ERASMUS UNIVERSITEIT ROTTERDAM

# How does Corporate Social Responsibility affect Firm Performance?

Adrián Rodriguez Sainz
Student number: 527002

July 29, 2022

Bachelor Thesis
International Bachelor of Economics and Business Economics
Erasmus School of Economics
Erasmus University Rotterdam

Supervisor:          Sacha Kapoor               Associate Professor
Second reader:       Vladimir Karamychev        Associate Professor

# Contents

**Abstract**

This thesis aims to help better understand the dynamics of corporate social responsibility, as well as show the potential impact of socially responsible behaviour on firm performance. Three main components are identified for effective corporate social responsibility policies: the level of social responsibility of a firm, the publicity of the firm's social responsibility, and the consumers' sensitivity to social responsibility compared to price changes, i.e., how much consumers care about monetary costs versus possible unethical practices a firm engages in. A negative relationship is found between social responsibility and sales, which indicates that less socially responsible firms have higher sales on average. This indicates that consumers are more sensitive to price changes than to levels of socially responsible behaviour. Another possible interpretation is the lack of publicly and readily available information regarding firms' corporate social responsibility levels, which results in purchase decisions not reflecting these levels.

# 1  Introduction

Sustainable and responsible ways of consumption have gained a lot of attention in recent years for various reasons, such as easier access to information and improving quality of life and education worldwide. People are increasingly willing to pay premiums for ethically manufactured goods, and firms have to adapt to this shift in consumer behaviour accordingly. However, changing entrenched manufacturing practices, making supply chain processes transparent, and reshaping the working environment all come at a cost. Therefore, firms have to evaluate whether the trade-off of operating in an ethical, transparent, and responsible way is worth the extra cost it entails. The main question of this thesis focuses on the viability of this trade-off: How does corporate social responsibility (CSR) affect firm performance?

Numerous firms have already made this trade-off, and the trend towards sustainability is also reflected by the rising popularity of sustainability labels around the world, such as Fairtrade or Rainforest Alliance. According to Ecolabel Index, the largest global directory of eco-labels, there are currently 456 eco-labels in 199 countries and 25 industry sectors. Sustainability labels are meant to reduce the effort it takes for the consumer to assess whether a product is of sustainable production by transferring costs of research, verification, and compliance to the organisations behind these labels. (Grunert et al., 2014) have shown that labels, depending on product type, can distort perceptions on taste and health effects of products. However, they have found no evidence for a social desirability account of the eco-label effect. The limit of the eco-labels depends on the consumers' general concern about sustainability and the extent to which this concern can be converted into actual purchasing behaviour.

The rising awareness surrounding sustainability, the existence of eco-labels, and the shift towards transparency indicate a demand for CRS. Gatersleben (2001) has found that people are more willing to pay more to maintain their quality of life while reducing their negative environmental impact rather than reducing their quality of life, which implies that people are willing to pay a premium for sustainability.

To assess the effect of CRS on firm performance, financial data are used from Compustat and Wharton Research Data Services, while sustainability data are acquired from RepRisk. Firm-specific fixed effects regressions of sales and sales growth are performed on the RepRisk Index, which indicates a firm's reputational risk exposure related to Environmental, Social, and Governance (ESG) issues. The RepRisk Index is on a scale of 0-100, with 0 being the best and 100 being the worst score. The higher the number, the more ESG-related issues a given firm has.

A statistically significant positive relationship was found between sales and ESG issues, indicating that firms with a lot of sales have more ESG issues than firms with lower sales. This also implies that firms with a high level of pro-social engagement and a low number of ESG issues have relatively fewer sales. It seems that, on average, in the current social and economic climate, the trade-off for sustainable and ethical operation is not worth the cost it entails. If the sensitivity of consumers to price changes is larger than their sensitivity to sustainability or lack thereof, firms will gravitate towards minimising costs, even if that brings potentially ethically questionable practices with it.

The overall effect of CSR on firm performance is particularly hard to measure, as both CSR and firm performance are measures for which there is no objectively correct metric. However, the finding that individuals are more responsive to price changes than changes in CSR is a valuable insight and a possible contribution to existing literature.

# 2 Theoretical Discussion

Existing theory suggests that under ideal market conditions, the invisible hand, described by Adam Smith, should guide the market towards a socially optimal state as a consequence of both consumers and corporations striving to maximise their own utility. The market has no moral or social responsibility, as it is purely a reflection of the will of the actors participating within it. If there is demand for socially responsible behaviour, consumers will engage with firms satisfying their criteria, and corporations must fulfil the needs of the consumers to stay competitive, thus reaching a socially responsible optimum. The purpose of the state is to correct for market failures preventing ideal market conditions, redistribution of wealth, and the provision of public goods that cannot be efficiently provided under market conditions. There is, however, great debate regarding what a desirable social outcome is, as well as the relative role of the market and the state in reaching this outcome.

With the rise of the internet and the advent of the information age, the consequences of unsustainable practices are more visible than ever to a wider audience than ever. This has caused a major shift in the public perception about the role of corporations, slowly making it a requirement for firms to stand up for social and environmental causes. (Agudelo et al., 2019)

## 2.1 What is Corporate Social Responsibility?

Corporate Social Responsibility can be interpreted in many ways. Some argue that CSR is essentially making a trade-off between profitability and social responsibility, essentially sacrificing profits for the "greater good". Others have argued that socially responsible business practices can actually be beneficial and lead to increased profits.

There are three main interpretations of CSR, according to Benabou and Tirole (2010): The first view is the notion of "doing well by doing good", meaning that being socially responsible can make a firm more profitable. A firm can implement socially responsible practices and make efforts to increase transparency to gain a competitive advantage and save on expenses resulting from possible future changes in legislation, thus increasing profits in the long run, even if these practices are costly in the present.

The second view on CSR involves delegated philanthropy. There are agents in the market with utility functions depending on social welfare, willing to potentially sacrifice money in exchange for perceived sustainable and socially responsible practices, practically using the corporation as a means of philanthropy and as a tool to support causes they believe in. Directly donating to a charity working on improving the working conditions of tea farmers in developing countries involves additional information and transaction costs compared to purchasing tea from a well-known, ethical, and transparent tea supplier that only purchases tea from farmers that are paid fairly. In this case, the consumer delegates their philanthropy to the tea supplier, willing to pay extra for tea, as a perceived social benefit is also included in the price. There is quite a lot of overlap between the first and second views, and both views consider CSR consistent with profit-maximisation.

As for the third interpretation, responsible behaviour is not considered to be a result of stakeholder demand but rather a reflection of the firm management's values. This insider-initiated corporate philanthropy can manifest itself in many ways, such as corporations donating to charities that management deems worthy or using the resources of a corporation for causes considered to be important by management. This interpretation of CSR has been criticised widely as it raises several questions regarding corporate governance, efficient allocation of funds, and the role of management.

Friedman (1970) argued that the only social responsibility of a business is to increase its profits. If management diverges from its role of maximising profit for shareholders, they are essentially spending others' resources for their own perceived benefit. As a business caters for the demand of its audience, if socially responsible behaviour is desired, it should follow through purely as a result of pursuing maximum profits. His view is consistent with the first and second interpretations of CSR by Benabou and Tirole (2010), both of which suggests that CSR can lead to increases in profit and should not be considered as a trade-off for profitability.

## 2.2 Individual vs Corporate Social Responsibility

Many people engage in pro-social activities even without the existence of firms focusing on making a positive social or environmental impact. To clearly see the workings behind Corporate Social Responsibility, it is essential to understand the motivation of individuals who act in a socially responsible way. Additionally, goals set by policymakers and corporations cannot possibly be achieved without the understanding of fundamental reasons as to why people choose to be responsible.

**Image concerns**

One of the main motivations for socially responsible behaviour is related to image concerns. In general, we like to think that we are acting and consuming in a responsible way, and the more we can signal a particular instance of good behaviour to our environment, the more likely we are to engage with it.

A study by Lacetera and Macis (2010) has shown that the implementation of an award scheme which rewarded blood donors with a "medal", has significantly increased participation frequency amongst donors. An interesting finding, however, is that this increased donation frequency was only statistically significant if some sort of publicity accompanied the medal. The thresholds to receive awards were fixed at 8, 16, 24, 50, 75, and 100 donations since joining the Association. Only the top three tiers of donors received their awards during a biannual awards ceremony, with their names publicised in local newspapers. They have found that the average reduction in the effective time elapsed between donations, in case of donations leading to a public award, is around 50%, a substantial increase in donation frequency. There was no effect of this nature found neither in the case of no awards nor privately awarded medals.

Several other studies have pointed out the importance of consumer self-image. A well-known experiment done by (Gneezy and Rustichini, 2000), named "Pay Enough or Don't Pay at all" has shown that receiving a small amount of money for charitable work has a disincentivising effect: engaging in pro-social activities, acting in selfless and charitable ways provide us with utility not due to financial gain, but because of genuine altruism. The moment financial rewards are added to this equation, the transaction is not selfless anymore.

If the financial rewards are not high enough to compensate for the utility decrease as a consequence of the loss of selflessness, it results in a utility decrease. In other words, being charitable in exchange for a low amount of financial compensation will make an individual feel less altruistic while also reducing the positive public perception of said charitable act: "they only did it for the money". This will result in less incentive to engage in such acts, up to the point where the financial incentives are actually strong enough to counteract this effect.

Understanding how people deal with image concerns is essential to motivate people to behave more responsibly. On the one hand, people respond positively to publicity and recognition associated with their selfless behaviour. However, on the other hand, as this publicity and recognition increases, it diminishes the core motivation of charitable acts, resulting in less proactive altruism.

Transparency is vital if we want to take advantage of image concerns. Individuals are much more likely to engage in pro-social activities if it is publicly acknowledged, and for this to hold in the case of companies, what companies are ethical and unethical should be publicly and readily available.

**Delegated Philantropy**

The second interpretation of Corporate Social Responsibility by Benabou and Tirole (2010), centred around delegated philanthropy, ties individual and corporate social responsibility together. Each individual has their own set of values, with their own set of causes they are willing to support. It is, however, highly costly to each individual to independently research the most effective way to support the causes they deem worthy compared to outsourcing this task to a third party. To avoid these costs, individuals can use the one fundamental tool they have to steer social change towards a direction they deem preferable: consumption.

Let us assume there are two scenarios:

In the first scenario, CSR is not encouraged, and the only purpose of a firm is to profit-maximise. For simplicity, assume consumers do not care about a firm's CSR. In this case, each individual has to independently support the social or environmental causes they believe in by researching charities, or doing volunteer work, for example.

In the second scenario, firms are actively encouraged to participate in CSR. Consumer prices are higher, as ethical sourcing and materials and good working conditions are costly. However, purely by consuming, individuals express their social and environmental preferences. In competitive markets, this will guide the supply to meet demand which will result in a socially efficient allocation of firms that cater for different social and environmental needs of the population.

In economic terms, the utility gain of an individual, under the first scenario, can be expressed as:

$$Utility_i = U_{good} + U_{cause} - P_{good} - P_{cause} - P_{information\&transaction} \tag{1}$$

Whereas the second scenario can be expressed as:

$$Utility_i = U_{good} + U_{cause} * \left(\frac{P_{premium}}{P_{good} + P_{premium}}\right) - P_{good} - P_{premium} \tag{2}$$

where

$Utility_i$ = Utility change of an individual

$U_{good}$ = Utility gain of an individual resulting from the consumption of a good

$U_{cause}$ = Utility gain of an individual resulting from social/environmental change

$P_{good}$ = Price of a good without any premiums

$P_{premium}$ = Premium on top of price resulting from responsible practices, such as good working conditions, or the firm giving a fraction of price to charitable causes

$P_{information\&transaction}$ = Price of information and transaction costs associated with an individual researching and supporting charities or organisations independently

$\frac{P_{premium}}{P_{good}}$ = Share of premium in overall cost of good

Under the second scenario, the information and transaction costs are entirely borne by the firm providing the good, making it possible to dilute these costs across all customers. It is noteworthy that here, a "premium" can refer to any price deviation that can be tied to a firm's decision. If an individual appreciates original design, they might be willing to pay the premium for the original product instead of a cheaper alternative with a similar design, to express their support for creative and innovative design, even if this does not have any social or environmental implications.

## Expectations

(Pirsch et al., 2007) have found that customers react positively to CSR programs, and they are more likely to repurchase from firms with Institutional CSR programs. They have also found different results between institutional and promotional CSR programs, with the difference between the two being that while institutional CSR programs are designed to build long-term customer relationships and are focused on a comprehensive, all-encompassing approach to CSR, promotional CSR programs are specifically designed as a tool to boost sales using CSR as a marketing tool. Individuals tend to be more suspicious of the firm's intentions with promotional CSR programs, which is reflected in their lower repurchase willingness compared to firms with institutional CSR programs.

A main notable limitation of their study, which the authors also highlighted, is that the study being a within-subject design rather than a between-subjects design, proposing subjects with both definitions of CSR could have altered the decisions of participants in favour of institutional CSR.

Sen and Bhattacharya (2001) reached a similar conclusion: people tend to respond positively to CSR policies; however, an interesting finding of their study was that all customers react negatively to negative CSR information, but only individuals that are most supportive of CSR causes react positively to positive CSR information. This can be explained by loss aversion, which is a cognitive bias resulting in individuals perceiving negative emotions more intensively than positive emotions of equal magnitude. (Tversky and Kahneman, 1992)

While, in theory, these findings would imply that CSR policies are universally desirable and could potentially lead to higher firm performance, there are other factors to consider: costs and information availability.

Assuming being socially responsible is costly, firms that do not practice CSR have lower costs, all else being equal. If the target audience is more responsive to price changes than ethical concerns, it is not in the interest of the firm to engage in ethical and responsible, but more costly practices.

There is also the issue of information asymmetry present between the firm and the consumer. Firms do their best to hide their wrongdoings while highlighting their pro-social contributions. Unless a consumer is not already highly invested in CSR and they do not do their own research, it is almost almost impossible to expect them to be fully informed about the stance of a specific firm regarding particular social issues.

In practice, for CSR to have a positive impact on firm performance, there needs to be almost perfect information present on the market, not just about positive CSR but about negative CSR as well. Additionally, people need to be more responsive to CSR than the price deviations it results in, which highlights the importance of mass adoption. As more firms engage in socially responsible practices, the potential cost of these practices is expected to decrease due to the dilution of fixed costs.

As for the expectations of this study, as the market current firms operate in is not fully transparent, with CSR being a relatively new concept, it is safe to assume that most present-day customers are likely to be more sensitive to price than CSR. Thus, the positive effect of cost-cutting while being less socially responsible is expected to dominate the effect of socially responsible practices that come with extra costs.

# 3   Data

Panel data from year 2010 to 2020 is used to analyse firm performance and CRS. The data is collected from 3 different sources: RepRisk, Compustat, and Wharton Research Data Services (WRDS). Due to complications concerning data collection in other markets, only companies with headquarters within the United States of America are examined, which is beneficial in terms of internal validity, but a significant compromise in terms of external validity.

For measuring CRS, the RepRisk Index (RRI) will be used. RepRisk is a data science company specialising in ESG and business-conduct risk research. They use AI and machine learning combined with human insights to convert big data into actionable research, analytics, and risk metrics. For this, over 100000 public sources are screened daily, including print media, online media, social media, government bodies, regulators, and newsletters, among others.The RRI, using RepRisk's own algorithm, quantifies a firm's reputational risk exposure to ESG issues. RepRisk's scope consists of 28 ESG Issues, and every risk incident is linked to at least one of these issues, such as animal welfare, child labour, and climate change. Risk incidents are violations of international standards that can possibly have reputational and financial impacts on a firm. Risk exposure captures a firm's tendency to engage in such violations. The index is purely performance-based, meaning that the RRI of a firm only depends on the risk incidents of that firm, and it captures actual risk management performance rather than reported goals and policies.

Each risk incident is analysed according to three parameters: severity, reach of the information source, and novelty. Severity is assessed on the basis of the consequences of the incident, the extent of its impact, and the cause of the incident. The reach of the information source depends on the extent to which a given violation is publicised. RepRisk has pre-classified all sources by reach into limited reach, medium reach, and high reach. Novelty of a risk incident indicates whether it is the firm's first violation regarding a specific ESG issue, or possibly, if the firm has a history of such violations. From these risk incidents, an overall risk exposure score, the RepRisk Index is determined by RepRisk's proprietary algorithm, which quantifies risk exposure on a scale from 0 to 100, where a low number means low risk exposure, and a high number represents high risk exposure.

In other words, the higher the number, the worse the company is from a social responsibility perspective.

For measures of firm performance, two datasets are used: Compustat and WRDS. Compustat is a product of S&P Global Market Intelligence, which is a division of S&P Global, a leading provider of transparent and independent rankings, benchmarks, analytics and data to the commodity markets worldwide. For the analysis, their annual fundamentals dataset is used, with data concerning a firm's annual sales, various expenses, market valuation, assets, and the sector a given firm operates in.

For additional firm performance measures, specifically financial ratios, such as advertising intensity, and R&D intensity, the WRDS Financial Ratios Suite dataset is used. All accounting-related data points are obtained from Compustat Quarterly and Annual reports, while pricing-related data are obtained from both Center for Research in Security Prices (CRSP) and Compustat. CRSP is a provider of historical stock market data, and it is a part of the Booth School of Business at the University of Chicago.

## 3.1 Processing Data

The WRDS and Compustat datasets share their identification keys, a proprietary Compustat variable named *gvkey*. The two datasets can be merged using each observation's *gvkey* and observation year.

After merging these two datasets, the RepRisk dataset has to be merged with the combined Compustat-WRDS dataset. The two datasets do not share an identification variable, but Compustat provides each firm's CUSIP while RepRisk contains each firm's ISIN number. An ISIN number is just an extension of a CUSIP number, with the first 2 characters being the country code (US in this case) and the last character is a check digit. Based on this, it is possible to create a CUSIP number from each company's ISIN number and then merge the RepRisk dataset with the Compustat-WRDS dataset using CUSIP and observation year.

As the observation periods were not identical across the three datasets, the data points need to be transformed in a way that for each year, one observation is registered. In numerous instances, for example, RRI was recorded multiple times a year, while some financial fundamentals are only measured once a year.

To overcome inconsistencies and bias caused by this, average values were created for each observed metric for each observed year, and these average values were assigned to each observed year for each company.

The final dataset is the combination of the Compustat, the WRDS Financial Ratio Suite, and the RepRisk datasets, with average values of financial and ESG-related performance measures reported yearly, from year 2010 to 2020. Each firm has one observation per year, with that one observation being the mean of all observations throughout that given year. As the absolute values of some measures, such as sales and expenses are heavily skewed to the right, these values have to be transformed, for which logarithmic transformation is used. Without transformation, false inferences can be made due to a larger weight put on megacorporations with orders of magnitude higher sales and/or expenses. This skewness is illustrated on Figure 3.1 and Figure 3.2. Sales and expense data are in millions.

| **Figure 3.1:** Distribution of Total Sales | **Figure 3.2:** Distribution of Operating Expenses |
|---|---|
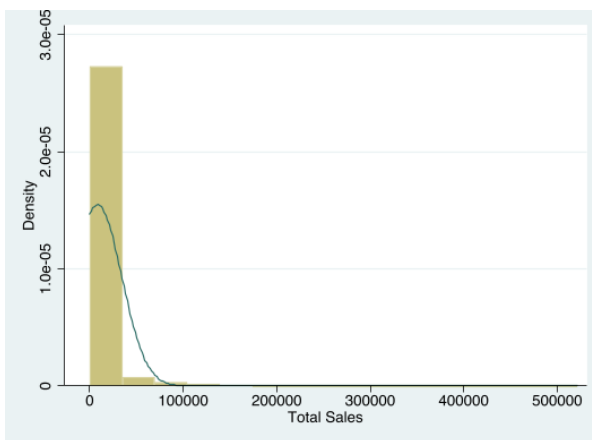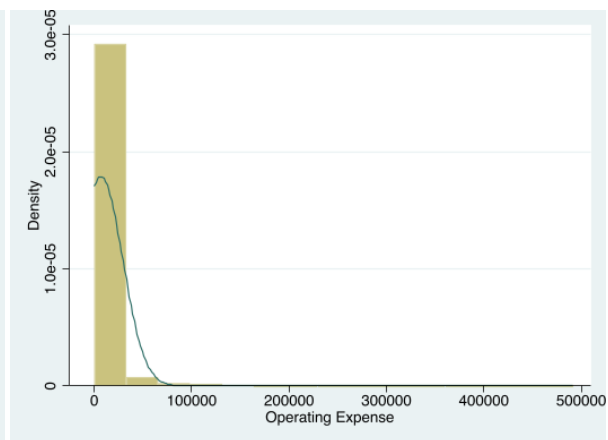


## 3.2   Descriptive Statistics

Summary statistics in Table 3.1 show that the mean sales and expenses are below the third quartile, meaning more than 75% of companies have fewer sales than the overall average. The interquartile ranges, in millions, are $5582.422 and $4500.992 for total sales and operating expense, respectively. This indicates that there is a huge difference between large and small firms in terms of both costs and sales.

**Table 3.1:** Summary Statistics of Total Sales and Operating Expense

|  | Mean | SD | Min | Max | 1st Q | 2nd Q | 3rd Q | N |
|---|---|---|---|---|---|---|---|---|
| Total Sales | 8,476.58 | 25,765.87 | 0.01 | 521,426.00 | 590.37 | 1,937.81 | 6,180.00 | 13,881.00 |
| Operating Expense | 6,910.71 | 22,317.28 | 1.79 | 491,287.00 | 473.16 | 1,566.97 | 4,986.32 | 13,881.00 |

*Note*: Totals sales and operating expenses with their corresponding means, standard deviations, minima, maxima, quartiles, and number of observations.

The median is less than one-fourth of the mean in terms of both total sales and operating expense, which further shows that a few big firms are responsible for a disproportionately large section of the market.

This very important insight has a lot of practical implications: if the goal is to raise the levels of corporate social responsibility across the board, it is essential to get the big firms on board. As they have such an influence over the entire market, they set the mainstream.

Plotting Current RRI scores against the natural logarithm of total sales clearly shows that having more sales is associated with being less socially responsible. This is illustrated in Figure 3.3, alongside Figure 3.4, which shows the distribution of the transformed sales data.

**Figure 3.3:** Scatter Plot of RRI vs Log of Total Sales
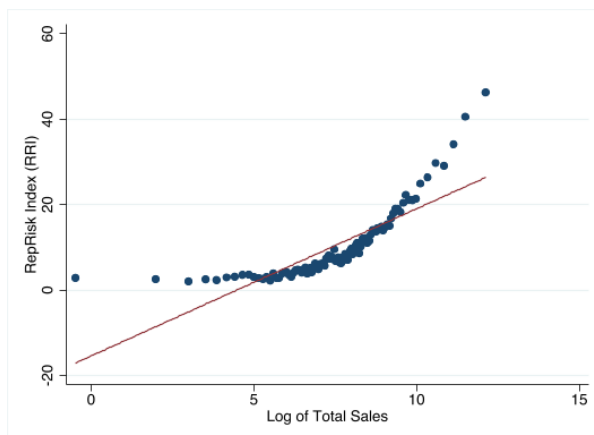


**Figure 3.4:** Distribution of Log of Total Sales
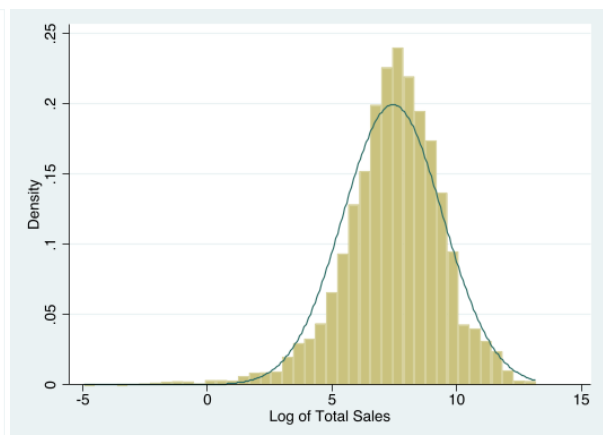


To put this into perspective, Figure 3.5 shows the distribution of RRI scores. 25% of firms have an RRI of 0, which is the best index that can be given. The right tail of the distribution shows that there are barely any firms above an RRI score of 40.

However, in Figure 3.3, it is clear that only firms with high sales numbers are in the territory of 40 and above.

As there is a large number of zero-valued observations, a dummy variable is created to indicate whether or not the value is non-zero. This shows the difference between companies that have had any ESG-related issues detected and companies that have a perfect score. This is important as the large proportion of zero-valued observations can bias the results and make it harder to differentiate between firms that have an RRI score larger than zero.

**Figure 3.5:** Distribution of RRI
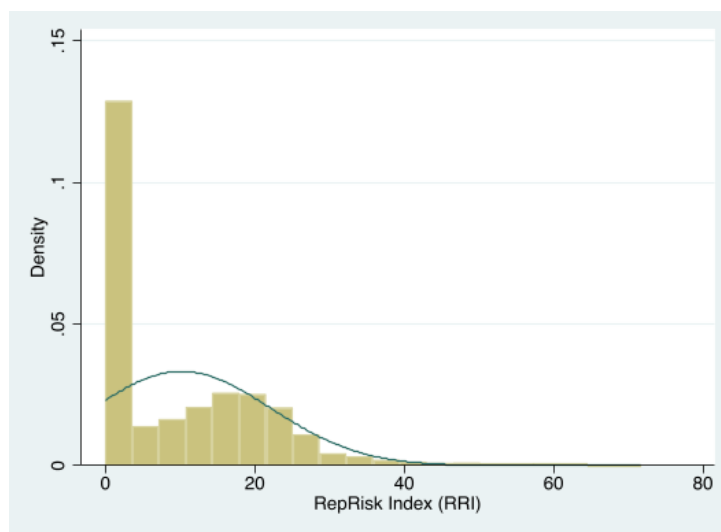
The tendency is even starker if we look at the absolute sale numbers versus RRI ratings, depicted in Figure 3.6. Again, it is very apparent that firms with high sales move towards the higher end of the RRI scale.

**Figure 3.6:** Scatter Plot of RRI vs Total Sales
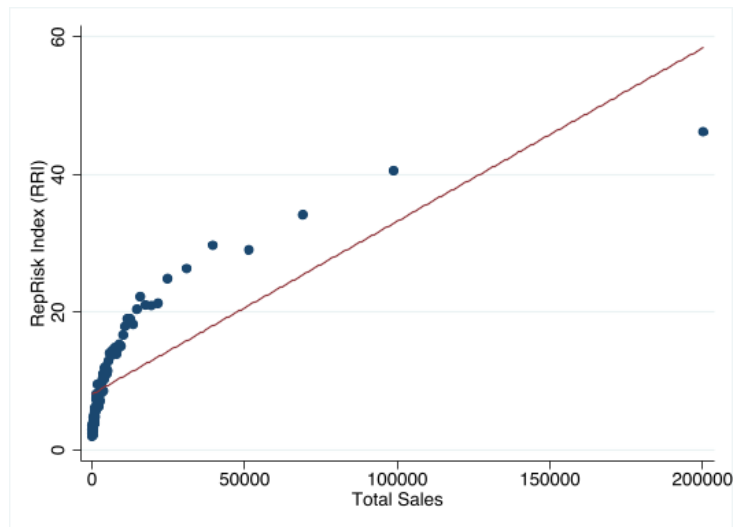


In Table 3.2, summary statistics of the RepRisk Index are shown, broken down by sectors. There is a notable difference between sectors, with the mean RRI for the Real Estate sector being almost half that of Consumer Staples, which is the sector responsible for beverages, food products, household products, and tobacco, among others. This means that firms in the Real Estate sector tend to be more socially responsible, on average.

As for changes in average RRI throughout the years, in Figure 3.7 the line graph of average RRI indices over the years is shown, with the summary statistics of RRI per year found in Table A.1, in Appendix A. The trend is upward as the mean increases year by year. However, this result can be biased: as Corporate Social Responsibility is getting more traction and attention, and as technology progresses, the chances of detecting non-responsible behaviour are also increasing. More frequent and more sophisticated ways of detecting non-responsible behaviour are bound to increase the average number of unethical practices detected, even if the overall number of these incidents is stagnant or even decreasing.

**Table 3.2:** Summary Statistics of RRI, by Sector

|  | Mean | SD | Min | Max | 1st Q | 2nd Q | 3rd Q | N |
|---|---|---|---|---|---|---|---|---|
| Communication Services | 12.11 | 14.01 | 0.00 | 63.58 | 0.00 | 8.42 | 20.50 | 588.00 |
| Consumer Discretionary | 11.32 | 12.37 | 0.00 | 71.67 | 0.00 | 9.33 | 19.75 | 2,351.00 |
| Consumer Staples | 14.34 | 14.43 | 0.00 | 66.08 | 0.00 | 13.00 | 23.17 | 942.00 |
| Energy | 13.10 | 13.61 | 0.00 | 66.42 | 0.00 | 11.42 | 21.67 | 870.00 |
| Financials | 9.16 | 12.19 | 0.00 | 66.50 | 0.00 | 3.67 | 16.17 | 1,631.00 |
| Health Care | 8.01 | 11.05 | 0.00 | 65.50 | 0.00 | 0.00 | 16.08 | 1,604.00 |
| Industrials | 8.31 | 10.29 | 0.00 | 64.33 | 0.00 | 2.00 | 16.17 | 2,617.00 |
| Information Technology | 8.21 | 11.40 | 0.00 | 65.00 | 0.00 | 0.08 | 15.33 | 1,533.00 |
| Materials | 10.55 | 9.82 | 0.00 | 51.00 | 0.00 | 10.67 | 18.33 | 1,021.00 |
| Real Estate | 7.34 | 8.12 | 0.00 | 23.75 | 0.00 | 4.17 | 14.83 | 123.00 |
| Utilities | 15.53 | 11.02 | 0.00 | 54.33 | 4.83 | 17.67 | 23.08 | 601.00 |
| Total | 10.21 | 11.99 | 0.00 | 71.67 | 0.00 | 6.25 | 18.33 | 13,881.00 |

*Note*: RepRisk Indices by sector, with their corresponding means, standard deviations, minima, maxima, quartiles, and number of observations. Total refers to values taking all observations into account.

**Figure 3.7:** Average RRI per year
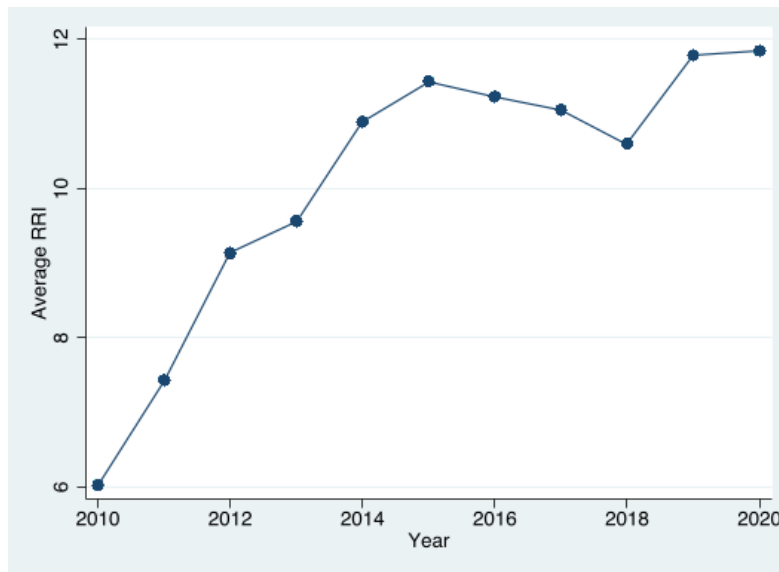
# 4  Methodology

Past empirical research about the effects of CRS on firm performance has shown mixed results (Orlitzky et al., 2003). Some argue that this might be due to failing to control for endogenous factors which are correlated with both CSR and firm performance. (Aguinis and Glavas, 2012)

There are many factors past research has not considered, with investment in marketing being one of the most notable. It has been long established that visibility is crucial when it comes to both individual and corporate social responsibility. (Burke and Logsdon, 1996) To address the concerns regarding potentially interacting endogenous variables, I am building on the framework used by McWilliams and Siegel (2000). In their research, they used accounting profits as a proxy for performance, which is problematic as it can be significantly influenced by the period economic profit is realised, furthermore, it does not reflect the efficiency at which the corporation uses its resources. (Tulvinschi, 2013)

Measuring firm performance in terms of stock market returns is also problematic: if we assume CRS firms have a different exposure to systematic risk due to being more resilient in times of crisis, for example, then it would have to translate into different risk premia, which would imply different returns. As Benabou and Tirole (2010) noted, socially responsible investors would simply be the ones with higher risk aversion.

To combat issues of endogeneity, a fixed effects model is used, as firms differ greatly in their underlying characteristics. The within fixed-effects regression is performed on sales and sales growth. Accounting for firm-specific fixed effects alleviates the bias caused by time-invariable differences between firms. Time-varying differences still have to be accounted for, which creates the need for the control variables of the lagged R&D and advertising intensities. These variables are lagged by one year, as the effects of R&D and advertising investments are likely to be materialised in the following year.

The econometric model is as follows:

$$Sales_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 RRInotZero_{it} + \beta_3 AD_{it-1} + \beta_4 R\&D_{it-1} + \alpha_i + \gamma_{it} + \epsilon_{it} \quad (3)$$

where

$Sales_{it}$ = Sales of $firm_i$ in $year_t$

$CSR_{it}$ = RRI of $firm_i$

$RRInotZero_{it}$ = Dummy for RRI not being zero for $firm_i$ in $year_t$

$RD_{it-1}$ = R&D expense of $firm_i$ in $year_{t-1}$

$AD_{it-1}$ = Advertising expense of $firm_i$ in $year_{t-1}$

$\alpha_i$ = Firm specific time-invariant fixed effects of $firm_i$

$\gamma_{it}$ = Date fixed effects in $year_t$ for $firm_i$

Additionally, a regression of RRI is ran on sectors to capture the average effect a sector has on CSR.

The model is as follows:

$$RRI_{ij} = \beta_0 + \beta_1 PERF_{ij} + \beta_2 Sector_{ij} + \beta_3 Sales_{ij} + \epsilon_{ij} \quad (4)$$

where

$RRI_{ij}$ = Expected RRI of $firm_i$ in $sector_j$

$Sector_{ij}$ = Dummy for $sector_j$ of $firm_i$

$Sales_{ij}$ = Sales of $firm_i$ in $sector_j$

This simple regression gives an insight into how each sector performs in terms of CSR on average. While no further inferences can be made from the results of this model, it can provide additional information regarding some sectors and their standing in corporate social responsibility at large.

The same is true for the first model: causal inferences cannot be made, but relationships can be identified. The issue of reverse causality is present, meaning it is not possible to assess whether changes in sales cause changes in CSR or changes in CSR cause changes in sales, but a general pattern is identifiable.

For causal inferences to be made, the conditional independence assumption needs to be satisfied. However, it is likely to not hold, as there are variables that affect both corporate social responsibility and sales. Since the RRI score is an arbitrary measure of corporate social responsibility, even though all time-invariant underlying differences are accounted for due to the fixed-effects specification, there are several other time-variant characteristics that potentially influence CSR, but are not included in the RRI score, which results in omitted-variable bias (OVB). OVB leads to over or underestimation of the treatment effect, CSR in this case. If there is an unobserved measure that results in a large increase in sales, and is negatively correlated with CSR (thus positively with RRI), this would lead to an underestimation of the effect of risk incidents on sales. A good example is the use of child labour: it reduces cost, thus increasing sales, and it is very hard to observe, as the communities that resort to the use of child labour are amongst the most vulnerable ones with hardly any access to outside information.

# 5 Results

The results of a fixed effects regression of the natural logarithm of sales are in Table 5.1.

**Table 5.1:** Regression on Log of Sales

|                                   | (1)       | (2)       | (3)       | (4)       |
|-----------------------------------|-----------|-----------|-----------|-----------|
| RepRisk Index (RRI)               | 0.012***  | 0.007***  | 0.005**   | 0.004**   |
|                                   | (0.001)   | (0.001)   | (0.002)   | (0.002)   |
| RRI is not zero                   |           | 0.115***  | 0.007     | -0.002    |
|                                   |           | (0.021)   | (0.027)   | (0.026)   |
| Lagged Log of Advertising Expense |           |           | 0.126***  | 0.126***  |
|                                   |           |           | (0.024)   | (0.023)   |
| Lagged Log of R&D Expense         |           |           | 0.448***  | 0.400***  |
|                                   |           |           | (0.041)   | (0.043)   |
| Year=2011                         |           |           |           | 0.000     |
|                                   |           |           |           | (.)       |
| Year=2012                         |           |           |           | -0.008    |
|                                   |           |           |           | (0.023)   |
| Year=2013                         |           |           |           | 0.021     |
|                                   |           |           |           | (0.024)   |
| Year=2014                         |           |           |           | 0.006     |
|                                   |           |           |           | (0.027)   |
| Year=2015                         |           |           |           | -0.035    |
|                                   |           |           |           | (0.029)   |
| Year=2016                         |           |           |           | -0.012    |
|                                   |           |           |           | (0.032)   |
| Year=2017                         |           |           |           | 0.029     |
|                                   |           |           |           | (0.035)   |
| Year=2018                         |           |           |           | 0.085***  |
|                                   |           |           |           | (0.032)   |
| Year=2019                         |           |           |           | 0.114***  |
|                                   |           |           |           | (0.036)   |
| Year=2020                         |           |           |           | 0.108***  |
|                                   |           |           |           | (0.038)   |
| Constant                          | 7.326***  | 7.303***  | 5.246***  | 5.421***  |
|                                   | (0.010)   | (0.012)   | (0.151)   | (0.151)   |
| Observations                      | 13881     | 13881     | 2452      | 2452      |

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Dependent variable: Log of Sales. Standard errors are clustered at the firm level.

Without any control variables, the coefficient of RRI is 0.012, meaning that 1 unit increase of RRI increases sales by about 1.2%. Once the dummy variable of RRI being non-zero is added, this coefficient drops to 0.007, indicating only about 0.7% increase in sales for an additional RRI score. This result is statistically significant. The third regression has additional control variables: the lagged log of advertising expense and R&D expense. The coefficient of RRI is 0.005 here, while still significant on the 95% confidence interval. Interestingly, the addition of the lagged advertising and R&D expenses seems to explain a lot of what the dummy variable indicating the RRI not being zero explained in the previous specifications. This is possibly due to large firms with high number of sales having high advertising and R&D costs, and most of them not having an RRI of zero. With the addition of year dummies, the relationship still remains statistically significant on the 95% confidence interval, with 1 unit of RRI increase resulting in 0.4% increase in sales on average.

It is possible that there is a lag between RRI and its effect on firm performance: if a company's RRi index increases due to questionable supply chain practices, it takes some time for this information to get to the end customer and to be reflected in sales numbers. A fixed effects regression on the RRI of the previous year can be found in Appendix B, in Table B.1. The results are very similar, with one unit increase of the lagged RRI resulting in 0.3% increase in sales. This result, however, is not statistically significant.

Another firm performance measure is yearly sales growth, which can be attained by subtracting the lagged sales of a firm from the current sales and taking its natural logarithm. The fixed effect regression on the change of sales is found in Table 5.2. The relationship between RRI and yearly sales growth is negative, meaning a worse level of corporate social responsibility results in 0.2% less sales growth, but this effect is not statistically significant.

<div align="center">

**Table 5.2:** Regression on Log of Sales Growth

</div>

|                                   | (1)       | (2)       | (3)       | (4)       |
|-----------------------------------|-----------|-----------|-----------|-----------|
| RepRisk Index (RRI)               | -0.001    | -0.001    | -0.004    | -0.002    |
|                                   | (0.002)   | (0.002)   | (0.006)   | (0.006)   |
| RRI is not zero                   |           |           | 0.132     | 0.136     |
|                                   |           |           | (0.101)   | (0.099)   |
| Lagged Log of Advertising Expense |           |           | 0.109     | 0.119*    |
|                                   |           |           | (0.070)   | (0.069)   |
| Lagged Log of R&D Expense         |           |           | 0.171     | 0.161     |
|                                   |           |           | (0.120)   | (0.148)   |
| Year=2011                         |           |           |           | 0.000     |
|                                   |           |           |           | (.)       |
| Year=2012                         |           |           |           | -0.383*** |
|                                   |           |           |           | (0.112)   |
| Year=2013                         |           |           |           | -0.322*** |
|                                   |           |           |           | (0.113)   |
| Year=2014                         |           |           |           | -0.350*** |
|                                   |           |           |           | (0.119)   |
| Year=2015                         |           |           |           | -0.443*** |
|                                   |           |           |           | (0.134)   |
| Year=2016                         |           |           |           | -0.466*** |
|                                   |           |           |           | (0.155)   |
| Year=2017                         |           |           |           | -0.317**  |
|                                   |           |           |           | (0.136)   |
| Year=2018                         |           |           |           | -0.171    |
|                                   |           |           |           | (0.135)   |
| Year=2019                         |           |           |           | -0.198    |
|                                   |           |           |           | (0.164)   |
| Year=2020                         |           |           |           | -0.267    |
|                                   |           |           |           | (0.186)   |
| Constant                          | 5.035***  | 5.035***  | 3.949***  | 4.220***  |
|                                   | (0.023)   | (0.023)   | (0.389)   | (0.487)   |
| Observations                      | 8517      | 8517      | 1765      | 1765      |

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Dependent variable: Log of Sales Growth. Standard errors are clustered at the firm level.

Finally, to get a grasp on the effect of a specific industry on CSR, a random effects regression is performed on RRI, which can be seen in Table 5.3.

All coefficients are relative to the Communication Services sector. Being in the sectors Industrials, IT, Financials, Real Estate, Materials, and Consumer Discretionary on average, have a statistically significant negative impact on RRI, which means they are more responsible on average than the Communication Services, while the Utilities, Energy, and Consumer Staples sectors are less responsible, with the result being also statistically significant, while the Health Care sector is also less responsible, with an average of 0.45 points more than Communication Services, but this result is not statistically significant.

The worst performers with regard to CRS are the Utilities and Energy sectors. The Energy sector is responsible for oil&gas drilling, refining, equipment, and services, while the Utilities sector is responsible for electric, gas, and water utilities.

**Table 5.3:** Regression on RRI

|  | (1) | (2) |
|---|---|---|
| Communication Services | 0.000 | 0.000 |
|  | (.) | (.) |
| Consumer Discretionary | -0.751*** | -0.873*** |
|  | (0.000) | (0.018) |
| Consumer Staples | 1.650*** | 1.511*** |
|  | (0.000) | (0.029) |
| Energy | 0.408*** | 1.994*** |
|  | (0.000) | (0.231) |
| Financials | -2.735*** | -1.352*** |
|  | (0.000) | (0.206) |
| Health Care | -4.185*** | 0.452 |
|  | (0.000) | (0.688) |
| Industrials | -3.461*** | -3.254*** |
|  | (0.000) | (0.034) |
| Information Technology | -3.530*** | -2.319*** |
|  | (0.000) | (0.183) |
| Materials | -1.268*** | -0.969*** |
|  | (0.000) | (0.046) |
| Real Estate | -3.761*** | -1.130*** |
|  | (0.000) | (0.406) |
| Utilities | 3.129*** | 2.611*** |
|  | (0.000) | (0.084) |
| Log of Total Sales |  | 2.920*** |
|  |  | (0.434) |
| Constant | 11.878*** | -10.365*** |
|  | (0.000) | (3.308) |
| Observations | 13881 | 13881 |

Note: *** p<0.01, ** p<0.05, * p<0.10. Dependent variable: Log of Sales. Standard errors are clustered at the sector level.

# 6 Limitations

One of the main limitations of all research concerning CSR is the lack of universal definition of being socially responsible. Current public opinion dictates what is socially desirable, which is subject to the public's information set and understanding of economics. In general, more visible "good" acts are rewarded, while potentially more efficient ways to improve social welfare that are not as visible or seem counterintuitive are not incentivised. Changing plastic bags to reusable ones is a very visible, positive change. Conversely, optimising the supply chain so that it is more environmentally friendly, transparent, and traceable might be more beneficial for society, but since it is not a clear and obvious sign of good will, companies might be discouraged from investing in such steps, especially as fundamental, systematic changes towards sustainability can be extremely costly. Indices are also more responsive to more visible acts of non-responsible behaviour, which impacts the quality of such indices as well. The RRI, even though widely used and reputable, is also an arbitrary measure of Corporate Social Responsibility. The weight attributed to specific risk factors is entirely dependent on the methodology of the index, as well as the relative importance of environmental and social issues.

Additionally, as data-processing capabilities improve and information-gathering processes develop, the question arises: are firms actually becoming more unethical, or are we just better at detecting previously undetected unethical behaviour?

Measurements of firm performance also pose a problem, as the results can vary depending on what is considered to be desirable in terms of performance. The analysis' main focus is on the effect of CSR on sales, but this leads to a lot of factors unaccounted for, such as growth, margins, expenses and various financial metrics such as return on equity or return on assets.

Finally, the problem of reverse causality. Are firms with a lot of sales not responsible, or are not responsible firms ending up having higher sales on average? Firms might start off with high ambitions and high levels of corporate social responsibility, but as competition tightens, they might resort to cheaper practices. In the other case, they might start off with unsustainable practices to begin with, which results in lower costs, giving the firm a competitive advantage, resulting in higher sales.

# 7  Conclusion

As Corporate Social Responsibility is vaguely defined, it is hard, if not impossible to make any causal inferences, however, the results indicate that a lower CSR score (higher RRI) results in more sales. It is a reasonable result, as the main aim of a firm is to generate profits, not to contribute to social well-being. Pro-social practices are costly, and these costs are eventually passed onto the consumer. If consumers are more sensitive to price changes than changes in CSR, it is in the firm's best interest to minimise costs and not engage in costly practices to maximise profits. The worst sectors in terms of CRS are the Utility and Energy sectors, while the best performers are the Industrials and Information Technology sectors.

The consequences of CSR mainly depend on three factors: the level of CSR of a firm, the information availability about the CSR of firms, and individuals' sensitivity to CSR.

For image concerns to have an effect, information should be widely and readily available about the CSR level of companies. If all CSR information about a firm is public knowledge, engaging with a given firm already implies engaging with its set of values. As individuals strive to convey the best possible image about themselves, under perfect information, they would aim to support firms which conform with their idea of a good and responsible enterprise. Unfortunately, in the current climate of opaque and deliberately difficult-to-access information about CSR, the image concerns resulting from engaging with a company are not significant enough to alter purchase decisions.

Sensitivity to CSR is also dependent on available information: the more apparent and widespread an ethical wrongdoing is, the more responsive individuals are expected to be. Besides information availability, financial stability and responsiveness to price changes are also important factors. If an individual is very sensitive to price changes, no matter how much they are invested in CSR, if implementing pro-social practices results in a price increase, they simply cannot engage with the socially responsible but financially prohibitive good.

With information becoming increasingly accessible and with general living standards and levels of education increasing all around the world, the demand for CSR is only increasing; therefore, research on the matter is essential and becoming more important every day.

# Bibliography

Agudelo, M. A. L., Jóhannsdóttir, L., and Davídsdóttir, B. (2019). A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility*, 4.

Aguinis, H. and Glavas, A. (2012). What we know and don't know about corporate social responsibility: A review and research agenda. *Journal of Management*, 38.

Benabou, R. and Tirole, J. (2010). Individual and corporate social responsibility. *Economica*, 77.

Burke, L. and Logsdon, J. M. (1996). How corporate social responsibility pays off. *Long Range Planning*, 29.

Friedman, M. (1970). A friedman doctrine - the social responsibility of business is to increase its profits. *New York Times Magazine*, 6.

Gatersleben, B. (2001). Sustainable household consumption and quality of life: the acceptability of sustainable consumption patterns and consumer policy strategies. *International Journal of Environment and Pollution*, 15.

Gneezy, U. and Rustichini, A. (2000). Pay enough or don't pay at all. *Quarterly Journal of Economics*, 115.

Grunert, K. G., Hieke, S., and Wills, J. (2014). Sustainability labels on food products: Consumer motivation, understanding and use. *Food Policy*, 44.

Lacetera, N. and Macis, M. (2010). Social image concerns and prosocial behavior: Field evidence from a nonlinear incentive scheme. *Journal of Economic Behavior and Organization*, 76.

McWilliams, A. and Siegel, D. (2000). Corporate social responsibility and financial performance: Correlation or misspecification? *Strategic Management Journal*, 21.

Orlitzky, M., Schmidt, F. L., and Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24.

Pirsch, J., Gupta, S., and Grau, S. L. (2007). A framework for understanding corporate social responsibility programs as a continuum: An exploratory study. *Journal of Business Ethics*, 70.

Sen, S. and Bhattacharya, C. B. (2001). Does doing good always lead to doing better? consumer reactions to corporate social responsibility. *Journal of Marketing Research*, 38.

Tulvinschi, M. (2013). The accounting profit – a measure of the performance of the business entity. *The USV Annals of Economics and Public Administration*, 13.

Tversky, A. and Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5.

# A  Appendix A

**Table A.1:** Summary Statistics of RRI, by year

|       | Mean  | SD    | Min  | Max   | 1st Q | 2nd Q | 3rd Q | N         |
|-------|-------|-------|------|-------|-------|-------|-------|-----------|
| 2010  | 6.03  | 9.77  | 0.00 | 60.58 | 0.00  | 0.00  | 11.25 | 1,117.00  |
| 2011  | 7.44  | 11.23 | 0.00 | 66.50 | 0.00  | 0.00  | 14.50 | 1,123.00  |
| 2012  | 9.13  | 12.29 | 0.00 | 66.42 | 0.00  | 0.00  | 17.92 | 1,164.00  |
| 2013  | 9.57  | 12.12 | 0.00 | 66.08 | 0.00  | 3.92  | 17.75 | 1,207.00  |
| 2014  | 10.90 | 13.06 | 0.00 | 71.67 | 0.00  | 6.00  | 19.67 | 1,245.00  |
| 2015  | 11.44 | 12.30 | 0.00 | 67.17 | 0.00  | 8.83  | 19.92 | 1,282.00  |
| 2016  | 11.24 | 11.55 | 0.00 | 63.25 | 0.00  | 10.58 | 18.83 | 1,291.00  |
| 2017  | 11.06 | 11.92 | 0.00 | 65.67 | 0.00  | 9.33  | 18.58 | 1,330.00  |
| 2018  | 10.60 | 11.87 | 0.00 | 63.33 | 0.00  | 7.50  | 18.42 | 1,358.00  |
| 2019  | 11.79 | 12.20 | 0.00 | 65.50 | 0.00  | 10.71 | 19.33 | 1,402.00  |
| 2020  | 11.85 | 11.73 | 0.00 | 62.58 | 0.00  | 11.08 | 19.25 | 1,362.00  |
| Total | 10.21 | 11.99 | 0.00 | 71.67 | 0.00  | 6.25  | 18.33 | 13,881.00 |

*Note*: RepRisk Indices by year, with their corresponding means, standard deviations, minima, maxima, quartiles, and number of observations.

# B Appendix B

**Table B.1:** Regression on Log of Sales

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| RRI in previous year | 0.008*** | 0.005*** | 0.003 | 0.003 |
|  | (0.001) | (0.001) | (0.002) | (0.002) |
| RRI is not zero in previous year |  | 0.098*** | 0.006 | -0.013 |
|  |  | (0.019) | (0.032) | (0.031) |
| Lagged Log of Advertising Expense |  |  | 0.128*** | 0.128*** |
|  |  |  | (0.024) | (0.023) |
| Lagged Log of R&D Expense |  |  | 0.452*** | 0.403*** |
|  |  |  | (0.041) | (0.043) |
| Year=2011 |  |  |  | 0.000 |
|  |  |  |  | (.) |
| Year=2012 |  |  |  | -0.004 |
|  |  |  |  | (0.023) |
| Year=2013 |  |  |  | 0.021 |
|  |  |  |  | (0.025) |
| Year=2014 |  |  |  | 0.013 |
|  |  |  |  | (0.027) |
| Year=2015 |  |  |  | -0.033 |
|  |  |  |  | (0.031) |
| Year=2016 |  |  |  | -0.012 |
|  |  |  |  | (0.034) |
| Year=2017 |  |  |  | 0.028 |
|  |  |  |  | (0.037) |
| Year=2018 |  |  |  | 0.087*** |
|  |  |  |  | (0.033) |
| Year=2019 |  |  |  | 0.120*** |
|  |  |  |  | (0.036) |
| Year=2020 |  |  |  | 0.112*** |
|  |  |  |  | (0.040) |
| Constant | 7.425*** | 7.406*** | 5.246*** | 5.422*** |
|  | (0.009) | (0.011) | (0.152) | (0.152) |
| Observations | 12285 | 12285 | 2452 | 2452 |

*Note*: *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Dependent variable: Log of Sales. Standard errors are clustered at the firm level.