# The New Regulator in Town:
# The Effect of Walmart's Sustainability Mandate on Supplier Shareholder Value


## Abstract

Suppliers are increasingly forced by dominant retailers to clean up their supply chains. While these retailers argue that their sustainability mandates may translate into profits for suppliers, many suppliers are cynical about these mandates because the onus to undertake the required investments is on them while potential gains may be usurped by the mandating retailer. We examine whether supplier fears are justified by studying the impact of Walmart's sustainability mandate on its suppliers' (short-term) shareholder value. Although about two-thirds of suppliers are indeed financially harmed, approximately one-third benefits. To delve deeper into this variation, we relate suppliers' short-term abnormal returns to Walmart's appropriation power and explore whether and to what extent a supplier's referent and expert power sources, derived from its marketing and operational characteristics, respectively, can counteract Walmart's appropriation attempts. We find that the supplier's marketing characteristics (its environmental reputation, brand equity, and advertising) provide it with the countervailing power needed to resist Walmart's appropriation attempts. In contrast, cost efficient suppliers and suppliers that invest heavily in R&D have a more difficult time to withstand Walmart's squeeze attempts.



*Keywords*: retailing, power-dependence, sustainability, Walmart, financial event study

Manufacturers such as Clorox, Mattel, and Kimberly-Clark have been given requests to shrink their packaging material, cut back on the use of toxic chemicals, conserve water, decrease greenhouse gas emissions, and so forth. These requests may sound like government mandates, aimed at propelling corporate America into a new era of sustainability, but they are not. They are mandates from some of the world's most powerful retailers, who increasingly act as the most vigorous of a new breed of private-sector regulators (Advertising Age 2011, p. 1). Suppliers – being captive since retailers are their main gateway to consumers – have generally no choice but to comply (Dauvergne and Lister 2012). The most prominent example is Walmart, which issued requests on how its suppliers should transition to greener products and processes, and publicly stated its intent to tie its suppliers' sustainability to their "compensation" (Major 2012).

There is no denying that the largest retailers are getting bigger and more powerful every year, and thus can use their scale to enforce mandates on their suppliers. Indeed, retailers now rank among the biggest corporations in the world, often dwarfing their largest suppliers (Dukes and Geylani 2016). These dominant retailers – not governments – are becoming the driving force behind suppliers' sustainability efforts (Environmental Leader 2012).

While sustainability mandates from dominant retailers can take different forms across industries, three common elements stand out. First, such mandates reach further than the nature of the product itself (e.g., is the product recyclable?), and include the process by which it was produced (e.g., what resources are consumed to make the product?). Second, to increase the effectiveness of their mandates, retailers translate suppliers' sustainability performance into a simple rating for consumers. By arming consumers with transparent information on the environmental costs of products, retailers turn consumers into informed decision makers that can hold suppliers accountable for negative environmental externalities (Cutting, Cahoon, and

Leggette 2006). Third, these mandates do not take place in a collaborative spirit, but are implemented on a formal here-is-what-we-need-you-to-do basis (Brockhaus, Kersten, and Knemeyer 2013).[1]

To propitiate their suppliers, dominant retailers typically emphasize how complying with their sustainability mandates may benefit suppliers. According to these retailers, suppliers cannot only reduce their operating costs (e.g., through energy savings or by using cheaper recycled raw materials) (Brockhaus, Kersten, and Knemeyer 2013), but positive consumer reactions may also result as retailers make suppliers' sustainability efforts visible within their stores (Hepler 2015). Retailer reassurance notwithstanding, many suppliers are cynical about these mandates because the onus to undertake the required investments is on them, while potential gains may be usurped by the mandating retailer. Hence, these suppliers see sustainability mandates as just another way for dominant retailers to squeeze them. Indeed, when interviewed about the matter (Brockhaus, Kersten, and Knemeyer 2013, pp. 175–176), several suppliers voiced their fears about unfair retailer appropriation.

Whether supplier fears, rather than retailer assurances, are justified is unclear. Against this background, we assess whether and when suppliers are affected by a dominant retailer's sustainability mandate. To test our hypotheses, we study the rollout of Walmart's mandate. Our performance metric is shareholder value. As such, we address Srinivasan and Hanssens' (2009, p. 308) call for more research on the "stock market impact of corporate social responsibility initiatives, such as environmental sustainability." We find that, on average, a dominant retailer's sustainability mandate reduces a supplier's short-term stock market abnormal returns. However,

[1] As a testament to this, one of the suppliers interviewed by Brockhaus, Kersten, and Knemeyer (2013, p. 175) indicated about the mandating retailer: "They said: 'You WILL provide us with a sustainable product.' […] It wasn't a question; it was a statement."

the effect is highly contingent on the interplay between the retailer's power over the supplier – which increases the likelihood that the retailer will extract rents from the supplier – and the supplier's countervailing power – which may help it to withstand the retailer's squeeze attempts.

Our findings contribute in two ways to the literature on corporate social responsibility (CSR) initiatives. First, the CSR literature has reported mixed evidence on the financial implications of CSR, one of the reasons being that CSR includes a variety of facets that may not similarly affect firm performance. With the exception of Jayachandran, Kalaignanam, and Eilert (2013) and Mishra and Modi (2016), research has not distinguished different CSR types. We home in on one facet that is gaining momentum – environmental sustainability. In doing so, we respond to recent calls to study the potentially distinct link between *specific types* of CSR and their outcomes (e.g., Homburg, Stierl, and Bornemann 2013; Mishra and Modi 2016). Indeed, in contrast to Margolis, Elfenbein, and Walsh (2008), who report an overall small but positive meta-analytical correlation between an *aggregate* CSR construct and financial performance, we find that suppliers' short-term stock market abnormal returns on average are reduced by a dominant retailer's sustainability mandate.

Second, the sustainability literature has established a positive relationship between *environmental* CSR and stock market performance (e.g., Flammer 2013; Klassen and McLaughlin 1996), with firms benefiting similarly from complying with environmental regulations set by government agencies – a reactive strategy – and from voluntarily investing in sustainability initiatives – a proactive strategy (Dixon-Fowler et al. 2013). The literature has been silent on the effect of a second reactive strategy – compliance with suppliers' prime customer, the retailer – which is surprising given the retailer's central role in the supply chain as a gateway to consumers. We show that, unlike the effect of complying with government

regulations, the effect of complying with a dominant retailer's mandate is negative for many suppliers, due to the retailer's ability to appropriate its suppliers' gains.

## *CONCEPTUAL FRAMEWORK*

### *The Effect of a Dominant Retailer's Sustainability Mandate on a Supplier's Performance*

A dominant retailer's sustainability mandate can improve suppliers' *environmental* performance. But how do these mandates affect suppliers' *financial* performance? Two schools of thought shape the debate (Lankoski 2009). The traditional view sees environmental sustainability as harming financial performance (e.g., Friedman 1970; Palmer, Oates, and Portney 1995), while the revisionist view believes it improves performance (e.g., Nidumolu, Prahalad, and Rangaswami 2009; Porter and Van der Linde 1995). The impact of these mandates may be more nuanced than either view claims, and include cost *and* revenue effects (Kumar and Christodoulopoulou 2014).

*Cost effects*. Addressing a dominant retailer's sustainability mandate requires supplier investments in time and money. Also, since natural resources such as water or air are in the public domain, suppliers could use them below their true cost and hence often used them in excess (Ambec and Lanoie 2008). Due to a dominant retailer's sustainability mandate, suppliers are confronted with the real production costs. Hence, such a mandate may come with an immediate cost increase.

On the other hand, suppliers may increase sustainability and reduce costs at the same time. Indeed, "pollution […] involves unnecessary or incomplete utilization of resources," and "reducing pollution is often coincident with improving the productivity with which resources are used" (Porter and Van der Linde 1995, p. 98 and p. 105). Increasing sustainability may thus

translate into cost savings because fewer purchased inputs, such as energy and waste management services, are needed. These longer-term cost savings may at least partially offset the short-term costs incurred to comply with a dominant retailer's sustainability.

*Revenue effects*. Complying with a dominant retailer's sustainability mandate may affect the purchasing decision of consumers, who are suppliers' relevant stakeholder group with respect to revenues. Revenue effects can materialize through suppliers' sales volume and/or the prices obtained for their products. Suppliers may reach new consumers, as the number of environmentally conscious consumers is growing (Kotler 2011), and increase repeat sales (Kumar, Teichman, and Timpernagel 2012). Supplier revenues may also increase when consumers are willing to pay a price premium for more environment-friendly products.

On the other hand, consumers have been shown to respond negatively when CSR initiatives are undertaken only after external pressure was exerted (Nyilasy, Gangadharbatla, and Paladino 2014), because such actions are perceived as forced and insincere (Groza, Pronschinske, and Walker 2011). Thus, supplier revenues may also decrease.

***The Net Effect: A Matter of Retailer Power and Supplier Countervailing Power***

Since a dominant retailer's sustainability mandate can have both positive and negative effects for suppliers, we propose a contingency framework that pinpoints the type of supplier most likely to reap the benefits, or downplay the negative effects, from a mandate. We start from the premise that the more powerful the retailer, the more likely it is to appropriate supplier benefits (cost savings and/or revenue gains) that result from the mandate. However, power being two-sided (Emerson 1962), a mandating retailer does not only hold power over its suppliers. Suppliers may also hold (countervailing) power over the retailer, and the more they do so, the better they are able to resist the retailer's attempts to appropriate rents (Etgar 1976). A supplier's

(countervailing) power over a retailer is shaped by the power sources available to the supplier (El-Ansary and Stern 1972). We study both marketing and operational characteristics as sources of supplier power.

Suppliers performing better in the marketing domain hold more sources of *referent power* over a retailer. Referent power is the ability of one party to confer prestige upon another (Gaski 1986). In distribution channels, referent power is especially visible when retailers pride themselves on carrying certain brands (Palmatier, Stern, and El-Ansary 2015, p. 302). We consider three sources of a supplier's referent power: (1) its environmental reputation, since a sustainability-promoting retailer seeks to rent that reputation (Chu and Chu 1994), (2) its brand equity, since a retailer tries to identify with brands that are valued by consumers (Shervani, Frazier, and Challagalla 2007), and (3) its advertising, since a retailer values the pull effect created by the manufacturer (Etgar 1976).

Suppliers that score better in the operational domain hold more sources of *expert power*. A supplier possesses expert power when it enjoys specialized knowledge of value to the retailer (Gaski 1986). We consider two sources of a supplier's expert power: (1) its cost efficiency, since a retailer aims to sell products at competitive prices (Hofer et al. 2012), and (2) its R&D, since a retailer seeks access to unique, innovative products (Dean, Griffith, and Calantone 2016).

Below, we theorize how the power of the mandating retailer over a supplier affects the supplier's shareholder value following a sustainability mandate, and how the supplier's referent and expert power sources may alter this relationship. Table 1 offers an overview of our predictions.

--- Insert Table 1 about here ---

***The Effect of the Mandating Retailer's Power over the Supplier***

In an interfirm relationship, power refers to the ability of one firm to influence another firm's behavior (El-Ansary and Stern 1972). A retailer that represents a substantial revenue stream for a supplier has power over that supplier because of its economic importance to the supplier (Pfeffer and Salancik 1978). Although power is defined as an ability, rather than as a behavior, the more power a retailer possesses over a supplier, the more apt it is to exercise that power (Gaski and Nevin 1985; for a similar reasoning, see Boyd, Chandy, and Cunha 2010). The mandating retailer may thus use its power to demand that a supplier's cost savings and/or revenue gains resulting from complying with the mandate are passed on. The appropriation attempts by the mandating retailer are more likely to be successful when dealing with more dependent suppliers[2], leaving the latter worse off.

***Suppliers' Marketing Characteristics as Sources of Referent Power***

A mandating retailer's appropriation attempts may be thwarted by a supplier's power sources (Etgar 1976). Below, we argue how a supplier's marketing characteristics may affect a retailer's appropriation attempts of the supplier's revenue gains (in the form of increased sales and/or higher prices) that result from complying with a mandate.

*Environmental reputation.* A supplier's environmental reputation captures whether it is already known for operating sustainably. A supplier with a better environmental reputation holds a source of referent power over a mandating retailer that wishes to play the sustainability card, since that retailer can rent the supplier's reputation to improve the credibility of its mandate (Chu and Chu 1994). As such, a better environmental reputation increases a supplier's countervailing power, thereby softening the negative effect of the mandating retailer's power and limiting its appropriation of the supplier's revenue gains. These gains may even be lower to begin with,

[2] Dependence is the mirror image of power. A retailer's power over a supplier increases with the supplier's dependence on that retailer (Emerson 1962).

since prior positive expectations (i.c., the supplier has been environmentally responsible) may generate a ceiling effect such that new information (i.c., adherence to the mandate) can hardly improve an already-high positive rating (Smith 1993). For less reputable suppliers, on the other hand, the revenue gains – which are typically larger than those of more reputable suppliers – are more likely to be skimmed away by a more powerful retailer.

*Brand equity.* Brand equity refers to the net present value of the incremental cash flows attributable to a brand, and to the firm owning that brand, compared to an identical product without brand name or brand-building efforts (Shankar, Azar, and Fuller 2008). A supplier with higher brand equity holds more countervailing power over the mandating retailer, because the retailer's own customers place a lot of value on the supplier's brands (Shervani, Frazier, and Challagalla 2007). Thus, a higher-equity supplier is more resistant to the mandating retailer's appropriation attempts of the supplier's revenue gains that result from complying with the mandate. The lower countervailing power of a lower-equity supplier, on the other hand, leaves it more vulnerable to the mandating retailer's appropriation attempts. The revenue gains of a lower-equity supplier are larger than those of higher-equity supplier, because a brand with less equity can more readily establish new associations (Swaminathan, Fox, and Reddy 2001) and position itself as "a CSR brand" rather than as "a brand that just engages in CSR" (Du, Bhattacharya, and Sen 2010, p. 226). The prospect of these gains turns suppliers of low-equity brands into attractive appropriation targets with little defense mechanisms in place to withstand the demands of a powerful retailer (Etgar 1976).

*Advertising.* Consumers often remain unaware of a supplier's sustainability initiatives (Bhattacharya and Sen 2004; Pomering and Dolnicar 2009). Advertising increases consumers' awareness of the advertising supplier, prompting them not only to become informed about the

firm's products, but also its practices, including its sustainability efforts (Servaes and Tamayo 2013).[3,4] Ceteris paribus, this may generate a consumer pull effect, which leads to more and faster consumer trial and adoption of new products (Steenkamp and Gielens 2003), providing heavier advertisers with more countervailing power. This may mitigate the negative effect of the mandating retailer's power over the supplier.

***Suppliers' Operational Characteristics as Sources of Expert Power***

A retailer's appropriation attempts may also be affected by a supplier's expert power sources (Etgar 1976). However, in contrast to a supplier's referent power sources, for which we argued that they translate into supplier countervailing power, opposite arguments exist for a supplier's expert power sources. Below, we discuss how a supplier's operational characteristics may affect the retailer's appropriation of the supplier's cost savings that result from complying with the sustainability mandate.

*Cost efficiency.* Cost efficiency refers to a firm's ability to combine various materials and activities in such a way that it can offer its final products at a lower cost (Dutta, Narasimhan, and Rajiv 1999). Cost efficiency is a source of supplier expert power as retailers need to sell products at competitive prices (Hofer et al. 2012). This may lead to less retailer skimming of a supplier's cost advantages that follow from complying with a sustainability mandate. These cost advantages may be realized particularly by a more cost efficient supplier, since it has developed the capability to absorb the costs of *any* new activity long before a mandate was imposed by a dominant retailer. In the longer term, this capability may allow a more cost efficient supplier to

[3] This does *not* imply that firms need to advertise their sustainability initiatives. All that is required is that advertising leads to increased firm awareness (see Servaes and Tamayo 2013 for a similar argument).

[4] Following Srivastava, Shervani, and Fahey (1998), we argue that brand equity represents a stock variable that captures a specific amount of knowledge or value possessed by a brand. It accumulates slowly over time through various marketing efforts (including advertising). Advertising, in contrast, is a flow variable and reflects the extent to which a stock of a particular asset is augmenting or decaying. Hence, brand equity and advertising capture two distinct but related constructs, as also evidenced by their low correlation of .11 in our sample.

comply with a dominant retailer's sustainability mandate in a way that lowers its operating expenses (Hayes and Upton 1998).

In contrast, given that retailers work with a multitude of cost-efficient suppliers, who often also supply them with private labels, they always have access to products at competitive prices through sourcing alternative manufacturers (ter Braak, Dekimpe, and Geyskens 2013). Cost efficiency as such may therefore not be a viable source of expert power. As a result, a supplier's cost efficiency may not translate into strong countervailing power, which increases appropriation by the mandating retailer. Thus, while suppliers with a higher cost efficiency may realize more cost savings following a mandate, they may also be more vulnerable to a powerful retailer's appropriation attempts.

*R&D.* Suppliers differ in the degree to which they generate superior products and/or production processes through R&D (Mizik and Jacobson 2003). A supplier that invests more in R&D holds a source of expert power, since retailers tend to prefer innovative products that are unique (Dean, Griffith, and Calantone 2016) and that incorporate the latest technological developments in the category (Alpert, Kamins, and Graham 1992). This may help the supplier to fight the retailer's appropriating behavior and to hold on more to the cost savings it realizes from complying with the mandate; cost savings that result from a higher inclination to try out innovative green technologies (with no immediate cost savings but with the potential of future savings), rather than using off-the-shelf alternatives (with guaranteed short-term success but fewer long-term cost saving potential; Berrone et al. 2013).

In contrast, given that suppliers have to reveal (proprietary) insights into their activities when complying with a dominant retailer's sustainability mandate, possibly the greatest risk for an R&D intensive supplier comes in the potential loss of tacit knowledge to the retailer who

internalizes its knowledge (Dutta and Weiss 1997). As a result, a supplier's R&D may not translate into countervailing power, thereby making the supplier more susceptible to the retailer skimming away the supplier's realized cost savings. Thus, while suppliers that invest more in R&D may be able to benefit more from a mandate in terms of cost savings, they may also have a harder time to hold on to these.

## *METHOD*

### *Empirical Setting*

We study Walmart's sustainability mandate. After years of talking about sustainability, numerous accusations of greenwashing (Mitchell 2012), and "just when many suppliers may have imagined it was safe to put sustainability on the back burner, Walmart issued a call to action" (Major 2012). On September 13, 2012, Walmart held a milestone meeting, where it announced the rollout of its mandate in front of an audience of suppliers, news channels, and NGOs. The mandate consisted of specific requests concerning the environmental impact of suppliers' operations, encompassing areas such as the use of recycled materials in packaging and of environment-friendly substitutes for chemicals in cosmetics.

### *Event Study Method*

*Logic*. Two challenges in measuring the supplier performance impact of a dominant retailer's sustainability mandate are that (1) suppliers do not disclose information on costs and/or revenues resulting from compliance with a mandate, and (2) a temporal asymmetry exists between complying with a mandate and its potential payoff. Indeed, while the costs of complying occur mainly in the short term, the benefits are uncertain and may arise only in the longer term (Ambec and Lanoie 2008). To handle these issues, we follow Walley and Whitehead's (1994, p. 52) suggestion that "for all environmental issues, shareholder value […] is the critical unifying

metric." We rely on the event study method and use abnormal returns around the announcement date to capture the short-term financial impact of Walmart's sustainability mandate on its suppliers.

*Four-factor model*. We use the Fama-French-Carhart four-factor model:

(1) $r_{it} = \alpha_i + \beta_{1i} RM_t + \beta_{2i} SMB_t + \beta_{3i} HML_t + \beta_{4i} UMD_t + \mu_{it}$,

where $r_{it}$ is the rate of return on supplier $i$'s stock on day $t$,[5] $RM_t$ is the rate of return on the market index, $SMB_t$ is the return differential between portfolios of small and large market capitalization stocks, $HML_t$ is the return differential between portfolios of high and low book-to-market ratio stocks, and $UMD_t$ is the momentum factor. The α and β parameters are estimated from an OLS regression for each stock separately over a period of 250 trading days, ranging from 260 to 10 trading days prior to the announcement date. We use the estimates obtained from this model to predict the daily abnormal returns for each supplier $i$ at time $t$ as $AR_{it} = r_{it} - \hat{r}_{it}$. To account for possible information leakage prior to the event day and gradual dissipation of information after the event day, the $AR_{it}$ are cumulated over a time window $[t_1, t_2]$, which includes the event day ($t = 0$), into a cumulative abnormal return ($CAR_i$):

(2) $CAR_i[t_1, t_2] = \sum_{t_1}^{t_2} AR_{it}$.

The extent of information leakage and dissemination of information is an empirical issue, and is determined on the basis of the significance of the *CAR*s for multiple event windows surrounding the event day. We select the window with the most significant Patell statistic (see, e.g., Gielens et al. 2008 and Swaminathan and Moorman 2009 for a similar practice).

[5] The return $r_{it}$ measures the relative change in stock price of supplier $i$ on two consecutive trading days and is obtained by $r_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}}$, where $P_{it}$ is the closing stock price for supplier $i$ on day $t$ adjusted for dividends and splits.

***Explaining Variation in Suppliers' Short Term Abnormal Returns***

We regress the standardized *CAR*s (*SCAR*s) on the set of predictors:[6]

$$(3)\ SCAR_i = \gamma_0 + \gamma_1 POW_i + \gamma_2(POW_i * ENVREP_i) + \gamma_3(POW_i * BREQ_i) + \gamma_4(POW_i * ADV_i) + \gamma_5(POW_i * COSTEFF_i) + \gamma_6(POW_i * R\&D_i) + \gamma_7 ENVREP_i + \gamma_8 BREQ_i + \gamma_9 ADV_i + \gamma_{10} COSTEFF_i + \gamma_{11} R\&D_i + \sum_{k=1}^{K} \gamma_{11+k}\, CONTROL_{ki} + \lambda\, IMR_i + \sigma_1\, ADV_i^c + \sigma_2\, R\&D_i^c + \varepsilon_i,$$

where $POW_i$ is Walmart's power over supplier $i$. $ENVREP_i$ is supplier $i$'s environmental reputation, $BREQ_i$ its brand equity, $ADV_i$ its advertising, $COSTEFF_i$ its cost efficiency, and $R\&D_i$ its R&D. *CONTROL* is a vector of control variables. To allow for the potential inter-correlation among suppliers within the same (two-digit SIC level) industry, we use cluster-robust estimation. To account for potential selection effects and to correct for possible endogeneity of supplier advertising and R&D, we add the inverse Mills ratio ($IMR_i$) and two endogeneity correction terms ($ADV_i^c$ and $R\&D_i^c$) as predictors to Eq. (3). The error term $\varepsilon_i$ follows a normal distribution.

*Correction for sample selection.* Our sample contains suppliers that depend for at least 10% of their revenues on Walmart (see the Data section for details). A sample selection bias may occur when the selection of Walmart suppliers is not independent of the outcome variable. To account for potential selection effects, we use a Heckman model and estimate the following binary probit regression:

$$(4)\ \Pr(SUPP_i = 1) = \delta_0 + \delta_1 ACCREC_i + \delta_2 LAWCOMPL_i + \delta_3 WAGES_i + \delta_4 UNIONS_i + \delta_5 SAFETY_i + \delta_6 ENVREP_i + \delta_7 ENVREP_i^2 + \delta_8 SGA_i + \delta_9 SGA_i^2 + \delta_{10} COSTEFF_i + \delta_{11} COSTEFF_i^2$$

[6] The standardized *CAR* is the *CAR* divided by the standard deviation of the estimation period abnormal returns. Standardizing the *CAR*s reduces heteroskedasticity that may arise when the estimated variances of the four-factor model residuals vary across firms (Jain 1982).

$$+ \delta_{12} R\&D_i + \delta_{13} R\&D_i^2 + \sum_{l=1}^{L} \delta_{13+l} CONTROL'_{li} + \varepsilon_i^*,$$

where $SUPP_i = 1$ if supplier $i$ is included in our sample, and zero otherwise. We include five variables that are expected to affect Walmart's choice for a supplier, but that do not affect the performance impact of a sustainability mandate. First, we include the supplier's accounts receivable relative to other suppliers in the industry ($ACCREC_i$), since retailers tend to prefer suppliers with more credit line opportunities (Gosman and Kelly 2002). Second, we include a set of variables that capture a number of social standards to which Walmart holds its suppliers.[7] In order to become a Walmart supplier, suppliers must (1) fully comply with applicable national and/or local laws and regulations ($LAWCOMPL_i$), (2) provide competitive wages and benefit packages for their employees ($WAGES_i$), (3) respect the right of workers to choose whether to form or join trade unions ($UNIONS_i$), and (4) offer a safe and healthy work environment and take proactive measures to prevent workplace hazards ($SAFETY_i$).[8] In addition, we include the same variables in the selection model as in Eq. (3), unless the required information was not available for the suppliers that uniquely feature in the selection sample, in which case we replaced the missing variable with a proxy (see, e.g., Robinson, Tuli, and Kohli 2014 and Swaminathan and Moorman 2009 for a similar practice). As such, we use a supplier's selling, general, and administrative expenses ($SGA_i$) as a proxy measure for its advertising and its brand equity.[9] Finally, we include the squares of the supplier's referent and expert power sources to account for their potential non-linear effect on the probability of being selected as a supplier.

We estimate Eq. (4) on a sample of 1,102 U.S. suppliers operating in the same two-digit SIC

[7] See https://cdn.corporate.walmart.com/1e/6e/8ccddc7a4db28195534b85fec528/standards-for-suppliers-english.pdf

[8] We checked whether these five variables did not affect the performance outcome of a dominant retailer's sustainability mandate by adding them to Eq. (3) and re-estimating the model. None of these variables was significant (all $p$'s > .10).

[9] This is supported by our data in which SGA is correlated significantly with both measures (advertising: $r = .52$, $p < .001$; brand equity: $r = .32$, $p < .001$).

level industries as the Walmart suppliers, and for which data were available for all covariates. We again use cluster-robust estimation to account for industry heterogeneity. We draw on the parameters to compute the inverse Mills ratio ($IMR_i$), which we add as a regressor to Eq. (3).

*Correction for endogeneity of advertising and R&D.* To correct for potential endogeneity of advertising and R&D, we implement Gaussian copulas. In contrast to classical methods to correct for endogeneity, this approach does not require instrumental variables to partial out the exogenous variation in the endogenous regressor, but directly models the joint distribution of the potentially endogenous regressor and the error term through a control function term (Park and Gupta 2012). Specifically, the endogenous regressor is treated as a random variable, consisting of an exogenous part (which is nonnormally distributed) and an endogenous part (which is normally distributed). The assumption that the endogenous regressor contains an exogenous, nonnormally distributed part is similar in spirit to the "exclusion" restriction for instrumental variables. With a normally distributed error term, an identification requirement of the Gaussian copula method is that the endogenous regressor is not normally distributed. Indeed, if the endogenous regressor is normally distributed, variation due to the endogenous regressor cannot be separated from variation due to the error term, giving rise to an identification problem (Papies, Ebbes, and van Heerde 2017). The copula terms are obtained as:

(5) $ADV_i^c = \emptyset^{-1}[(\mathrm{H}_{ADV}(ADV_i)]$, and

$R\&D_i^c = \emptyset^{-1}[(\mathrm{H}_{R\&D}(R\&D_i)]$,

where $\emptyset^{-1}$ is the inverse of the cumulative normal distribution function (normal CDF), and $\mathrm{H}_{ADV}(ADV_i)$ and $\mathrm{H}_{R\&D}(R\&D_i)$ denote the empirical distribution functions of advertising and R&D, respectively. The nonnormal distribution of the potentially endogenous regressors, $ADV_i$ and $R\&D_i$, is confirmed by a Shapiro-Wilk test ($W_{ADV}$ = .751, $p$ < .001; $W_{R\&D}$ = .745, $p$ < .001). We

first estimate a model where we include a copula for both potentially endogenous variables. Following Mathys, Burmester, and Clement (2016), we retain the copula terms that are statistically significant, and then re-estimate the model.

## *DATA*

### *Sample of Walmart Suppliers*

The Securities and Exchange Commission (SEC) requires publicly listed firms to disclose which customers (such as Walmart) account for more than 10 percent of their annual revenues. In addition, firms sometimes voluntarily report the names of important customers below the 10 percent threshold. Following Gosman and Kohlbeck (2009), we identified suppliers of Walmart by searching the SEC filings of all firms with a SIC code suggestive of manufacturers that sell through retailers. This includes 70 industries in the SIC 2000–3999 range. For each of the 1,341 active firms classified in one of these industries, we inspected the 10-K report filed in the year preceding the mandate for any reference to Walmart as a retail customer. We identified 114 Walmart suppliers. To validate and/or extend this information, we searched Planet Retail reports and news articles pertaining to Walmart. We located an additional 25 suppliers that were not part of the SIC 2000–3999 range, but that also listed Walmart as one of their customers.[10] From the resulting 139 suppliers, we dropped (1) 11 firms that were not publicly listed during the estimation period, (2) five firms that did not have stock price information available during the entire estimation period, because they started trading during the estimation period (three firms) or did not trade on a daily basis (two firms), and (3) two firms that interacted with Walmart as an end customer rather than as an intermediary.

[10] For instance, Bob Evans Farms is listed in SIC code 5812 (Retail - Eating Places) even though a substantial part of its business consists of ready meals sold via grocery retailers, including Walmart.

We extensively checked the remaining 121 firms for potential concurrent events (e.g., announcements of CEO changes, quarterly results, dividend payments, mergers and acquisitions, strategic alliances, new product introductions) during the [-3, +3] trading day window surrounding the announcement, using Factiva, LexisNexis, and SDC Platinum. This resulted in the elimination of three suppliers that could confound the results. In addition, we searched Walmart's investors' news portal for any press releases or news reports on its U.S. suppliers. We repeated this for Walmart's ten largest (in terms of banner sales in the year prior to the event) retail competitors in the U.S.[11] Neither Walmart nor its competitors made announcements concerning their suppliers during the [-3, +3] window.

The final sample consists of 118 Walmart suppliers, of which 115 had complete information on all covariates. The size of our sample is similar to that of other event studies on buyer-supplier relationships (e.g., Kalaignanam et al. 2013; Liu et al. 2014) and customer power (e.g., Boyd, Chandy, and Cunha 2010; Deitz, Hansen, and Richey 2009). The suppliers in our sample are active in grocery categories, such as cereals (e.g., General Mills, Kellogg's) and meat products (e.g., Bob Evans, Tyson Foods), as well as non-grocery categories, such as apparel (e.g., Hanesbrands, VF Corporation), electronics (e.g., Emerson Radio Corporation, Koss), and entertainment (e.g., Activision Blizzard, Electronic Arts). The sample spans well-known companies, such as Procter & Gamble and Mattel, but also covers less known suppliers such as OurPets and NACCO Industries. The Web Appendix summarizes the screened SIC codes and the number of suppliers per SIC code included in our sample.

***Measures***

We compiled data from a wide variety of sources. All independent variables are measured in the

[11] These include Kroger, Walgreens, Target, Costco, Home Depot, CVS, Lowe's, Best Buy, Safeway (USA), and Supervalu.

year prior to the mandate. All supplier characteristics (marketing and operational) are expressed relative to other suppliers in the same (two-digit SIC) industry, to convey the relative power of suppliers within an industry. Table 2 offers an overview.

--- Insert Table 2 about here ---

*Financial measures.* We obtained daily data on suppliers' stock market returns from the CRSP database and on the four Fama-French-Carhart factors from Kenneth French's website.

*Retailer power over supplier.* We measure the retailer's power over a supplier as the percentage of revenues that supplier realizes through the retailer, if this is reported in the 10-K filings.[12] Immaterial percentages do not have to be disclosed in the SEC filings. To avoid dropping suppliers, we follow Kelly and Gosman (2000) for the 24 cases where the supplier identified the mandating retailer as a customer, but did not report the percentage of revenues it realized through this retailer, by setting this percentage to zero.

*Environmental reputation.* In line with Mishra and Modi (2016), we use the KLD index of environmental strengths in the year prior to the mandate. This index ranges from zero to seven, adding one index point for each of seven environmental strengths a firm may possess (e.g., pollution prevention, use of renewable energy). We divide this index by the average environmental reputation of all firms belonging to the same (two-digit SIC level) industry. The KLD database is widely used by institutional investors (Mishra and Modi 2016), and has been hailed as the "de facto research standard" in sustainability research, because of its unmatched coverage of monitored sources (Waddock 2003, p. 369).

*Brand equity.* We use a market-based measure of brand equity, viz. revenue premium, which

[12] Sometimes, firms voluntarily report the names of important customers below the 10% threshold, but without indicating the actual percentage of revenues. An example is: "We sell our products through a network of grocery stores, mass merchandisers and club stores, including Safeway, Stop & Shop, Ralph's, Kroger, Publix, Whole Foods Market, Target and Walmart."

reflects the difference between a supplier's revenues and private label revenues in the same category (Ailawadi, Lehmann, and Neslin 2003).[13] To ensure comparability across categories, we divide by total category revenue.

*Advertising.* We use a share-of-voice measure: the firm's advertising relative to the (two-digit SIC level) industry's advertising (Reibstein and Wittink 2005; Steenkamp and Fang 2011). Following Sotgiu and Gielens (2015), we use national expenditures on television advertising.

*Cost efficiency.* A supplier's cost of goods sold (COGS) to sales ratio captures the proportion of sales revenue used to pay for expenses that vary directly with sales. Since a firm enjoys a higher cost efficiency if its COGS/sales ratio is lower (Moatti et al. 2015), a supplier's cost efficiency can be proxied by the inverse of this ratio.[14] We divide this measure by the average cost efficiency of all firms belonging to the same (two-digit SIC level) industry.

*R&D.* We include the supplier's R&D share, i.e. its expenditures on R&D relative to the total (two-digit SIC level) industry's R&D.

*Control variables.* To control for the supplier's resources, we include its resource slack (*SLACK*) and inventory turnover (*INV*). Slack allows a firm to experiment (Grewal and Tansuhaj 2001), thus promoting more innovative projects that might not be approved by a more constrained firm. Also inventory turnover allows for experimentation, as less of the supplier's working capital is tied up in inventories (Ailawadi, Borin, and Farris 1995). We further add a dummy variable (*PRIOR*) that captures whether the supplier announced investments in environmental sustainability in the year prior to the mandate. Recent investments in environmentally friendly technologies may make it easier for a supplier to meet the standards

[13] We use Euromonitor's product category definitions. Euromonitor defines categories at a more refined level than the two-digit SIC level. Suppliers may be active in multiple categories. In such instances, we measure a supplier's brand equity in the category that accounts for the largest proportion of its revenues.
[14] The ratio of sales to COGS is also known as the gross margin (see, e.g., Kesavan, Gaur, and Raman 2010).

imposed by the mandating retailer (Berrone et al. 2013), resulting in lower short-term costs. On the other hand, a supplier may find it complex to change the investment path it is on. Being-stuck-in-the-middle between its own investment path and the retailer's demands may lead to a suboptimal solution and reduce the potential for costs savings in the longer run (Environmental Leader 2012). Finally, to control for systematic differences between suppliers of groceries (e.g., soft drinks, detergents), semi-durables (e.g., apparel, household textiles), durables (e.g., household appliances, audio equipment), and entertainment (e.g., games, films), we add three effect-coded variables (*SEMIDUR*, *DUR*, and *ENT*), with grocery suppliers as the baseline.[15] Table 3 provides descriptives.

--- Insert Table 3 about here ---

## *RESULTS*

### *Effect of a Dominant Retailer's Sustainability Mandate on Supplier Shareholder Value*

We test whether the cumulative average abnormal returns (*CAAR*s) over several event windows, extending up to 10 trading days before and after the event date, are different from zero (see Table 4). The [-2, +1] window is most significant based on Patell's *t*-test ($t = -3.81$, $p < .001$). This window, which is similar to that of other event studies on interfirm relations (e.g., Fang, Lee, and Yang 2015; Swaminathan and Moorman 2009), suggests the presence of both leakage and delayed dissemination of information. Over the [-2, +1] window, the announcement of Walmart's sustainability mandate, on average, decreases suppliers' stock returns by .57%. To demonstrate the economic significance of this finding, we calculate the average change in shareholder value of a median-sized Walmart supplier in our sample (determined based on

[15] Note that we also allow for industry heterogeneity at the two-digit SIC level by using cluster-robust estimation. This is a more parsimonious way to account for industry heterogeneity than using industry fixed effects. As such, it is particularly suitable for small samples with many clusters (Cameron, Gelbach, and Miller 2008).

suppliers' market capitalization on the day before our event window, i.e., *t*-3) (see Geyskens, Gielens, and Dekimpe 2002 for a similar practice). With an average decrease of .57% in the cumulative abnormal return of a supplier, the shareholder value of a median supplier with a market capitalization of $1,052 million is reduced (adjusted for overall market movements) by $6 million in three days.

--- Insert Table 4 about here ---

***Explaining Variation in Suppliers' Short-Term Abnormal Returns***

More noteworthy than the overall negative effect is the wide variation in *CAR*s across suppliers. While 64% of the suppliers faced a negative effect, 36% experienced a positive outcome. Some of the suppliers most hurt by the mandate were Lance and Elizabeth Arden with *CAR*s of -4.8% and -6.0%, respectively. With a market capitalization of $1,370 million, Elizabeth Arden, for instance, lost $82.2 million in shareholder value in three days. On the other side of the spectrum, some of the best performers were Hasbro and Spectrum Brands, with CARs amounting to 3.7% and 5.7%. Best performer Spectrum Brands, for example, was able to increase its shareholder value by $113.3 million to $2,119 million in three days. Whereas low and high performers roughly realize the same percentage of revenues through Walmart (Lance: 18%; Elizabeth Arden: 11%; Hasbro: 17%, Spectrum Brands: 18%), they differ substantially in terms of their sources of referent and expert power. Low performers Lance and Elizabeth Arden, for example, possessed little sources of referent power to help them resist the mandating retailer's appropriation attempts, since their brand equity was low and they hardly invested in advertising. In contrast, high performer Hasbro advertised more than the industry average, while Spectrum Brands excelled on brand equity with an above average revenue premium.

Table 5 presents the result for the selection model. The Likelihood Ratio test shows good model fit ($\chi^2(18) = 129.78$, $p < .001$). The hit rate of 90.0% is significantly better than chance ($80.9\% = \alpha^2 + (1- \alpha)^2$, with $\alpha = 10.7\%$; Morrison 1969). In terms of variance inflation factors (VIFs), none of the variables exceeds the commonly used threshold of 10 (maximum VIF = 2.89) (Hair et al. 2010). Suppliers with higher accounts receivable ($p < .001$) that offer more competitive wages ($p < .05$) and a better workplace safety ($p < .01$) have a higher chance of realizing a large percentage of their revenues through Walmart. Suppliers lower on SGA have a lower likelihood of being selected ($p < .01$), up to a certain point, after which the likelihood increases again ($p = .07$), which suggests that Walmart prefers suppliers with either a low or a high brand equity over suppliers that are average on brand equity. Finally, suppliers with less resource slack ($p < .01$) and entertainment suppliers ($p < .01$) are less likely to have Walmart as a major customer.

--- Insert Table 5 about here ---

Table 6 reports the results of our contingency analysis. The correlations between all variables are below the recommended threshold of .8 (Judge et al. 1988), and none of the VIFs exceeds 10 (maximum VIF = 8.9) (Hair et al. 2010). Thus, multicollinearity is not likely to be a problem. The estimate of the inverse Mills ratio is significant ($\gamma_{19} = -.601$, $p < .05$), implying that a selection correction is indeed warranted. The negative sign suggests that, on average, unobserved factors that make a firm more likely to have Walmart as a major customer tend to have an opposite effect on the shareholder value implications from the sustainability mandate issued by Walmart. We find that the copula correction term for R&D is significant, albeit only at the .09 level, underscoring the importance of controlling for endogeneity in R&D. Advertising is not endogenous ($p > .10$). Hence, we only retain the copula correction for R&D in our final model.

The main effect of Walmart's power over the supplier is not significant ($p > .10$). Thus, the mandating retailer does (or can) not always use its power to demand that the supplier's cost-savings and/or revenue gains of complying with the mandate are passed on. Indeed, our results support that the retailer's power use attempts can be thwarted by the supplier's power sources.

*Suppliers' sources of referent power*. The higher a supplier's environmental reputation, the more negative the shareholder value implications from the mandate are ($\gamma_7 = -.105$, $p < .05$). However, a supplier's environmental reputation also provides it with countervailing power, which limits appropriation by the mandating retailer ($\gamma_2 = .003$, $p < .05$). Whereas suppliers that hold more brand equity benefit less in the face of a mandate ($\gamma_8 = -5.390$, $p < .001$) – implying that they have a harder time to tap into a new revenue stream when forced to move to more sustainable operations –, they can use their countervailing power to fight off the mandating retailer and prevent it from skimming the benefits (even when there are fewer benefits to begin with), as reflected in the positive interaction of the mandating retailer's power over the supplier with the supplier's brand equity ($\gamma_3 = .227$, $p < .01$). Also suppliers that advertise more are better able to withstand the dominant retailer's appropriation pressure ($\gamma_4 = .041$, $p < .05$).

*Supplier's sources of expert power*. Whereas cost-efficient suppliers gain more ($\gamma_{10} = 1.147$, $p < .05$) – implying that they are, on average, better able to absorb the costs of a mandate –, their cost efficiency does not provide them with the countervailing power that prevents appropriation by the dominant retailer. Interestingly, their gains are usurped *more* by the mandating retailer, as indicated by the negative interaction effect ($\gamma_5 = -.028$, $p < .05$). Also R&D positively affects the supplier's stock market reaction following the mandate ($\gamma_{11} = 10.812$, $p < .001$), but – again – it does not provide the supplier with the countervailing power to fight off the dominant retailer's appropriation attempts. Similar to cost efficiency, suppliers high in R&D suffer more from

appropriation by the mandating retailer ($\gamma_6$ = -.530, $p$ < .001).

To further illustrate the nature of the interaction effects, we graphically depict the simple slopes in Figure 1. Specifically, we portray the effect of the dominant retailer's power over its suppliers on their *SCAR*s for low and high values of the suppliers' power sources (determined as one standard deviation below and above each variable's mean). The plots clearly depict that referent power sources offer countervailing power whereas expert power sources do not. Whereas a strong environmental reputation (simple slope = .034, $p$ < .05), sizeable brand equity (simple slope = .037, $p$ < .05), and major advertising spending (simple slope = .033, $p$ < .01) clearly help to prevent the mandating retailer from appropriating a supplier's gains, resulting in higher abnormal returns for the supplier, the opposite holds for high cost efficiency (simple slope = -.015, $p$ < .05) and considerable R&D investments (simple slope = -.068, $p$ < .01). For low levels of a supplier's power sources, the effect of Walmart's power on supplier shareholder value is not significant ($p$'s > .05), except for low R&D suppliers, where the effect is positive and significant (simple slope = .042, $p$ < .01). Possibly, the retailer (rightfully or wrongfully) believes that these suppliers may not have the required skills to transform the mandate into successful solutions without incurring prohibitive additional costs, and therefore reduces its appropriation attempts disproportionately.

--- Insert Table 6 and Figure 1 about here ---

***Robustness Checks***

*Alternative operationalizations.* We re-ran our model using alternative measures for (1) the mandating retailer's power over a supplier, (2) a supplier's brand equity, and (3) its cost efficiency. We set the mandating retailer's power over a supplier equal to 5% for the 24 cases for which it was not reported in the SEC filings, rather than to zero. We measured brand equity

using a dummy variable that captures whether a supplier features on the Brand Finance list, and that equals zero otherwise. We derived an alternative measure for cost efficiency using a stochastic frontier model:

$$(6)\ \ln(SALES_{it}) = \mu_0 + \mu_1 \ln(COGS_{it}) + \mu_2 \ln(LABOR_{it}) + \mu_3 \ln(CAPCOST_{it}) - \eta_{it} + v_{it},$$

where $SALES_{it}$ is supplier *i*'s revenues in year *t*, and $COGS_{it}$, $LABOR_{it}$, and $CAPCOST_{it}$ its cost of goods sold, labor, and capital. $v_{it}$ is the error term, and $e^{\eta_{it}}$ supplier *i*'s cost efficiency in year *t*. Using Compustat data for the ten years before Walmart's announcement, we estimate Eq. (6) by (two-digit SIC level) industry, using all the suppliers included in our selection sample. Results were very robust to these alternative operationalizations, although the significance of the interaction between retailer power and supplier cost efficiency dropped slightly ($p$ = .06, $p$ = .11, and $p$ = .18 for robustness checks (1), (2), and (3), respectively).

*Alternative sample compositions.* We re-estimated Eq. (3) after (1) removing the bottom 5% and (2) the top 5% of the observations based on the SCAR ranking, and (3) following Gielens et al. (2008), adding two suppliers with more than 60 (but less than 250) days of stock price information in the estimation period. In all three instances, parameters were robust in sign. The retailer power × environmental reputation interaction became marginally significant at .06 in robustness check (1). Also the significance of the retailer power × advertising interaction dropped to $p$ = .22 in robustness check (1), while the significance of the retailer power × cost efficiency interaction dropped to $p$ = .30 and $p$ = .15 in robustness checks (2) and (3), respectively.

## *DISCUSSION*

The alleged exercise of market power by dominant retailers is featuring high on the public policy agenda. Interestingly, while almost any practice of dominant retailers (e.g., slotting allowances,

buying alliances) receives antitrust scrutiny, governments allow retailers to use their market muscle as a bully pulpit to push sustainability through their supply chain, since legislation "may not be able to solve the problem quickly or completely" (Nidumolu, Prahalad, and Rangaswami 2009, p. 57). Suppliers – being captive since retailers are their main gateway to consumers – have generally no choice but to comply, as they fear being switched for another supplier. Although the majority (64%) of suppliers is harmed by a dominant retailer's sustainability mandate, others (36%) benefit. To explain this variation, we related the short-term changes in supplier shareholder value to the power structure of the supplier-retailer relationship.

Unlike the classical CSR studies that evaluate companies' voluntary sustainability activities (e.g., Homburg, Stierl, and Bornemann 2013; Peloza and Shang 2011), we evaluate the stock-market performance impact of sustainability activities that are enforced by a dominant retailer on its suppliers. Findings regarding the impact of voluntary, broad CSR activities do not readily transfer to an enforced, environmental sustainability context. In addressing this issue, our findings contribute to prior research in several ways.

First, dominant retailers' sustainability mandates are coercive. The power literature has repeatedly established that coercive power use is detrimental to channel performance (Geyskens, Steenkamp, and Kumar 1999). Not only do suppliers perceive costs in complying with retailers' threats (Anderson and Narus 1990), they also decrease channel members' outcomes (Scheer and Stern 1992). Still, Deitz, Hansen, and Richey (2009) demonstrate that suppliers experienced, on average, a net *gain* in short-term abnormal stock returns following the announcement of Walmart's RFID mandate. In contrast, in the context of a dominant retailer's sustainability mandate, we find that most suppliers are harmed. This suggests that the market is not only reacting to the coercive nature of a mandate, but also to the type of mandate.

Second, the environmental CSR literature implicitly suggests that dominant retailers' sustainability mandates should be beneficial for suppliers as it has repeatedly established that CSR is good. For example, Hamilton (1995), Klassen and McLaughlin (1996), and Flammer (2013) all point towards a positive effect of environmental CSR on stock market performance, with firms benefiting similarly from pursuing reactive strategies (actions driven by compliance with environmental regulations) and proactive strategies (voluntary actions) (Dixon-Fowler et al. 2013). Our findings are more nuanced in that we find that a dominant retailer's sustainability mandate is not inevitably bad for the supplier, as one would expect based on the power use literature, nor is it always good, as one would expect based on the environmental CSR literature.

Suppliers who already had established a strong environmental reputation prior to a dominant retailer's sustainability mandate benefit less from that mandate. This suggests a level playing field effect, where suppliers with a weaker environmental reputation catch up with their competitors who started in pole position. However, the higher countervailing power that their environmental reputation offers allows them to hold on to their revenue gains, even when these are smaller than those of less reputable suppliers. Higher brand-equity suppliers benefit less when they face a dominant retailer's sustainability mandate, presumably because stronger brands gain less from adding a sustainability dimension to their brand association mix than lower-equity brands. Still, their countervailing power allows them to overcome this setback as they are better able to defend themselves against appropriation attempts by the mandating retailer, in contrast to lower-equity suppliers who stand to gain more from a mandate but also tend to be strong-armed more. Suppliers that advertise more benefit more from a dominant retailer's sustainability mandate, as the consumer-pull effect of advertising provides them with the countervailing power needed to withstand the retailer's appropriation attempts.

More cost efficient suppliers can better absorb the costs of a dominant retailer's mandate in the longer run. However, their cost savings do not provide them with countervailing power and are therefore (partly) skimmed away by the mandating retailer. Also R&D does not provide suppliers with countervailing power. Quite the reverse, suppliers that rate higher on R&D are considerably worse off when their dependence on the mandating retailer increases. Apparently, once the retailer learns from the supplier, the supplier's expert power source drops immediately (Palmatier, Stern, and El-Ansary 2015, p. 298). Collectively, our findings (summarized in Table 1) provide support for the viewpoint that referent power sources are regarded as the sources having the broadest range, in contrast to expert power sources, which may quickly dissipate (French and Raven 1959). As such, referent power sources translate into countervailing power, but expert power sources do not, at least not in a dominant retailer-dependent supplier setting.

Given the often opposing direct and indirect effects of the supplier's power sources, Table 7 reports a summary of the net effect of a supplier's power sources on its short-term shareholder value, for the four industry types studied, and evaluated at the within-industry average of the retailer's power over the supplier (see, e.g., Dotzel, Shankar, and Berry 2013, for a similar exercise).

--- Insert Table 7 about here ---

As suppliers in different industries tend to differ with respect to the level of power sources they possess, the usefulness of the various power sources varies across industries. In the face of a dominant retailer's sustainability mandate, suppliers that are higher in environmental reputation benefit less (or are hurt more) in all four industry groups, but the effect is more negative for suppliers in the entertainment industry (-.21) than for suppliers in semi-durables (-.09), with suppliers in groceries and durables falling in between (-.15). Across all industry groups, suppliers

in semi-durables benefit most if they have strong brands (.05), whereas this power source has almost no effect for durables (.00) and groceries (-.01). This implies that, in these industries, potential revenue gains for high-equity suppliers are completely appropriated by the mandating retailer. To avoid this, grocery suppliers may want to steer away from the typical price-promotion trap eating into their brand equity. Advertising is most effective for suppliers from entertainment industries (3.39), followed by durables (1.90) and groceries (1.64), with almost no effect for semi-durables. Semi-durable suppliers may want to consider upping the ante in the advertising realm as currently they are missing out on a strong countervailing tool. The effects of cost efficiency and R&D are more or less the same across the board – in all four industry groups, suppliers that rate higher on cost efficiency and R&D, on average, benefit more (or are hurt less) from a dominant retailer's sustainability mandate. The positive net effects imply that, *at average levels of retailer power*, the main effects of cost efficiency and R&D exceed their interaction effects with retailer power: suppliers that are more cost efficient and that invest more in R&D realize benefits from the mandate that are appropriated by the dominant retailer, but not entirely.

*Generalizability.* While Walmart has led the sustainability charge, suppliers are far from reaching the aspirational goals of carbon and water neutrality, zero waste, or 100% sustainable sourcing (Dauvergne and Lister 2012). As such, different dominant retailers can, and typically do, set different sustainability requirements (Environmental Leader 2012), leading to a morass of different requirements for their suppliers (Advertising Age 2011; Major 2012). On October 7, 2013, Target announced that it was going to monitor its suppliers' environmental footprint and proclaimed adverse consequences to suppliers in case of poor environmental performance (Winston 2015). Using a similar screening procedure as for Walmart, we carried out an event study for 40 Target suppliers. The announcement of Target's sustainability mandate significantly

decreased its suppliers' short-term stock returns (CAAR = -1.51%, $p < .01$). Also for the 33 suppliers that had already been subject to Walmart's mandate, the CAAR was negative (CAAR = -2.50%, $p < .05$),[16] thereby indicating that earlier sustainability mandates from dominant retailers do not help to absorb the downsides of a new mandate. This also signals that our findings are not merely of historical interest, but can offer guidelines to what is in store for a broad set of suppliers, including grocery retailers in other countries and retailers in other industries (e.g., office products, home improvement, hardware).

***Limitations and further research***. It would be fruitful to explore the generalizability of our findings for retailers that have sustainability as part of their DNA (e.g., Whole Foods) and for online retailers. Indeed, our study has focused on brick-and-mortar retailers. Yet, online retailers, such as Amazon, are increasingly powerful too and considered the biggest disruptor in the retail industry. The shift from shopping in-store to online has left many big suppliers unable to ignore Amazon, increasing the retailer's dominance. About 55% of all product searches now start at Amazon, compared with 28% at other search engines (Stevens 2017), allowing Amazon to lean heavily on its suppliers to help execute on its low price promise. Amazon's outsize retail muscle increasingly allows the retailer to threaten and terminate its relationship with any supplier that violates its Supplier Code of Conduct.

Further, it would be interesting to explore to what extent our results generalize to retailers that are less powerful than Walmart. Interestingly, smaller retailers are joining forces to *jointly* impose sustainability mandates on their suppliers. For example, Alidis, a buying group

[16] Again, there was wide variation in CARs across suppliers. Unfortunately, a follow-up contingency analysis for Target was not feasible due to the small sample size for Target. Indeed, given Walmart's size and visibility, we benefited from increased data availability on Walmart's supplier base. Not surprisingly, perhaps, Walmart has been used repeatedly as the sole retailer to study the impact of a dominant retailer on its suppliers (Bloom and Perry 2001; Deitz, Hansen, and Richey 2009; Huang et al. 2012) and competitors (Ailawadi et al. 2010; Gielens et al. 2008; Jia 2008).

combining the purchasing forces of six European retailers, announced that the combined scale of its members will be used to enhance sustainability in the supply chain.

We rely on secondary data, and thus our study is limited to the variables for which we could obtain data. Potentially interesting variables related to firm profits or factors such as top management influence and contractual details could not be tested. Further research could expand the set of moderators.

In addition, our negative average short-term abnormal return represents the initial reaction of investors to a dominant retailer's sustainability mandate, and the long-run value created for shareholders may differ from that suggested by our findings. Future studies could use, for instance, the calendar-time portfolio method, which offers estimates of long-term returns and is especially relevant when suppliers face mandates from multiple retailers (see, e.g., Sorescu, Shankar, and Kushwaha 2007; Sorescu, Warren, and Ertekin 2017).

Finally, we evaluate the *net* effect on suppliers' financial stock market performance, but it remains unclear to what extent these net effects emerge due to shifts in costs versus changes in revenues. Future research could assess the impact on realized costs and revenues separately.

## *REFERENCES*


Advertising Age (2011), "Move Over Government, Walmart's the New Regulator in Town. Retailer Dictates Guidelines From Greenhouse Gas Emissions to Sodium Content," March 6.

Ailawadi, Kusum L., Norm Borin, and Paul W. Farris (1995), "Market Power and Performance: A Cross-Industry Analysis of Manufacturers and Retailers," *Journal of Retailing*, 71 (3), 211–48.

_____, Donald R. Lehmann, and Scott A. Neslin (2003), "Revenue Premium as an Outcome Measure of Brand Equity," *Journal of Marketing*, 67 (4), 1–17.

———, Jie Zhang, Aradhna Krishna, and Michael W. Kruger (2010), "When Wal-Mart Enters: How Incumbent Retailers React and How This Affects Their Sales Outcomes," *Journal of Marketing Research*, 47 (4), 577–93.

Alpert, Frank H., Michael A. Kamins, and John L. Graham (1992), "An Examination of Reseller Buyer Attitudes toward Order of Brand Entry," *Journal of Marketing*, 56 (3), 25–37.

Ambec, Stefan and Paul Lanoie (2008), "Does It Pay to Be Green? A Systematic Overview," *Academy of Management Perspectives*, 22 (4), 45–62.

Anderson, James C. and James A. Narus (1990), "A Model of Distributor and Manufacturer Firm Working Partnerships," *Journal of Marketing*, 54 (1), 42–58.

Berrone, Pascual, Andrea Fosfuri, Liliana Gelabert, and Luis R. Gomez-Mejia (2013), "Necessity as the Mother of 'Green' Inventions: Institutional Pressures and Environmental Innovations," *Strategic Management Journal*, 34 (8), 891–909.

Bhattacharya, C.B. and Sankar Sen (2004), "Doing Better at Doing Good: When, Why, and How Consumers Respond to Corporate Social Initiatives," *California Management Review*, 47 (1), 9–24.

Bloom, Paul N. and Vanessa G. Perry (2001), "Retailer Power and Supplier Welfare: The Case of Wal-Mart," *Journal of Retailing*, 77 (3), 379–96.

Borah, Abhishek and Gerard J. Tellis (2014), "Make, Buy, or Ally? Choice of and Payoff from Announcements of Alternate Strategies for Innovations," *Marketing Science*, 33 (1), 114–33.

Boyd, D. Eric, Rajesh K. Chandy, and Marcus Cunha Jr. (2010), "When Do Chief Marketing Officers Affect Firm Value? A Customer Power Explanation," *Journal of Marketing Research*, 47 (6), 1162–76.

Brockhaus, Sebastian, Wolfgang Kersten, and A. Michael Knemeyer (2013), "Where Do We Go from Here? Progressing Sustainability Implementation Efforts across Supply Chains," *Journal of Business Logistics*, 34 (2), 167–82.

Burmester, Alexa B., Jan U. Becker, Harald J. van Heerde, and Michel Clement (2015), "The Impact of Pre- and Post-Launch Publicity and Advertising on New Product Sales," *International Journal of Research in Marketing*, 32 (4), 408–17.

Cameron, A. Coline, Johan B. Gelbach, and Douglas Miller (2008), "Bootstrap-Based Improvements for Inference with Clustered Errors," *The Review of Economics and Statistics*, 90 (3), 414–27.

Chu, Wujin and Woosik Chu (1994), "Signaling Quality by Selling Through a Reputable Retailer: An Example of Renting the Reputation of Another Agent," *Marketing Science*, 13 (2), 177–89.

Cutting, Robert H., Lawrence B. Cahoon, and Ryan D. Leggette (2006), "Enforcement Data: A Tool for Environmental Management," *Environmental Law Reporter*, 36 (1), 1–13.

Datta, Hannes, Bram Foubert, and Harald J. van Heerde (2015), "The Challenge of Retaining Customers Acquired with Free Trials," *Journal of Marketing Research*, 52 (April), 217–34.

Dauvergne, Peter and Jane Lister (2012), "Big Brand Sustainability: Governance Prospects and Environmental Limits," *Global Environmental Change*, 22 (1), 36–45.

Dean, Tereza, David A. Griffith, and Roger J. Calantone (2016), "New Product Creativity: Understanding Contract Specificity in New Product Introductions," *Journal of Marketing*, 80 (2), 39–58.

Deitz, George, John Hansen, and R. Glenn Richey (2009), "Coerced Integration: The Effects of Retailer Supply Chain Technology Mandates on Supplier Stock Returns," *International Journal of Physical Distribution & Logistics Management*, 39 (10), 814–25.

Dixon-Fowler, Heather R., Daniel J. Slater, Jonathan L. Johnson, Alan E. Ellstrand, and Andrea M. Romi (2013), "Beyond 'Does It Pay to Be Green?' A Meta-Analysis of Moderators of the CEP-CFP Relationship," *Journal of Business Ethics*, 112 (2), 353–66.

Dotzel, Thomas, Venkatesh Shankar, and Leonard L. Berry (2013), "Service Innovativeness and Firm Value," *Journal of Marketing Research*, 50 (April), 259–76.

Du, Shuili, C.B. Bhattacharya, and Sankar Sen (2010), "Maximizing Business Returns to Corporate Social Responsibility (CSR): The Role of CSR Communication," *Journal of Business Ethics*, 12 (1), 8–19.

Dukes, Anthony and Tansev Geylani (2016), "Dominant Retailers and Their Impact on Marketing Channels," in *Handbook on the Economics of Retailing and Distribution*, Emek Basker (ed.), Cheltenham, U.K.: Edward Elgar Publishing, 137–56.

Dutta, Shantanu, Om Narasimhan, and Surendra Rajiv (1999), "Success in High-Technology Markets: Is Marketing Capability Critical?" *Marketing Science*, 18 (4), 547–68.

——— and Allen M. Weiss (1997), "The Relationship between a Firm's Level of Technological Innovativeness and Its Pattern of Partnership Agreements," *Management Science*, 43 (3), 343–56.

E1-Ansary, Adel I. and Louis W. Stern (1972), "Power Measurement in the Distribution Channel," *Journal of Marketing Research*, 9 (February), 47–52.

Emerson, Richard M. (1962), "Power-Dependence Relations," *American Sociological Review*, 27 (1), 31–41.

Environmental Leader (2012), "3 Ways Retailers Can Help Suppliers Tackle Sustainability," March 14.

Etgar, Michael (1976), "Channel Domination and Countervailing Power in Distributive Channels," *Journal of Marketing Research*, 13 (3), 254–62.

Fang, Eric, Jongkuk Lee, and Zhi Yang (2015), "The Timing of Codevelopment Alliances in New Product Development Processes: Returns for Upstream and Downstream Partners," *Journal of Marketing*, 79 (1), 64–82.

Flammer, Caroline (2013), "Corporate Social Responsibility and Shareholder Reaction: The

Environmental Awareness of Investors," *Academy of Management Journal*, 56 (3), 758–81.

French, John R.P. and Bertram Raven (1959), "The Bases of Social Power," in *Studies in Social Power*, Dorwin Cartwright, Ed., pp. 150-167. Ann Arbor, MI: Institute for Social Research.

Friedman, Milton (1970), "The Social Responsibility of Business Is to Increase Its Profits," *The New York Times Magazine*, September 13, 122–26.

Gaski, John F. (1986), "Interrelations among a Channel Entity's Power Sources: Impact of the Exercise of Reward and Coercion on Expert, Referent, and Legitimate Power Sources," *Journal of Marketing Research*, 23 (1), 62–77.

——— and John R. Nevin (1985), "The Differential Effects of Exercised and Unexercised Power Sources in a Marketing Channel," *Journal of Marketing Research*, 22 (May), 130–42.

Geyskens, Inge, Katrijn Gielens, and Marnik G. Dekimpe (2002), "The Market Valuation of Internet Channel Additions," *Journal of Marketing*, 66 (2), 102–19.

———, Jan-Benedict E.M. Steenkamp, and Nirmalya Kumar (1999), "A Meta-Analysis of Satisfaction in Marketing Channel Relationships," *Journal of Marketing Research*, 36 (2), 223–38.

Gielens, Katrijn, Linda M. Van de Gucht, Jan-Benedict E.M. Steenkamp, and Marnik G. Dekimpe (2008), "Dancing with a Giant: The Effect of Wal-Mart's Entry into the United Kingdom on the Performance of European Retailers," *Journal of Marketing Research*, 45 (5), 519–34.

Gosman, Martin L. and Trish Kelly (2002), "Big Customers and Their Suppliers: A Case Examining Changes in Business Relationships and Their Financial Effects," *Issues in Accounting Education*, 17 (1), 41–56.

——— and Mark J. Kohlbeck (2009), "Effects of the Existence and Identity of Major Customers on Supplier Profitability: Is Wal-Mart Different?" *Journal of Management Accounting Research*, 21 (1), 179–201.

Grewal, Rajdeep and Patriya Tansuhaj (2001), "Building Organizational Capabilities for Managing Economic Crisis: The Role of Market Orientation and Strategic Flexibility," *Journal of Marketing*, 65 (2), 67–80.

Groza, Mark D., Mya R. Pronschinske, and Matthew Walker (2011), "Perceived Organizational Motives and Consumer Responses to Proactive and Reactive CSR," *Journal of Business Ethics*, 102 (4), 639–52.

Hair, Joseph F., William C. Black, Barry J. Babin, and Rolph E. Anderson (2010), *Multivariate Data Analysis: A Global Perspective*, Upper Saddle River, NJ: Pearson/Prentice Hall.

Hamilton, James (1995), "Pollution as News: Media and Stock Market Reactions to the TRI Data," *Journal of Environmental Economics and Management*, 28 (1), 98–113.

Hayes, Robert H. and David M. Upton (1998), "Operations-Based Strategy," *California Management Review*, 40 (4), 8–25.

Hepler, Lauren (2015), "How Walmart's Green Label Aims to Drive Suppliers' Race to the Top," *GreenBiz*, February 25.

Hofer, Christian, Henry Jin, R., David Swanson, Matthew A. Waller, and Brent D. Williams (2012), "The Impact of Key Retail Accounts on Supplier Performance: A Collaborative

Perspective of Resource Dependency Theory," *Journal of Retailing*, 88 (3), 412–20.

Homburg, Christian, Marcel Stierl, and Torsten Bornemann (2013), "Corporate Social Responsibility in Business-to-Business Markets: How Organizational Customers Account for Supplier Corporate Social Responsibility Engagement," *Journal of Marketing*, 77 (6), 54–72.

Huang, Qingyi, Vincent R. Nijs, Karsten Hansen, and Eric T. Anderson (2012), "Wal-Mart's Impact on Supplier Profits," *Journal of Marketing Research*, 49 (2), 131–43.

Jain, Prem C. (1982), "Cross-Sectional Association between Abnormal Returns and Firm Specific Variables," *Journal of Accounting and Economics*, 4 (3), 205–28.

Jayachandran, Satish, Kartik Kalaignanam, and Meike Eilert (2013), "Product and Environmental Social Performance: Varying Effect on Firm Performance," *Strategic Management Journal*, 34 (10), 1255–64.

Jia, Panle (2008), "What Happens When Wal-Mart Comes to Town: An Empirical Analysis of the Discount Retailing Industry," *Econometrica*, 76 (6), 1263–316.

Judge, George G., R. Carter Hill, William E. Griffiths, Helmut Lütkepohl, and Tsoung-Chao Lee (1988), *Introduction to the Theory and Practice of Econometrics*, New York, NY: Wiley.

Kalaignanam, Kartik, Tarun Kushwaha, Jan-Benedict E.M. Steenkamp, and Kapil R. Tuli (2013), "The Effect of CRM Outsourcing on Shareholder Value: A Contingency Perspective," *Management Science*, 59 (3), 748–69.

Kelly, Trish and Martin L. Gosman (2000), "Increased Buyer Concentration and Its Effects on Profitability in the Manufacturing Sector," *Review of Industrial Organization*, 17 (1), 41–59.

Kesavan, Saravanan, Vishal Gaur, and Ananth Raman, (2010), "Do Inventory and Gross Margin Data Improve Sales Forecasts for U.S. Public Retailers?" *Management Science* 56 (9), 1519–33.

Klassen, Robert D. and Curtis P. McLaughlin (1996), "The Impact of Environmental Management on Firm Performance," *Management Science*, 42 (8), 1199–214.

Kotler, Philip (2011), "Reinventing Marketing to Manage the Environmental Imperative," *Journal of Marketing*, 75 (4), 132–35.

Kumar, Sameer, Steve Teichman, and Tobias Timpernagel (2012), "A Green Supply Chain Is a Requirement for Profitability," *International Journal of Production Research*, 50 (5), 1278–96.

Kumar, V. and Angeliki Christodoulopoulou (2014), "Sustainability and Branding: An Integrated Perspective," *Industrial Marketing Management*, 43 (1), 6-15.

Lankoski, Leena (2009), "Cost and Revenue Impacts of Corporate Responsibility: Comparisons across Sustainability Dimensions and Product Chain Stages," *Scandinavian Journal of Management*, 25 (1), 57–67.

Liu, Kun, Jonathan D. Arthurs, Daeil Nam, and Fariss-Terry Mousa (2014), "Information Diffusion and Value Redistribution among Transaction Partners of the IPO Firm," *Strategic Management Journal*, 35 (11), 1717–26.

Major, Marc (2012), "Is Sustainability Here to Stay? What Retailers Think," *Greenbiz*, October 8.

Margolis, Joshua D., Hillary Anger Elfenbein, and James P. Walsh (2008), "Do Well by Doing

Good? Don't Count on It," *Harvard Business Review* 86 (1), 19.

Mathys, Juliane, Alexa B. Burmester, and Michel Clement (2016), "What Drives the Market Popularity of Celebrities? A Longitudinal Analysis of Consumer Interest in Film Stars," *International Journal of Research in Marketing*, 33 (2), 428–48.

Mishra, Saurabh and Sachin B. Modi (2016), "Corporate Social Responsibility and Shareholder Wealth: The Role of Marketing Capability," *Journal of Marketing*, 80 (1), 26–46.

Mitchell, Stacy (2012), *Walmart's Greenwash: How the Company's Much-Publicized Sustainability Campaign Falls Short, While Its Relentless Growth Devastates the Environment*, ILSR Report, 1–31.

Mizik, Natalie and Robert Jacobson (2003), "Trading Off Between Value Creation and Value Appropriation: The Financial Implications of Shifts in Strategic Emphasis," *Journal of Marketing*, 67 (1), 63–76.

Moatti, Valérie, Charlotte R. Ren, Jaideep Anand, and Pierre Dussauge (2015), "Disentangling the Performance Effects of Efficiency and Bargaining Power in Horizontal Growth Strategies: An Empirical Investigation in the Global Retail Industry," *Strategic Management Journal*, 36 (5), 745–57.

Morrison, Donald G. (1969), "On the Interpretation of Discriminant Analysis," *Journal of Marketing Research*, 6 (5), 156–63.

Nidumolu, Ram, C.K. Prahalad, and M.R. Rangaswami (2009), "Why Sustainability Is Now the Key Driver of Innovation," *Harvard Business Review*, 87 (9), 56–64.

Nyilasy, Gergely, Harsha Gangadharbatla, and Angela Paladino (2014), "Perceived Greenwashing: The Interactive Effects of Green Advertising and Corporate Environmental Performance on Consumer Reactions," *Journal of Business Ethics*, 125 (4), 693–707.

Palmatier, Robert W., Louis W. Stern, and Adel I. El-Ansary (2015), *Marketing Channel Strategy*, Upper Saddle River, NJ: Prentice-Hall.

Palmer, Karen, Wallace E. Oates, and Paul R. Portney (1995), "Tightening Environmental Standards: The Benefit-Cost or the No-Cost Paradigm?" *Journal of Economic Perspectives*, 9 (4), 119–32.

Papies, Dominique, Peter Ebbes, and Harald J. van Heerde (2017), "Addressing Endogeneity in Marketing Models," Chapter 18 in *Advanced Methods for Modeling Markets*, Eds. Peter S.H. Leeflang, Jaap E. Wieringa, Tammo H.A. Bijmolt, and Koen H. Pauwels, Springer International Series in Quantitative Marketing.

Park, Sungho and Sachin Gupta (2012), "Handling Endogenous Regressors by Joint Estimation Using Copulas," *Marketing Science*, 31 (4), 567–86.

Peloza, John and Jingzhi Shang (2011), "How Can Corporate Social Responsibility Activities Create Value for Stakeholders? A Systematic Review," *Journal of the Academy of Marketing Science*, 39 (1), 117–35.

Pfeffer, Jeffrey and Gerald R. Salancik, G. R. (1978), *The External Control of Organizations: A Resource Dependence Perspective*, New York: Harper & Row.

Pomering, Alan and Sara Dolnicar (2009), "Assessing the Prerequisite of Successful CSR

Implementation: Are Consumers Aware of CSR Initiatives?" *Journal of Business Ethics*, 85 (Supplement 2), 285–301.

Porter, Michael E. and Claas Van der Linde (1995), "Toward a New Conception of the Environment-Competitiveness Relationship," *The Journal of Economic Perspectives*, 9 (4), 97–118.

Reibstein, David J. and Dick R. Wittink (2005), "Competitive Responsiveness," *Marketing Science*, 24 (1), 8–11.

Robinson, Adina Bărbulescu, Kapil R. Tuli, and Ajay K. Kohli (2014), "Does Brand Licensing Increase a Licensor's Shareholder Value?" *Management Science*, 61 (6), 1436–55.

Scheer, Lisa K. and Louis W. Stern, (1992), "The Effect of Influence Type and Performance Outcomes on Attitude toward the Influencer," *Journal of Marketing Research*, 29 (1), 128–42.

Servaes, Henri and Ane Tamayo (2013), "The Impact of Corporate Social Responsibility on Firm Value: The Role of Customer Awareness," *Management Science*, 59 (5), 1045–61.

Shankar, Venkatesh, Pablo Azar, and Matthew Fuller (2008), "BRAN*EQT: A Multicategory Brand Equity Model and Its Application at Allstate," *Marketing Science*, 27 (4), 567–84.

Shervani, Tasadduq A., Gary Frazier, and Goutam Challagalla (2007), "The Moderating Influence of Firm Market Power on the Transaction Cost Economics Model: An Empirical Test in a Forward Channel Integration Context," *Strategic Management Journal*, 28 (6), 635–52.

Smith, Robert E. (1993), "Integrating Information from Advertising and Trial: Processes and Effects on Consumer Response to Product Information," *Journal of Marketing Research*, 30 (2), 204–19.

Sorescu, Alina, Venkatesh Shankar, and Tarun Kushwaha (2007), "New Product Preannouncements and Shareholder Value: Don't Make Promises You Can't Keep," *Journal of Marketing Research*, 44 (August), 468–89.

Sorescu, Alina, Nooshin L. Warren, and Larisa Ertekin (2017), "Event Study Methodology in the Marketing Literature: An Overview," *Journal of the Academy of Marketing Science*, 45 (2), 186–207.

Sotgiu, Francesca and Katrijn Gielens (2015), "Suppliers Caught in Supermarket Price Wars: Victims or Victors? Insights from a Dutch Price War," *Journal of Marketing Research*, 52 (6), 784–800.

Srinivasan, Shuba and Dominique M. Hanssens (2009), "Marketing and Firm Value: Metrics, Methods, Findings, and Future Directions," *Journal of Marketing Research*, 46 (3), 293–312.

Srivastava, Rajendra K., Tasadduq A. Shervani, and Liam Fahey (1998), "Market-Based Assets and Shareholder Value: A Framework for Analysis," *Journal of Marketing*, 62 (January), 2-18.

Steenkamp, Jan-Benedict E.M. and Eric Fang (2011), "The Impact of Economic Contractions on the Effectiveness of R&D and Advertising: Evidence from U.S. Companies Spanning Three Decades," *Marketing Science*, 30 (4), 628–45.

——— and Katrijn Gielens (2003), "Consumer and Market Drivers of the Trial Probability of New Consumer Packaged Goods," *Journal of Consumer Research*, 30 (December), 368–84.

Stevens, Laura (2017), "Amazon's Expansions Costs Take a Toll as profits Falls 77%," *Wall Street*

*Journal*, July 28.

Swaminathan, Vanitha, Richard J. Fox, and Srinivas K. Reddy (2001), "The Impact of Brand Extension Introduction on Choice," *Journal of Marketing*, 65 (4), 1–15.

——— and Christine Moorman (2009), "Marketing Alliances, Firm Networks, and Firm Value Creation," *Journal of Marketing*, 73 (5), 52–69.

Ter Braak, Anne, Marnik G. Dekimpe, and Inge Geyskens (2013), "Retailer Private Label Margins: The Role of Supplier and Quality-Tier Differentiation," *Journal of Marketing*, 77 (July), 86–103.

Waddock, Sandra (2003), "Stakeholder Performance Implications of Corporate Responsibility," *International Journal of Business Performance Management*, 5 (2/3), 114–24.

Walley, Noah and Bradley Whitehead (1994), "It's Not Easy Being Green," *Harvard Business Review*, 72 (3), 46–52.

Winston, Andrew (2015), "How Target is Taking Sustainable Products Mainstream," *hbr.org*, August 4.

**Table 1**

**SUMMARY OF PREDICTIONS**

| *Variable* | *Effect on Costs* | *Effect on Revenues* | *Predictions* | *Corroborated* |
|---|---|---|---|---|
| Retailer power over supplier | ✓ | ✓ | A mandating retailer that holds more power over a supplier can appropriate more supplier benefits (cost savings and/or revenue gains) that result from complying with the mandate. | |
| *Supplier's sources of referent power* | | | | |
| Environmental reputation | | ✓ | Suppliers with a stronger environmental reputation can more readily resist a mandating retailer's appropriation attempts. | ✓ |
| Brand equity | | ✓ | Suppliers with a higher brand equity can more readily resist a mandating retailer's appropriation attempts. | ✓ |
| Advertising | | ✓ | Suppliers that advertise more can more readily resist a mandating retailer's appropriation attempts. | ✓ |
| *Supplier's sources of expert power* | | | | |
| Cost efficiency | ✓ | | Suppliers that are more cost efficient can more readily resist a mandating retailer's appropriation attempts.<br>Suppliers that are more cost efficient are less resistant to a mandating retailer's appropriation attempts. | ✓ |
| R&D | ✓ | | Suppliers that invest more in R&D can more readily resist a mandating retailer's appropriation attempts.<br>Suppliers that invest more in R&D are less resistant to a mandating retailer's appropriation attempts. | ✓ |

## Table 2

## SUMMARY OF MEASURES AND DATA SOURCES

| *Variable (label)* | *Data Source* | *Operationalization* [a] |
|---|---|---|
| Retailer power over supplier *(POW)* | SEC filings | Percentage of supplier revenues realized through the mandating retailer if reported in the 10-K filings, zero if not reported (see, e.g., Kelly and Gosman 2000 for a similar practice). |
| Environmental reputation *(ENVREP)* | KLD | Number of environmental strengths the supplier is known for, ranging from zero to seven, divided by the average number of environmental strengths of all suppliers in the same two-digit SIC level industry. |
| Brand equity *(BREQ)* | Euromonitor | $\frac{REV-REV_{PL}}{CATREV}$, where *REV* is supplier revenues in the category that accounts for the largest proportion of the supplier's revenues, $REV_{PL}$ is private label revenues in the same category, and *CATREV* is total category revenues. |
| Advertising *(ADV)* | Kantar Media | Supplier expenditures on television advertising divided by the total expenditures on television advertising of suppliers in the same two-digit SIC level industry. |
| Cost efficiency *(COSTEFF)* | Compustat | Ratio of supplier revenues to cost of goods sold, divided by the average cost efficiency of suppliers in the same two-digit SIC level industry; Items: COGS, SALE. |
| R&D *(R&D)* | Compustat | Supplier expenditures on R&D divided by the total R&D of suppliers in the same two-digit SIC level industry. Set to 0 when a supplier's R&D expenditures are not reported (see, e.g., Borah and Tellis 2014 for a similar practice); Item: XRD. |
| Resource slack *(SLACK)* | Compustat | Ratio of supplier net cash flows from operating activities to assets; Items: OANCF, AT. |
| Inventory turnover *(INV)* | Compustat | Ratio of supplier revenues to inventory; Items: SALE, INVT. |
| Prior environmental investments *(PRIOR)* | Factiva, LexisNexis | Dummy variable that equals 1 when the supplier announced investments in environmental sustainability in the year prior to the mandate, 0 otherwise. |
| Semi-durables supplier *(SEMIDUR)* | Compustat | Effect-coded variable that equals 1 when the supplier operates in semi-durables industries, -1 for grocery industries, and 0 otherwise; Item: SIC. |
| Durables supplier *(DUR)* | Compustat | Effect-coded variable that equals 1 when the supplier operates in durables industries, -1 for grocery industries, and 0 otherwise; Item: SIC. |
| Entertainment supplier *(ENT)* | Compustat | Effect-coded variable that equals 1 when the supplier operates in entertainment industries, -1 for grocery industries, and 0 otherwise; Item: SIC. |

| | | |
|---|---|---|
| SGA *(SGA)* [b] | Compustat | Supplier sales and general administrative expenses (SGA) divided by the total SGA of suppliers in the same two-digit SIC level industry; Item: SGA. |
| Accounts receivable *(ACCREC)* [b] | Compustat | The outstanding invoices a supplier has because it has delivered products or services to its customers, divided by the average accounts receivable of suppliers in the same two-digit SIC level industry. Receivables represent a line of credit extended by a supplier; Item: RECCH. |
| Compliance with laws *(LAWCOMPL)* [b] | KLD | A composite indicator that identifies suppliers that support social regulation, divided by the average score of suppliers in the same two-digit SIC level industry. |
| Competitive wages *(WAGES)* [b] | KLD | A composite indicator that identifies suppliers that provide strong employment benefits and performance incentives, divided by the average score of suppliers in the same two-digit SIC level industry. |
| Union rights *(UNIONS)* [b] | KLD | A composite indicator that identifies suppliers with a high union density, divided by the average score of suppliers in the same two-digit SIC level industry. |
| Workplace safety *(SAFETY)* [b] | KLD | A composite indicator that identifies suppliers that have strong employee health and safety programs, divided by the average score of suppliers in the same two-digit SIC level industry. |

[a] All variables are measured in the year prior to Walmart's sustainability mandate.
[b] Variable featuring exclusively in the selection equation.

**Table 3**

**DESCRIPTIVES (N = 115)**

| *Variable (label)* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* | *12* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Retailer power over supplier *(POW)* | 1.00 | | | | | | | | | | | |
| 2. Environmental reputation *(ENVREP)* | -.06 | 1.00 | | | | | | | | | | |
| 3. Brand equity *(BREQ)* | -.05 | .31 | 1.00 | | | | | | | | | |
| 4. Advertising *(ADV)* | .12 | .47 | .19 | 1.00 | | | | | | | | |
| 5. Cost efficiency *(COSTEFF)* | .11 | .07 | .20 | .04 | 1.00 | | | | | | | |
| 6. R&D *(R&D)* | -.08 | .74 | .53 | .39 | .07 | 1.00 | | | | | | |
| 7. Resource slack *(SLACK)* | -.09 | .24 | .18 | .21 | .15 | .22 | 1.00 | | | | | |
| 8. Inventory turnover *(INV)* | .25 | -.05 | .00 | .12 | .01 | -.04 | -.11 | 1.00 | | | | |
| 9. Prior env. investments *(PRIOR)* | -.03 | .36 | .05 | .34 | .10 | .30 | .10 | -.06 | 1.00 | | | |
| 10. Semi-durables supplier *(DUR)* | -.11 | -.06 | -.06 | -.03 | -.20 | -.05 | -.16 | .05 | -.16 | 1.00 | | |
| 11. Durables supplier *(SEMIDUR)* | -.02 | -.01 | -.02 | .06 | -.42 | .00 | -.10 | -.01 | -.10 | .62 | 1.00 | |
| 12. Entertainment supplier *(ENT)* | .01 | .05 | -.07 | .01 | -.31 | .03 | -.14 | .29 | -.16 | .67 | .60 | 1.00 |
| Mean[a] | 15.22 | 2.73 | .00 | .27 | .53 | .04 | .08 | 42 | .13 | .14 | .36 | .17 |
| Standard deviation | 12.30 | 6.01 | .14 | .41 | .20 | .10 | .08 | 190.97 | - | - | - | - |

[a] For dummy variables, we report the proportion of observations having the value of one.

**Table 4**

**CUMULATIVE AVERAGE ABNORMAL RETURNS**

**ACROSS SELECTED EVENT WINDOWS (N = 118)**

| *Event Window (in Days)* | *Average CAR* | *Average SCAR* | *Patell t* | *Percentage Negative*[a] |
|---|---|---|---|---|
| -10 to +10 | -.19% | -.13% | -1.37 | 57% |
| -3 to +3 | -.37% | -.20% | -2.18* | 66% |
| -2 to +2 | -.54% | -.30% | -3.28*** | 68% |
| -1 to +1 | -.77% | -.31% | -3.37*** | 64% |
| -3 to 0 | .08% | -.17% | -1.87 | 66% |
| -2 to 0 | -.20% | -.23% | -2.54** | 65% |
| -1 to 0 | -.39% | -.17% | -1.85 | 63% |
| 0 to +1 | -.48% | -.19% | -2.02* | 56% |
| 0 to +2 | -.45% | -.14% | -1.48 | 62% |
| 0 to +3 | -.55% | -.08% | -0.82 | 61% |
| -1 to +2 | -.74% | -.26% | -2.77** | 65% |
| -2 to +1 | -.57% | -.36% | -3.81*** | 64% |

*** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed)

[a] Percentage of suppliers with negative abnormal returns.

**Table 5**

**SELECTION MODEL RESULTS (N=1,102)**

| *Variable (label)* | *Estimate* | *Wald-$\chi^2(1)$* |
|---|---|---|
| Intercept | -1.687 | 53.11*** |
| *Selection variables* | | |
| Accounts receivable *(ACCREC)* | .038 | 11.03*** |
| Compliance with laws *(LAWCOMPL)* | -.593 | .69 |
| Competitive wages/benefits *(WAGES)* | .247 | 5.57* |
| Union rights *(UNIONS)* | -1.050 | 3.03 |
| Workplace safety *(SAFETY)* | .779 | 9.95** |
| *Supplier's sources of referent power* | | |
| Environmental reputation *(ENVREP)* | .037 | 3.10 |
| Environmental reputation$^2$ | -.001 | 1.79 |
| SGA *(SGA)* | -.133 | 6.14* |
| SGA$^2$ | .003 | 3.22 |
| *Supplier's sources of expert power* | | |
| Cost efficiency *(COSTEFF)* | 1.124 | 2.48 |
| Cost efficiency$^2$ | -.499 | 1.22 |
| R&D *(R&D)* | 4.929 | .76 |
| R&D$^2$ | -25.082 | 1.38 |
| *Control variables* | | |
| Resource slack *(SLACK)* | .624 | 8.60** |
| Inventory turnover *(INV)* | -.000 | .84 |
| Semi-durables supplier *(SEMIDUR)* | .051 | .09 |
| Durables supplier *(DUR)* | -.184 | 2.73 |
| Entertainment supplier *(ENT)* | -.411 | 9.02** |

*** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed)

**Table 6**

**EXPLAINING THE VARIATION IN THE EFFECT OF A DOMINANT RETAILER'S SUSTAINABILITY MANDATE ON SUPPLIERS' ABNORMAL RETURNS (N = 115)**

| *Variable (label)* | *Estimate* | *t* |
|---|---|---|
| Intercept | 1.387 | 2.03* |
| Retailer power over supplier *(POW)* | .006 | .59 |
| *Supplier's sources of referent power* | | |
| Retailer power × Env. reputation | .003 | 2.05* |
| Retailer power × Brand equity | .227 | 3.03** |
| Retailer power × Advertising | .041 | 2.14* |
| Env. reputation *(ENVREP)* | -.105 | -2.42* |
| Brand equity *(BREQ)* | -5.390 | -3.96*** |
| Advertising *(ADV)* | -.088 | -.13 |
| *Supplier's sources of expert power* | | |
| Retailer power × Cost efficiency | -.028 | -2.04* |
| Retailer power × R&D | -.530 | -3.88*** |
| Cost efficiency *(COSTEFF)* | 1.147 | 2.09* |
| R&D *(R&D)* | 10.812 | 3.60*** |
| *Control variables* | | |
| Resource slack *(SLACK)* | -2.847 | -3.01** |
| Inventory turnover *(INV)* | -.001 | -2.97** |
| Prior env. investments *(PRIOR)* | -.037 | -.15 |
| Semi-durables supplier *(SEMIDUR)* | .053 | .35 |
| Durables supplier *(DUR)* | .367 | 2.94** |
| Entertainment supplier *(ENT)* | .320 | 1.10 |
| Inverse Mills ratio *(IMR)* | -.601 | -2.40* |
| Copula correction R&D[a] *(R&D$^c$)* | -.639 | -1.76 |
| $R^2$ | .320 | |

*** $p < .001$, ** $p < .01$, * $p < .05$ (two-sided)

[a] The copula correction for R&D is significant at $p = .09$. The copula correction for advertising was not significant ($p = .84$) and was therefore not retained in the model.

**Table 7**

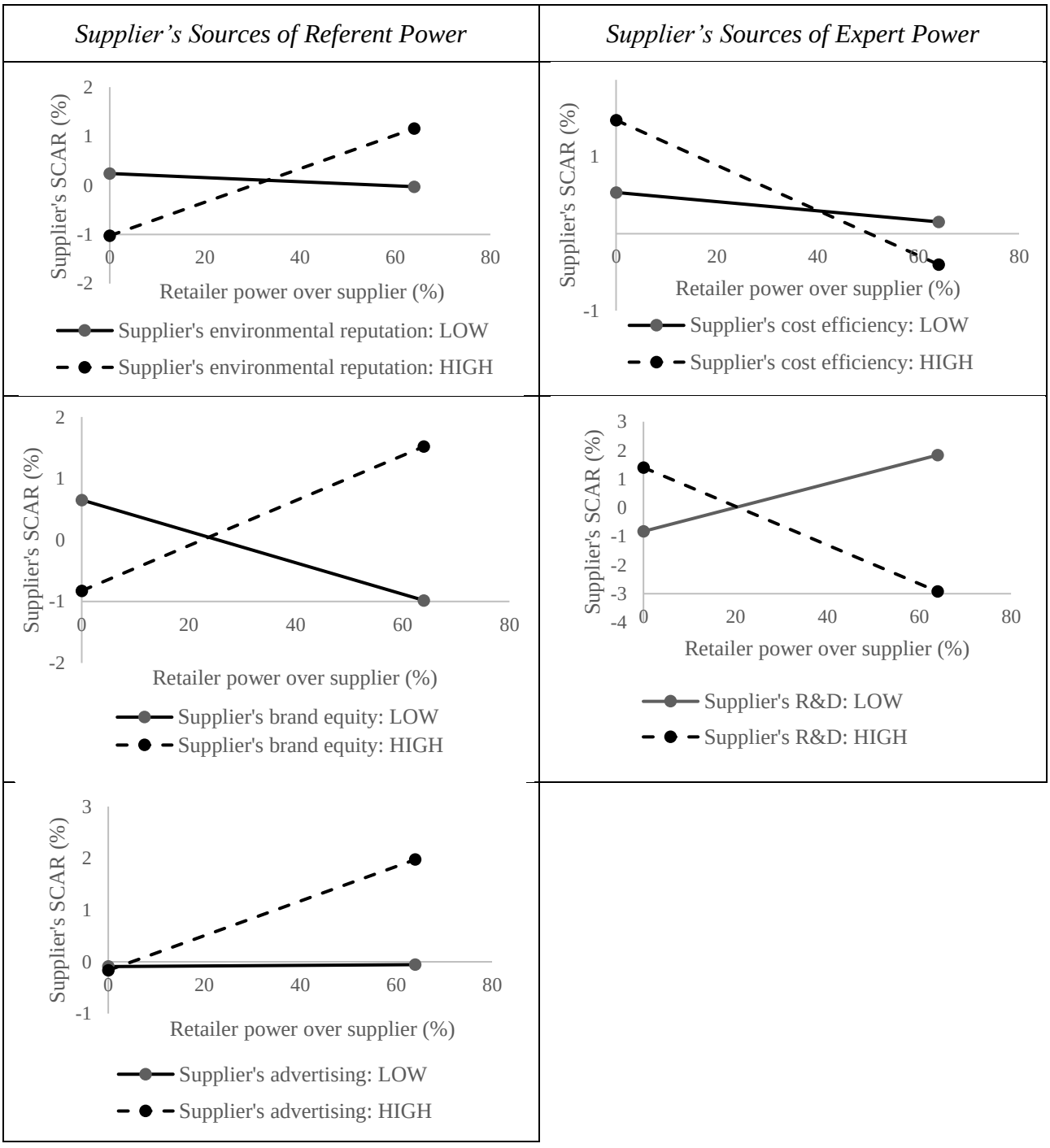
**SUPPLIER POWER SOURCES AND THEIR NET EFFECT ON SUPPLIER SHAREHOLDER VALUE BY INDUSTRY** [a]

| *Industry* | *Env. Reputation (ENVREP)* | *Brand Equity (BREQ)* | *Advertising (ADV)* | *Cost Efficiency (COSTEFF)* | *R&D (R&D)* |
|---|---|---|---|---|---|
| Groceries | -.15 | -.01 | 1.64 | .44 | .09 |
| Semi-durables | -.09 | .05 | .12 | .50 | .09 |
| Durables | -.15 | .00 | 1.90 | .31 | .10 |
| Entertainment | -.21 | .03 | 3.39 | .32 | .08 |

[a] The net effect for every power source is calculated by multiplying the corresponding main and moderating effect parameter estimates in Table 6 with the average values of the power source and the retailer's power over the supplier in the industry under investigation.

**Figure 1**

**SIMPLE SLOPE ANALYSES[a]**




*Supplier's Sources of Referent Power* | *Supplier's Sources of Expert Power*

[a] Low (high) is defined as one standard deviation below (above) the variable's mean.

## Web Appendix

## OVERVIEW OF SIC INDUSTRIES SCREENED AND SUPPLIERS RETAINED

| SIC code | Description | Number of suppliers in Walmart sample |
|---|---|---|
| 0200 | AGRICULTURAL PROD-LIVESTOCK & ANIMAL SPECIALTIES | 1 |
| 2000 | FOOD AND KINDRED PRODUCTS | 6 |
| 2011 | MEAT PACKING PLANTS | 2 |
| 2013 | SAUSAGES & OTHER PREPARED MEAT PRODUCTS | 2 |
| 2015 | POULTRY SLAUGHTERING AND PROCESSING | 1 |
| 2020 | DAIRY PRODUCTS | 0 |
| 2024 | ICE CREAM & FROZEN DESSERTS | 1 |
| 2030 | CANNED, FROZEN & PRESERVD FRUIT, VEG & FOOD SPECIALTIES | 4 |
| 2033 | CANNED, FRUITS, VEG, PRESERVES, JAMS & JELLIES | 2 |
| 2040 | GRAIN MILL PRODUCTS | 2 |
| 2050 | BAKERY PRODUCTS | 0 |
| 2052 | COOKIES & CRACKERS | 1 |
| 2060 | SUGAR & CONFECTIONERY PRODUCTS | 4 |
| 2070 | FATS & OILS | 0 |
| 2080 | BEVERAGES | 1 |
| 2082 | MALT BEVERAGES | 0 |
| 2086 | BOTTLED & CANNED SOFT DRINKS & CARBONATED WATERS | 4 |
| 2090 | MISCELLANEOUS FOOD PREPARATIONS & KINDRED PRODUCTS | 5 |
| 2092 | PREPARED FRESH OR FROZEN FISH & SEAFOODS | 0 |
| 2100 | TOBACCO PRODUCTS | 0 |
| 2111 | CIGARETTES | 3 |
| 2200 | TEXTILE MILL PRODUCTS | 0 |
| 2211 | BROADWOVEN FABRIC MILLS, COTTON | 1 |
| 2273 | CARPETS & RUGS | 0 |
| 2300 | APPAREL & OTHER FINISHD PRODS OF FABRICS & SIMILAR MATL | 4 |
| 2320 | MEN'S & BOYS' FURNISHGS, WORK CLOTHG, & ALLIED GARMENTS | 2 |
| 2330 | WOMEN'S, MISSES', AND JUNIORS OUTERWEAR | 1 |
| 2340 | WOMEN'S, MISSES', CHILDREN'S & INFANTS' UNDERGARMENTS | 1 |

| SIC code | Description | Number of suppliers in Walmart sample |
|---|---|---|
| 2390 | MISCELLANEOUS FABRICATED TEXTILE PRODUCTS | 0 |
| 2510 | HOUSEHOLD FURNITURE | 0 |
| 2511 | WOOD HOUSEHOLD FURNITURE, (NO UPHOLSTERED) | 0 |
| 2520 | OFFICE FURNITURE | 0 |
| 2522 | OFFICE FURNITURE (NO WOOD) | 0 |
| 2590 | MISCELLANEOUS FURNITURE & FIXTURES | 0 |
| 2600 | PAPERS & ALLIED PRODUCTS | 0 |
| 2621 | PAPER MILLS | 1 |
| 2670 | CONVERTED PAPER & PAPERBOARD PRODS (NO CONTANERS/BOXES) | 2 |
| 2771 | GREETING CARDS | 1 |
| 2780 | BLANKBOOKS, LOOSELEAF BINDERS & BOOKBINDG & RELATD WORK | 1 |
| 2834 | PHARMACEUTICAL PREPARATIONS | 3 |
| 2840 | SOAP, DETERGENTS, CLEANG PREPARATIONS, PERFUMES, COSMETICS | 2 |
| 2842 | SPECIALTY CLEANING, POLISHING AND SANITATION PREPARATIONS | 3 |
| 2844 | PERFUMES, COSMETICS & OTHER TOILET PREPARATIONS | 5 |
| 2851 | PAINTS, VARNISHES, LACQUERS, ENAMELS & ALLIED PRODS | 0 |
| 2870 | AGRICULTURAL CHEMICALS | 1 |
| 2890 | MISCELLANEOUS CHEMICAL PRODUCTS | 2 |
| 2911 | PETROLEUM REFINING | 1 |
| 3011 | TIRES & INNER TUBES | 0 |
| 3021 | RUBBER & PLASTICS FOOTWEAR | 0 |
| 3060 | FABRICATED RUBBER PRODUCTS, NEC | 0 |
| 3086 | PLASTICS FOAM PRODUCTS | 0 |
| 3089 | PLASTICS PRODUCTS, NEC | 3 |
| 3100 | LEATHER & LEATHER PRODUCTS | 0 |
| 3140 | FOOTWEAR, (NO RUBBER) | 3 |
| 3220 | GLASS & GLASSWARE, PRESSED OR BLOWN | 0 |
| 3420 | CUTLERY, HANDTOOLS & GENERAL HARDWARE | 1 |
| 3480 | ORDNANCE & ACCESSORIES, (NO VEHICLES/GUIDED MISSILES) | 1 |
| 3578 | CALCULATING AND ACCOUNTING MACHINES | 1 |
| 3630 | HOUSEHOLD APPLIANCES | 0 |
| 3634 | ELECTRIC HOUSEWARES & FANS | 2 |

| SIC code | Description | Number of suppliers in Walmart sample |
|---|---|---|
| 3651 | HOUSEHOLD AUDIO & VIDEO EQUIPMENT | 2 |
| 3663 | RADIO & TV BROADCASTING & COMMUNICATIONS EQUIPMENT | 1 |
| 3669 | COMMUNICATIONS EQUIPMENT, NEC | 0 |
| 3690 | MISCELLANEOUS ELECTRICAL MACHINERY, EQUIPMENT & SUPPLIES | 2 |
| 3751 | MOTORCYCLES, BICYCLES & PARTS | 0 |
| 3827 | OPTICAL INSTRUMENTS & LENSES | 1 |
| 3861 | PHOTOGRAPHIC EQUIPMENT & SUPPLIES | 0 |
| 3873 | WATCHES, CLOCKS, CLOCKWORK OPERATED DEVICES/PARTS | 1 |
| 3910 | JEWELRY, SILVERWARE & PLATED WARE | 0 |
| 3942 | DOLLS & STUFFED TOYS | 2 |
| 3944 | GAMES, TOYS & CHILDREN'S VEHICLES (NO DOLLS & BICYCLES) | 3 |
| 3949 | SPORTING & ATHLETIC GOODS, NEC | 0 |
| 3990 | MISCELLANEOUS MANUFACTURING INDUSTRIES | 4 |
| 4841 | CABLE & OTHER PAY TELEVISION SERVICES | 1 |
| 5045 | WHOLESALE-COMPUTERS & PERIPHERAL EQUIPMENT & SOFTWARE | 1 |
| 5190 | WHOLESALE-MISCELLANEOUS NONDURABLE GOODS | 1 |
| 5600 | RETAIL-APPAREL & ACCESSORY STORES | 1 |
| 5812 | RETAIL-EATING PLACES | 2 |
| 6099 | DEPOSITORY BANKING | 1 |
| 7200 | SERVICES-PERSONAL SERVICES | 2 |
| 7372 | PREPACKAGED SOFTWARE | 7 |
| 7389 | SERVICES-BUSINESS SERVICES | 1 |
| 7812 | SERVICE MOTION PICTURE & VIDEO TAPE PRODUCTION | 4 |
| TOTAL | | 118 |