total accruals defined as earnings before extraordinary items and discontinued operations minus the operating cash flows reported in the statement of cash flows. Asset represents total assets, ΔRev is the change in revenues from the preceding year and PPE is the gross value of property, plant and equipment.
Firm-specific normal accruals	We use the coefficient estimates total accruals to calculate the firm-specific normal accruals (NAit): $$NA_{it} = \hat{k}_1 \frac{1}{Assets_{i,t-1}} + \hat{k}_2 \frac{(\Delta Rev_{it} - \Delta AR_{it})}{Assets_{i,t-1}} + \hat{k}_3 \frac{PPE_{it}}{Assets_{i,t-1}}$$ Where ΔAR is the change in accounts receivable from the preceding year, which captures potential accounting discretion arising from credit sales.
ESG	Natural logarithm of equally weighted overall ESG score from Asset4.
Fluidity	The degree of competitive threat and product market change surrounding a firm, based on Hoberg et al. (2014).
High Fluidity	A binary variable equal to one for those firms having a fluidity measure greater than the annual average fluidity across all firms in the industry, excluding the firm in question from the average fluidity estimation, zero otherwise.
Vertical Integration	The degree of the firm's vertical integration defines as the overlap between firms' product descriptions and the actual product words and descriptions used by the BEA in their input-output tables, based on Hoberg et al. (2016).
High Vertical Integration	A binary variable equal to one for those firms having a vertical integration measure greater than the annual average vertical integration across all firms in the industry, excluding the firm in question from the average fluidity estimation, zero otherwise.
Herfindahl-Hirschman Index (HHI)	Text-based Network Industry Classifications identifying competitors to each firm, based on Hoberg et al. (2014).
High HHI	A binary variable equal to one for those firms having a HHI measure greater than the annual average HHI across all firms in the industry, excluding the firm in question from the average fluidity estimation, zero otherwise.
Similarity	The degree of similarity between the firm's products and those of competitors, based on Hoberg et al. (2014).
High Similarity	A binary variable equal to one for those firms having a similarity measure greater than the annual average HHI across all firms in

	the industry, excluding the firm in question from the average similarity estimation, zero otherwise.
Market-to-Book	Market value of equity (Compustat item PRCC times item CSHO) over total assets (Compustat item AT).
Leverage	Long-term debt (Compustat item DLTT) plus long-term debt due in one year (Compustat item DD1) over Firm market value.
Firm market value	Total assets (Compustat item AT) minus Book equity plus Market Capitalization.
Book equity	Book equity is book common equity (Compustat item CEQ) plus total assets (Compustat item AT) minus total liabilities (Compustat item LT), minus Preferred stock, plus deferred taxes and investment tax credit (Compustat item TXDITC), if available, minus the post-retirement benefit asset (Compustat item PRBA), if available.
Market capitalization	Market capitalization at the end of the fiscal year (Compustat item PRCC times item CSHO).
Size	Natural logarithm of total assets.
Return on assets	Net income over lagged total assets
MRK_SHR	Firm's market share calculated as sales over annual industry sales
DISTRESS	A binary variable equal to one for those firms having an Altman's (1968) Z-score higher than 2.675, zero otherwise
Altman's Z-score	The Z-score is computed as follows: Z-score = 3.3 * (item OIADP / item AT) + 1.2 * ((item ACT - item LCT) / item AT) + item SALE / item AT + 0.6 * ((item CSHO * item PRCC) / (item DLTT + item DLC)) + 1.4 * (item RE / item AT). All items are from Compustat.
LOW_MTR	A binary variable equal to one for those firms having low marginal tax rate with total loss carries forward, zero otherwise.
BIGAUD	A binary variable equal to one if the firm is audited by one of the Big-4 auditing firms (Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers).
BLOAT	A binary variable equal to one if the firm's balance sheet Bloat is higher than the industry's average.
Balance sheet Bloat	The firm's net operating assets over lagged sales.

Appendix C: Exclusion criterion satisfaction.

This table presents the results of a regression, which estimates the relationship between the chosen instrument and earnings management over the sample period of 2002-2017. The absolute value of firm's discretionary accruals is used as the dependent variable. *Industry_ESG* is the industry year average ESG score from Asset4. The results without control variables are presented in column (1). Column (2) reports the regression results with control variables. All variables are defined in the Appendix B. All regressions include industry and year fixed effects. We use heteroscedasticity robust standard errors clustered at the firm/year level, which are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. All continuous variables are winsorized at the 1% and 99% tails.

	(1) EM	(2) EM
Industry_ESG	-0.0012	0.0062
	(0.0033)	(0.0039)
MRK_SHR		0.3867***
		(0.0411)
ROA		-0.0105
		(0.0070)
SIZE		-0.0225***
		(0.0008)
MB		0.0064***
		(0.0010)
LEV		0.0300***
		(0.0046)
DISTRESS		0.0675***
		(0.0141)
LOW_MTR		0.0106***
		(0.0022)
BIGAUD		-0.0058***
		(0.0018)
BLOAT		0.0147***
		(0.0023)
Constant	0.1096***	0.1628***
	(0.0126)	(0.0150)
Observations	54,838	41,125
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
R-squared	0.0482	0.2410

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