THE PRESENT OF ACTIVE AND INACTIVE B CORPS

Mohamed Yassin Mohamed Elkateb

Dissertation written under the supervision of Professor Dr. Helio Arthur Reis Irigaray

Dissertation submitted in partial fulfilment of requirements for the MSc in International Management, at Universidade Católica Portuguesa and for the MSc in Business Adminstration at Escola Brasileira de Administração Pública e de Empresas, at Fundação Getúlio Vargas, 1st of June 2022.

Abstract

Purpose – The purpose of this paper is to analyze the current state of certified and decertified B Corps in order to have a better understanding of why firms decide to abandon the B Corp certificate as well as to reveal decertification trends.

Design/Methodology/Approach – The research is based on secondary data published by B Lab itself. Basic statistical methods such as t-tests and linear regressions were used to have a better overview of the state of active and inactive B Corps.

Findings – The findings show that there is a general decrease in the decertification rates of B Corps. While the U.S. accounts for the highest and the United Kingdom accounts for the lowest decertification rates. Most of the B Corps are small sized and larger B Corps are less likely to decertify.

Research Limitations – The main limitation of this paper is the restricted access to the B Lab data. In the publicly available dataset, information regarding reasons of decertification are not mentioned and thus conclusions are based on literature review and intuition.

Practical Implications – From the results, B Lab can identify some of it its weaknesses in some regions, size categories and sectors. B Lab must focus on improving their assessment test to decrease the decertification rates. While also working closely with the government to achieve the best possible outcomes.

Social Implications – From the results, consumers will have a better overview of the current B Corp state which will decrease the information asymmetry and improve the decision-making process.

Originality – To the author's knowledge, this is the first paper that examines the relationship between B Corp certification counts and the GDP of a country.

Keywords: B Corporation; B Lab; Corporate Social Responsibility; Gross Domestic Product; Sustainability; Third-party certification

Category: Master's thesis

Resumo

Objetivo – O objetivo deste artigo é analisar o estado atual das Empresas B certificadas e descertificadas, a fim de entender melhor por que as empresas decidem abandonar o certificado da Empresa B, bem como revelar tendências de descertificação.

Desenho/Metodologia/Abordagem – A pesquisa é baseada em dados secundários publicados pelo próprio B Lab. Métodos estatísticos básicos, como testes t e regressões lineares, foram usados para ter uma melhor visão geral do estado das Empresas B ativas e inativas.

Resultados – Os resultados mostram que há uma diminuição geral nas taxas de descertificação das Empresas B. Os EUA representam as maiores taxas de descertificação, enquanto o Reino Unido representa as mais baixas. A maioria das Corporações B é bastante pequena em tamanho e as Corporações B maiores são menos propensas a perder a certificação.

Limitações da pesquisa – A principal limitação deste trabalho é o acesso restrito aos dados do B Lab. No conjunto de dados disponível publicamente, as informações sobre os motivos da descertificação não são mencionadas e, portanto, as conclusões são baseadas na revisão da literatura e na intuição.

Implicações – A partir dos resultados, o B Lab pode identificar alguns de seus pontos fracos em algumas regiões, categorias de tamanho e setores. O B Lab deve focar em melhorar seu teste de avaliação para diminuir as taxas de descertificação. Enquanto o B Lab também deve trabalhar em estreita colaboração com o governo para alcançar os melhores resultados possíveis.

Originalidade – Até onde o autor sabe, este é o primeiro artigo que examina a relação entre as contagens de certificação de empresas B e o PIB de um país.

Palavras-chave: Corporação B; Lab B; Responsabilidade social corporativa; Produto Interno Bruto; Sustentabilidade, certificação de terceiros

Acknowledgements

First, I have to mention that I am deeply indebted to my supervisor Professor Dr. Helio Arthur Reis Irigaray for his constant support, feedback and tips for my research. FGV as well as Católica further refined my skills I have previously acquired and gave me the opportunity to interact with enlightened professors and teacher assistants who inspired me every day to work relentlessly towards my goals.

Second, I would like to extend my sincere thanks to my friends as well as colleagues that for the amazing experience I had the past two years. Without them I would not be able to enjoy my master's the way I did.

Last one goes without saying, but I am extremely grateful for my family for their constant support and love. Without them I would have not been able to achieve what I have achieved so far. Thank you for being my backbone and for never letting me down. You have made the impossible possible!

Mohamed Elkateb

Table of Contents

List of Tables

Table of Figures

List of Abbreviations

BCC   – B Corporation Certificates Count

BIA   – B Impact Assessment

CFP   – Corporate Financial Performance

CSP   – Corporate Social Performance

CSR   – Corporate Social Responsibility

ECB   – European Central Bank

ER   – Exchange Rate

FER   – Foreign Exchange Reserves

IF   – Inflation Rates

ISO   – International Organization for Standardization

NGO   – Non-Governmental Organizations

OLS   – Ordinary Least Squares

SAI   – Social Accountability International

SME   – Small and Medium Enterprises

TPC   – Third Party Certificates

1. Introduction

Nowadays, companies do not only have the responsibility to generate value to their shareholders, but also to act socially and environmentally responsible towards all stakeholders (Jamali, 2008). Companies that only focus on generating profit but ignore their responsibility towards the stakeholders will be penalized by the market (Diez-Busto et al., 2021); consequently, they will experience financial, ethical as well as altruistic motives to engage in Corporate Social Responsibility activities (Graafland & Mazereeuw-Van der Duijn Schoute, 2012). Previous studies suggest that there is a positive correlation between corporate social performance (CSP) and corporate financial performance (CFP) (Beurden & Gössling, 2008; Busch & Friede, 2018; Orlitzky et al., 2003).

Managers may feel the need to act socially responsible due to intrinsic motives, such as carrying the responsibility of doing right towards their stakeholders and the planet, or due to the enjoyment derived from CSR (Brønn & Vidaver-Cohen, 2009; Graafland & Mazereeuw-Van der Duijn Schoute, 2012). Thus, companies feel obliged to show their sustainability efforts to the world. However, for the private sector to evaluate their contribution to sustainable development, some type of measurement is needed. Based on Filho et al. (2019) what can be measured is more likely to be achieved and hence if sustainability measures exist, companies are more likely to act sustainably. Among other measurements, some companies have adopted sustainability certificates to show the world their social and environmental commitment.

The non-profit organization B Lab issues the sustainability certificates, B Corp certificates, for profit-businesses that meet the highest standards of corporate social responsibility (B Lab, 2021). The importance of B Corp certifications cannot be denied, especially since it motivates the private sector to contribute to the achievement of the Sustainable Development Goals (Diez-Busto et al., 2021). In 2017 there were 2300 certified B Corp companies, while now there are over 4000 certified B Corp companies. Hence, in the past five years B Corps have increased by more than 74% (B Lab, 2021).

Moreover, there is a notable increase in socially responsible investments. According to the Forum for Sustainable and Responsible Investments, sustainable investment has increased by 42% from 2018 to 2020 in the U.S. In fact, there has been a huge shift towards sustainable business in the world that in turn increases the importance of sustainability reports (Cohen et

al., 2015; Amel-Zadeh & Serafeim, 2018). On the other hand, consumers are more likely to spend more for sustainable goods and services (B Lab, 2021). As it is difficult for them to be aware of sustainable business in this fast-paced life, B Corp certificates offer an easy way to increase the consumers' knowledge in that area (De Magistris, 2015; Etilé & Teyssier, 2016).

Even though there are many motivators for companies to attain the B Corp certification, some companies decertify after attaining the B Corp certification. Based on Cao et al. (2017) 34% of the certified companies in the U.S. decided to decertify. Thus, it is necessary to understand why these companies decertify and analyze the current state of these companies. What is more, the amount of B Corp certifications is of utmost importance as one might expect certified firms to outperform their competitors (Romi et al., 2018) and consequently an increase in B Corp certification count should be associated with an increase the Gross Domestic Product (GDP) of a country (see Corbett & Kirsch, 2001).

Thus, this leads to the following research question:

RQ: What is the current status of certified and decertified B Corps?

In order to answer this research question, one must explore the amount as well as the BIA scores of certified and decertified B Corps in each sector, region and size category. Hence, one will examine the countries, sectors and size categories with the highest decertification rates and provide possible explanations of the high decertification rates. Examining certified and decertified B Corps based on the geography, also allows one to explore the relationship between B Corp certification count and GDP. Another intermediate objective derived from this research question is the comparison of performance of certified and decertified B Corps in each sector, region and size category.

So far, only a handful of papers have examined the current state of certified and decertified B Corps. (Corsi et al., 2020; Kim, 2021; Peprah, 2021; Putnam Rankin & Matthews, 2020). There is a lack of research in the B Corp movement field and an additional study that provides the literature with the current state of B Corps might be beneficial to firms as well as B Lab itself. The certification process is lengthy and costly, firms being aware of the likelihood of decertification might lead to avoidance of applying when firms are not ready yet. Additionally, the study will provide insights for B Lab to achieve a better policy that increases the likelihood

of re-certification while being aware of the sectors and geographical locations that B Lab needs to explore and improve (Perpah, 2020).

To the authors' knowledge, this is the first paper that explores the relation between the amount of B Corp certifications and the GDP. One might expect that B Corp certification count has a positive impact on the GDP, since obtaining sustainability certificates requires additional efforts towards R&D to provide customers with better and sustainable quality (Hatanka et al., 2005). Furthermore, based on the dataset used in this paper developed countries tend to have a higher certification count than developing countries. This indicates that the count is also dependent on the resources of a country and in turn a country with higher GDP should have a higher certificate count.

Due to limited resources and timeframe, this paper only examines the current state of B Corps, while there are several other third-party certifiers that must be examined. Thus, future research can examine several third-party certifiers to increase the sample size and generalize the finding of this study. Moreover, future research can back up the reasons of abandoning B Corp certificate by primary data, such as surveys and interviews targeting decertified firms.

The remainder of the paper is outlined as follows. The next section provides literature regarding CSR, CSR reporting and the third-party certification as well as decertification effects by focusing on SA8000, ISO 9000 and ISO1400 and of course B Corporations. Section 3 describes the dataset and how it was collected and treated but also explains the methodology used in this paper. Section 5 presents the results while section 6 discusses them. Future implications of this study are represented in section 6 and the last section concludes and mentions the limitations of the paper.

2. Literature Review

2.1 CSR Reporting

Before diving into literature about the third-party certifications (TPC) and the B Corp movement, it is important to understand what CSR is and why companies must report their social and environmental engagement. To clearly understand CSR, one must know the social responsibilities of a business. Based on CSR Europe, businesses carry a responsibility towards their employees, customers, suppliers and community as well as towards the environment, ethics and human rights (Moir, 2001). Thus, the World Business Council for Sustainable Development (WBSCD) described CSR as the following:

"CSR is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large."

Nowadays, most stakeholders expect proper communication and explanations regarding firms' actions and CSR activities. CSR reporting is perceived as a proper tool for communication between internal and external stakeholders that also offers companies several advantages. First, it increases the transparency of a company and in turn increases the trustworthiness. Second, it is a way to supervise CSR activities. Based on the competition's CSR reports, one can identify the strengths and weaknesses of one's own company strategy. Third, it increases the involvement as well as the knowledge of stakeholders and thus improves the decision-making process (Moravickova et al., 2015).

2.2 Third Party Certificates (TPC)

Third-party sustainability certifications offer companies a way to communicate their actions and CSR activities to stakeholders instead of self-advocacy (Darnall et al., 2018). Usually, to obtain a third-party certification, an entity has to apply to a third-party certifier by sending the necessary documents of the production operations, facilities etc. After the third-party certifier reviews those documents and pre-assess them, field audits are conducted to verify the accuracy of the information given. If conformity is verified, the third-party certifier issues a certification for entities to label their products (Hatanaka et al., 2005).

There are several third-party certifiers in the market that help firms meet their regulatory and statutory requirements, such as social, environmental and ethical standards. Among others,

there is International Organization for Standardization (ISO) that issues ISO 9000 certificates for quality management and ISO 14000 for environmental management (ISO, 2022). Another example would be Social Accountability International (SAI) that issues SA8000 certificates for ethically and socially accepted auditing practices (SAI, 2022). Fair Trade International certifies products that are organically produced under the social, environmental and economic Fairtrade Standards (Fair Trade International, 2022).

The main distinction and importance of third-party certifications lies in their independence. Their independence leads to an increased legitimacy as third-party certifiers have no interest in the outcome as the costs of the audit are usually barred by the applicant. In turn, they are perceived "as more reliable and credible than first and second-party certification" in the eyes of the stakeholders (Fagan, 2003; Golan et al., 2001; Hatanaka et al., 2005).

2.3 Effects Associated with TPC

Based on a literature review conducted by Blackman and Rivera (2011) it still remains unclear whether there are social, economic as well as environmental effects of certification. However, Fort and Ruben (2008a) found that certifications improve farmers' productivity in the banana market in Peru due to increased on-farm investments. In the coffee industry, fair trade and organic certifications lead to an increase in the price as well as the quantity sold (Arnould et al., 2009; Bowlig et al., 2009). On the other hand, there is a bunch of research that did not find significant results regarding neither social nor economic benefits of certifications (Fort & Ruben 2008b; Lyngbaek et al., 2001; Sáenz Segura & Zúñiga-Arias 2008).

Nevertheless, third-party certifications have several other advantages for retailers, suppliers, non-governmental organizations (NGO) and consumer activists. From the retailers' side, TPC offers a reliable way to switch suppliers while ensuring similar quality of labeled products offered by suppliers hence minimizing transaction costs (Hatanaka et al., 2005; Henson & Northen, 1998). TPC serves as an insurance that some standards and requirements are enforced and in turn reduce the chances of reputation loss if product failure or any problem occurred. In other words, retailers do not carry the responsibility of the quality and safety of their product solely but share it with third-party certifiers, leading to a shift in liability (Hatanaka et al., 2005; Tanner, 2000). This might be an indicator that with the help of TPC a country can increase its exports (Christmann & Taylor, 1999) especially that retailers have assurance of international

quality standards. Consequently, one might expect a positive correlation between TPC count and GDP.

TPC offers a way to suppliers to show stakeholder along the chain how committed they are to follow the standards and requirements that ensure quality. While also differentiating suppliers from other competitors due to outstanding quality or sustainability and thus gaining a competitive advantage (Hatanaka et al., 2005). However, TPC effects depend on the size of suppliers. To meet the requirements to be certified, structural change, such as new technology, equipment and workforce, is needed (Bain & Busch, 2004). While some suppliers can bear the costs of the restructuring, others smaller suppliers cannot afford to become certified. Moreover, there is information asymmetry between small and medium enterprises (SMEs) in developing countries and retailers in developed countries. SMEs tend to have difficulties accessing information regarding the standards demanded by retailers in developed countries. Most retailers demand certifications from industrialized companies due to their competency and reliability and thus are less likely to accept certification from issuers from developing countries (Barret et al, 2002). Hence, one can conclude that retailers have more benefits from TPC and thus are the main customers for third-party certifiers (Hatanaka et al., 2005).

Still, NGOs are working closely with SMEs in developing countries to implement TPCs and improve the sustainability of those businesses. Based on Gereffi et al. (2009), certifications have improved worker rights and protected the environment. In industrialized countries, third-party certifiers provide an extra private layer that tries to cover the gaps in the state standards or come up with alternative solutions. While in developing countries, TPCs can serve as an alert to misconducts and try to come up with solutions to solve those.

On the other hand, consumer activists are publicly shaming misconducts of big corporations (Winston, 2002). This has shown to be effective as it draws attention to big corporations and in turn might ruin their reputation or brand name (Gerrefi et al., 2009, Santoro, 2003). Corporations are responding to consumer activists by working with NGOs and third-party certifiers to avoid any unwanted behavior and protect their business (Hatanaka et al., 2005).

2.4 Effects Associated with B Corporation
If one takes a deeper look into the B Corp literature, one can find that one of the main incentives for firms to become B Corp certified is that SMEs that have always been committed to being

sustainable wanted to prove that they are more genuine and authentic than large for-profit firms that want to be perceived as sustainable. B Corp certificates is a way for small and medium sized firms to prove their authenticity of being green (Kim et al., 2016).

Another incentive is that most certified firms believe that the main reason behind environmental and social crises is how business is managed nowadays. Thus, those firms want to enter a new marketplace with new rules that avoid such crises. To sum up, the certification offers firms a way to claim an identity that has the best interest in its shareholders as well as stakeholders while differentiating them from other competitors who mainly care about the profit and the shareholders (Kim et al., 2016).

Furthermore, B Corps experience higher revenue growth rates than the public competitors. Kelly and Chen (2015) found that B Corps had significantly higher revenue growth rates than large as well as small public competitors from year 2006 to year 2011. During the financial crisis B Corps increased their investments in sustainable activities that might have led to customers rather doing businesses with such firms than others. Another contributor to the revenue growth rates, might be the outstanding marketing efforts of B certified firms to advocate their social and environmental awareness. However, Kelly and Chen (2015) did not find any significant differences in productivity of the two groups.

Romi et al. (2018) found that B Corps experience higher sales growth-rates compared to their non-B Corp organizations. This supports the view that investing in CSR requires innovation and increased efficiency that in turn influences the sales (Dixon-Fowler et al., 2013; Plambeck & Weber, 2009; Porter & Van der Linde, 1995a, 1995b). In line with Kelly and Chen, Romi et al. (2018) found that B Corps and their non-counterpart experience similar employee productivity.

What is more, Paelman et al. (2020) found that B Corp certification has one-year post positive significant impact on the turnover growth rates compared to non-B Corp companies. The positive turnover growth rate is an indicator of strategic advantages. Firms which are in a highly competitive market that nevertheless decide to allocate their resources towards obtaining certification provide evidence for competitive advantage (Harojo et al., 2018). On the other hand, Gamble et al. (2020) concluded that B Corp certification rather results in a stagnation of revenues as well as business growth.

2.5 Decertification of ISO 9000 & ISO 14000

Aforementioned, there are several benefits for companies to become third-party certified, nevertheless companies still decide to decertify. Losing a third-party certification might negatively affect the reputation of a firm. In fact, losing a certification can be perceived as worse than not pursuing a third-party certification in the first place (Joubert, 1998). The literature has been mainly focusing on decertification with reference to ISO. One of the main reasons of resignation from ISO 9000 and ISO 14000 certifications is the high costs of certification compared to the outcome (Kafel & Nowicki, 2014; Lo & Chang, 2007; Zimon & Dellana, 2019). Some firms decertify due to a lack of pressure to pursue ISO certifications. If there is a lack of pressure on the management to purse certification, the interest in pursuing decreases and in turn motivation to recertify (Alič, 2014). While other firms decertify as they might have reached the level of maturity to obey the standard rules and operate sustainably (Dahlgaard-Park, 2013). Consequently, the management rather relocates their investments on tool and techniques to become sustainable than on becoming certified (Alič, 2014). Last, companies might decertify because the market has lost interest in the ISO certification (Chiarini, 2019). However, even though those companies might not be certified anymore, they most probably will still follow the standardized requirements for environmental and quality management (Kafel & Nowicki, 2014).

2.6 Decertification of SA8000

Podrecca et al. (2021) investigated the reasons behind why companies forgo SA8000. Decertified companies in their sample experienced short-term growth in sales and profitability after certification, however in the medium/long-term those effects disappeared. Moreover, nowadays SA8000 is not perceived as a differentiation factor since many competitors have adopted the certification. Consequently, certified companies cannot charge a price premium for the certification. Another reason for decertification, is that if some non-compliances appear, SAI auditors would make some demands that might lead to medium or long-term productivity disadvantages. To sum up, most of the firms decertified due to the medium and long-term costs imposed by the certification. While there are several short-term economic benefits those tend to transform into costs on the long run. Thus, firms will decide to maintain their certification status until the costs outweigh the benefits of being certified.

2.7 Decertification of B Corp

Though there is some literature relevant to the B Corp movement, there is a lack of literature that explores the reasons behind the B Corp decertification. Thus, this paper has to rely on the study conducted by Martin (2020) which investigates the reasons behind decertification by conducting interviews of decertified B Corp firms in the Bay Area in the US. Chafetz and Fraser (1979) stated that a miscalculation of costs and benefits might lead to a higher likelihood of decertification. One of the possible reasons why those firms did not re-certify is that most firms either overestimated the benefits or underestimated the costs. For example, most of the participants in the study neglected indirect costs and calculated only the direct costs of the certification, i.e., annual B Lab subscriptions. In other words, costs such as data collection, meetings, monitoring and opportunity costs were neglected.

In line with reasons of forgoing SA8000 and ISO certifications, time and costs to meet the B Corp requirements are too high. As mentioned before, there are several benefits when being B Corp certified among others higher revenue growth rates (Kelly & Chen, 2015), higher sales growth rates (Romi et al., 2018) and improved strategic alliances (JP Morgan & Rockefeller Foundation, 2010). Nevertheless, it is very difficult to trace these benefits back to the B Corp certification since organizations applying for the B Corp certificates are already reshaping the marketplace or entering a new marketplace (Martin, 2020).

Another reason, why companies forgo their B Corp certification is that companies are able to fulfill their goals towards the environment and the stakeholders without pursuing the B Corp certificate. Etsy, the large American e-commerce company stated that while they abandoned their B Corp certificate their mission towards society will remain the same (Martin, 2020). This in consistent with the research provided by Alič (2014) as those firms have the chance to relocate their initial B Corp subscription fee to R&D or elsewhere. Moreover, sometimes the requirements of B Corp diverged from the goals of the firms or were viewed as unnecessary by those firms (Martin, 2020).

Aforementioned, lack of pressure from the management might be a result of decertification (Cooke, 1983). Consequently, a change in management or loss in advocacy might lead to a loss of the certificate (Anderson et al., 1982). Half of the participants in the study conducted by Martin (2020), decided not to re-certify due to retirement of a principal or companies being acquired. Thus, the importance of a succession plan that ensures the continuance of the

certification cannot be denied. Moreover, B Lab should also incentivize acquirers or new managers by renewing the certification. One way to do so, is to reduce the subscription fee or not eliminate it for one a period of time (Martin, 2020).

Last but not least, firms abandon certifications due to requirements from the certifiers that might lead to restructuring of the firm or convergence of the initial trajectories (Delmas and Toffel, 2008). Silverman, the Etsy CEO, stated that the main reason for not pursuing the B Corp certificate is that B Corp demanded to restructure the company from a C Corporation[1] to a Benefit Corporation (Steiner, 2017). Additionally, B Lab was not able to incentivize the firms that have gone through restructuring to keep their certification. Hence, B Lab did not provide those firms with enough procedures to overcome the restructure while remaining certified (Martin, 2020).

2.8 Past Status of B Corps

Kim (2021) examined the status of B Corps from 2007 to 2020. Approximately 70% of the B Corps that were first certified in 2007 remain certified, they recertified for at least four times so far. While the United States account for the highest number of decertified firms compared to other countries. 30% of the firms that were once certified in the U.S are currently decertified. In Europe, only 15% of the countries that were once certified are decertified. Regarding, the size of certified companies, 37% of the companies that are certified have 1 to 9 employees and roughly 30% of the companies have 10 to 49 employees. Smaller companies are also less likely to decertify than large companies. Firms with up to 9 employees account for roughly 66% of all the decertified firms.

Additionally, Kim (2021) found that companies are less likely to decertify when they go through many re-certification rounds. 90% of the firms abandoned the certification after the second re-certification round. This indicates that companies are less likely to decertify once re-certification has been routinized. Certified companies had a slightly higher overall B Impact Assessment (BIA) score than de-certified companies, however the reason behind that remains unclear.

---

[1] C corporation (or C-corp) is a legal structure for a corporation in which the owners, or shareholders, are taxed separately from the entity." (https://www.investopedia.com/terms/c/c-corporation.asp)

Cao et al. (2017) examined the status of B Corps from year 2007 to 2016 in the United States and found interesting results. Within the US there are large differences between the BIA scores of companies. For instance, most of the firms in Minnesota and Wisconsin had relatively high BIA scores, while firms in the neighboring states, Michigan, Iowa and Illinois, had the lowest BIA scores in the US. Thus, for firms to stand out in the US highly depends on their location. Moreover, most certified firms are in the services and manufacturing sectors, 44% and 15% respectively. While construction accounts for the highest BIA scoring industry followed by finance, insurance and real estate. On the other hand, the public administration industries account for the lowest BIA scores. Based on Cao et al. (2017) these companies are rather small and local. B Corps in the agriculture, forestry and fishing industries in California account for more than double the number of companies that are publicly traded. While the amount of B Corps in the construction industry are roughly half the size of the publicly traded companies in this industry. On the other hand, the public administration industries account for the lowest BIA scores.

Contrary to Kim (2021), decertified B Corps had a slightly higher BIA overall score than certified firms in the U.S. (Cao et al., 2017). Nevertheless, the attrition rate is also higher for smaller firms. Certified B Corps had an average of 21 employees while decertified B Corps had an average of 10 employees. In line, the average sales of certified B Corps were around $3.9 million while the average sales of decertified B Corps was $1.4 million.

2.9 How to become B Corp certified?
Before explaining the process of how to become B Corp certified, it is important to distinguish between B Corporation and Benefit corporation. Benefit Corporations are companies that adopt the Benefit Corporations statute and therefore are legally recognized by the state and the law as Benefit Corporations. While B Corporations are firms that voluntarily chose to be assessed by B Lab and then obtain a certification from the B Lab entity. Thus, B Corps enter into a private contractual agreement with B Lab, where the state is not involved and cannot demand from an organization to put the stakeholders above shareholders (Hiller, 2013).

In order for a company to become B Corp certified, it must reach a minimum of 80 points out of 200 in the BIA. The BIA is a series of questions that covers five topics: governance, workers, community, environment and customers. If a company reaches or surpasses the 80-point threshold, the BIA will be evaluated by a B Corp analyst. Once the answers are evaluated, the

company has to provide the necessary documents that prove eligibility. If conformity is verified, the firm becomes officially B Corp certified and will apply for recertification every three years (B Lab, 2021).

3. Methodological Procedures

3.1 Data Collection and Description

Sustainability as well as TPC have gained a lot of research attention in the past decade. However, as mentioned before minimal literature about B Lab has been conducted. This might be due to the absence of open comprehensive data regarding B Corps (Kim, 2021). Thus, one can assume that there is a knowledge gap regarding the benefits of B Corp certifications. B Lab is trying to close this gap by publishing this dataset, so that consumers can grasp the idea of B Corp certifications and what they really stand for (Kim, 2021). Hence, it is of utmost importance to take advantage of the public dataset and provide consumers with various literature that sheds light on the status of certified and decertified B Corps.

The data set was collected from Data.World and was published by B Lab in March 2017 (Data.World, 2022). Nevertheless, the data has been continuously updated quarterly since then with the latest version being updated in February 2022. Data.World is an open-source certified B Corporation, that is considered to be the world's largest collaborative data community. The public is allowed to discover data as well as share analysis in their discussion platform (Data.World, 2022).

The data contains entries about companies that are certified or were certified from 2007 to 2022. The sample includes 8799 observations, along with company names and IDs, their current status (certified or de-certified), first certification dates, most recent certification dates, brief descriptions about each company, their industry, products and services as well as their geography. The data also provides information regarding the sector each firm is competing in. There are six sectors provided by B Corp to better assess and categorize firms: Agriculture/Growers, Manufacturing, Service, Service with Minor Environmental Footprint, Service with Significant Environmental Footprint and Wholesale/Retail. Moreover, the data includes information about the number of employees working in a company [2] as well as the overall BIA and five dimensions score. Since firms have to recertify every three years, there are several entries in the dataset for each firm depending on the amount of recertifications. However, some firms decide to recertify after more than three years. Thus, the dataset contains 5651 firms but 8799 entries.

---

[2] Companies with 0 employees indicate sole proprietorship.

The dataset to run a regression investigating the B Corp certificate count impact on GDP was collected from different sources. The U.S. GDP (in USD) and inflation rates (in %) from year 2007 to 2021 were collected from the World Bank Group (World Bank, 2021). While the yearly average exchange rates (USD to EUR) were collected from the European Central Bank (ECB) (ECB, 2022). Data regarding the monthly foreign exchange reserves of the U.S were collected from the U.S. Department of Treasury. The yearly foreign exchange reserve was calculated by taking the average of all the monthly foreign exchange reserves in a year. While the yearly average interest rate was collected from macrotrends (Macrotrends, 2021). Since the initial dataset from Data.World was missing the information regarding the number of yearly certified firms in the U.S., this information was extracted from the search engine on the B Lab website (http://www.bcorporation.net/).

3.2 Methodology
The methodology used in this paper is adapted by Kim (2021) to explore the current state of B Corps. To analyze the current state of B Corp certified and decertified firms, one had to explore the number of firms that have been certified and decertified yearly from period 2007 to 2022. This helps to understand the trend of how B Corps have evolved over the years. To have a better understanding and easier interpretation of certified and decertified firms, percentages were calculated.

Second, one had to analyze the number of firms certified and decertified based on sizes of the firms. To compare if certified firms had an overall higher score than de-certified firms, t-tests were conducted. Since the sample size is rather large and the data is not normally distributed, but right-skewed (view Appendix, Figure 2), t-tests are more appropriate than non-parametric tests in this case as they offer a simple and unified approach for interpretation and presentation of results (Fagerland, 2012).

Third, the data was investigated based on the geographical locations of companies. It is important to explore whether the geography matters in terms of the amount of certified and decertified firms as well as the overall BIA score. Thus, percentages have been calculated and t-tests have been conducted for each region, to compare the differences in the overall score within a region.

Fourth, one must investigate the current state of companies based on the sector and compare the overall scores with the help of t-tests within each sector. Fifth, t-tests were calculated for each of the five impact areas aforementioned to investigate the differences between certified and decertified B Corps.

Last but not least, an ordinary least squares (OLS) regression was conducted to explore the relation between B Corp certification count in the U.S. and the American GDP. The OLS regression was used as it is one of the most popular techniques for prediction and examining relationships between variables (Hutcheson, 1999). Based on several literatures, inflation rates have an impact on the GDP (Ayyoub et al., 2011; Faria & Carneiro 2001; Malik & Chowdhury, 2001; Sidrausky, 1967) and hence should be included in the regression. Without going into much detail, one of the possible explanations why growth rates and inflation rates are associated with GDP is the Balassa-Samuelson effect. It states that rapid growth rates are a result of an expansion in the productivity of a country, leading to higher exports which in turn leads to higher prices. If the nominal exchange rate did not adapt fast enough to these changes, domestic prices will grow further, consequently inflation rates as well (Andrés & Hernando, 1999; Balassa, 1964; Samuelson, 1964). This also indicates that exchange rates have an impact on the GDP and should also be included in the regression (Rodrik, 2008; Ayyoub et al., 2011). Another variable that must be added to the regression is the foreign currency reserves. Since foreign currency reserves are dependent on the exchange rates, an accumulation of foreign currency reserves leads to an underestimation of the real exchange rate and in turn an increase in the exports thus productivity increase and in turn GDP increase (Polterovich & Popov, 2003).

Thus, this leaves one with following regression:[3]

$$\log(GDP) = \text{ß}_0 + \text{ß}_1(BCC) + \text{ß}_2(IF) + \text{ß}_3(\log(FER)) + \text{ß}_4(ER) + \varepsilon \qquad (1)$$

$\log(GDP)$: Logarithmic function of the GDP (in USD) in the U.S.
BCC: Number of B Corp certifications in the U.S.
IF: Inflation rates in the U.S. in percentage
$\log(FER)$: Logarithmic function of the foreign exchange reserves (in USD) in the U.S.

---

[3] All the findings were coded in R Studio and all the results were rounded to two decimals except for regression results that were rounded to three decimals.

ER: Exchange rate of USD to Euro

The U.S. was chosen not only because it is the country with the most B Corp certifications as well as decertification but also due to the availability and reliability of the data provided. The logarithmic function of GDP and foreign exchange reserves was taken due to the relatively large numbers of GDP and FER compared to the other variables.

4. Findings

To have a clear understanding of the implications, this section will present the findings as well as discuss how those findings can be implemented. Based on Table *1*, there are currently 4234 companies that are B Corp certified and 1419 companies that are decertified. One can notice that 63% of the firms that were first certified in 2007 are still active. In other words, those firms have gone through at least four certification rounds. Nevertheless, Kim (2021) reported that in 2020 there were 32 firms that were in the first cohort of certified B Corps. This indicates that three firms have decertified since then, though they have gone through the certification process several times and must have by then routinized the process.

Table 1: Current status of certified and decertified B Corps

Year	Certified		De-certified		Total
	n	**%**	**n**	**%**	
2007	29	63.04	17	36.96	46
2008	21	53.85	18	46.15	39
2009	15	34.88	28	65.12	43
2010	35	41.67	49	58.33	84
2011	52	49.52	53	50.48	105
2012	90	41.10	129	58.90	219
2013	128	42.95	170	57.05	298
2014	186	49.47	190	50.53	376
2015	256	54.24	216	45.76	472
2016	394	63.55	226	36.45	620
2017	414	69.46	182	30.54	596
2018	457	80.04	114	19.96	571
2019	607	96.35	23	3.65	630
2020	653	99.39	4	0.61	657
2021	777	100.00	0	0.00	777
2022	118	100.00	0	0.00	118
Total	**4232**	74.89	1419	25.11	5651

To have a better representation of the data, a graph has been conducted with active and inactive B Corporations over the years (see Figure 1). Since 2009 the number of certified B Corps has been constantly increasing, reaching an all-time high of 777 firms in 2021. On the other hand, the number of decertification has been also increasing constantly till 2016.

Figure 1: Current status of certified and decertified B Corps[4]
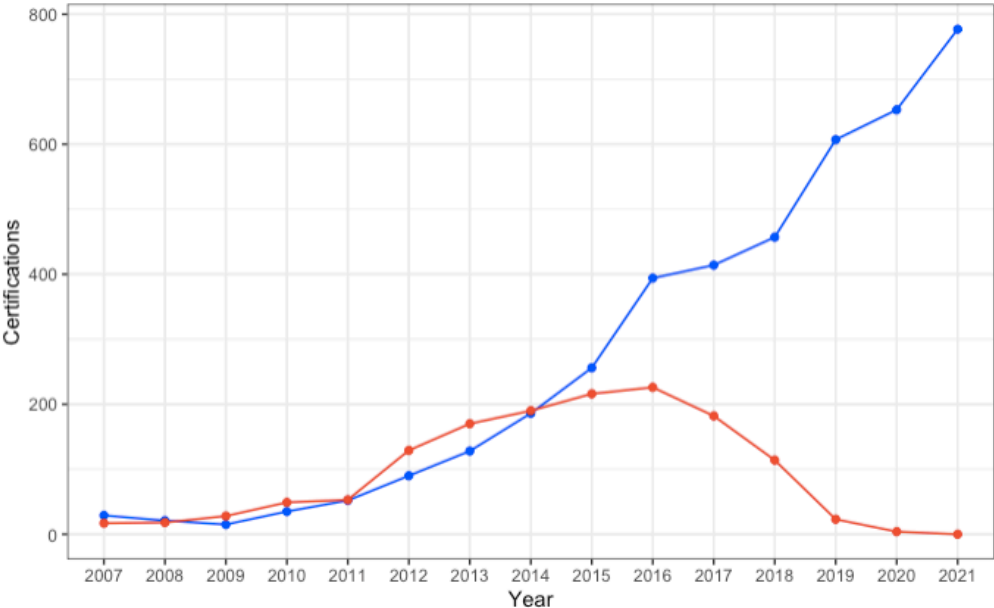
However, if one compares the number of certified B Corps to the sum of certified as well as decertified B Corps (% in   Table *1*), one will notice that an actual increase in certifications compared to the total number of certifications was only present from 2011 till now. As for decertified companies, more companies started to certify or re-certify and less started to decertify from year 2012 onwards. Leaving one with a total attrition rate of 25.11%.

However, one step closer to answer the research question, is to explore the differences between certified and decertified B Corps further. Hence, t-tests were conducted to see if there are any differences in the overall BIA score and the five impact areas of active and inactive B Corps. Based on Table 2 there are no statistically significant differences in the overall mean score of certified and decertified B Corps. However, decertified B Corps tend to have statistically significant higher means in the community and customer impact area scores[5]. On the other hand, certified B Corps tend to perform better in environment, governance as well as workers' impact

---

[4] The red line represents decertified B Corps while the blue line represents active B Corps. The year 2022 is not included in Figure 1 as the year has not ended yet and more firms can still certify or decertify.

[5] Both results are significant at the 1%-level, with p-value of 2.2^{-16} and 1.14^{-6} respectively.

area scores. The higher mean in environment score is significant at the 5%-level, while governance and workers' means are significant at the 1%-level[6]. The full results of the t-tests are shown in the appendix. It still remains unclear why certified firms outperform decertified firms in some BIA areas and vice versa. However, one can conclude that on average there is no significant difference in the overall BIA score of active and inactive B Corps.

Table 2: Two sample t-test for BIA scores

BIA score	Certified mean	Decertified mean	Observations
Overall score	94.16	94.63	5651
Community	27.49	33.38	5651
Customers	13.09	15.36	5320
Environment	17.6	16.9	5651
Governance	13.92	11.98	5651
Workers	25.76	20.24	4966

As demonstrated in Table 3, most of the certified and decertified companies are rather small sized. In fact, firms with up to 50 employees account for roughly 80% of certified firms and 90% of decertified firms. To further examine the data, vertical and horizontal percentages were calculated. The vertical percentage[7] accounts for the composition of active and inactive firms in a size category among the total of certified or decertified B Corps, while the horizontal percentage[8] accounts for the fraction of B Corps in a size category that are certified or decertified. Approximately 35% of the active B Corps have 1-9 employees. This is also the size of category size with the most decertified B Corps. While firms with sole proprietorship are more likely to decertify. Within this size category (0), 56% of the B Corps are active and 44% are inactive. This is in line with other TPCs such as SA8000, that are also dominated by SME (SAI, 2020).

Table 3: Size of certified and decertified firms

Status by size		
	Certified	**De-certified**

---

[6] P-value for the environment variable is 0.039, 2.2^{-16} for governance as well as workers.
[7] Vertical % = n/ (total number of firms certified or decertified).
[8] Horizontal % = n/ (total number of firms in the same size category).

Size	n	Vert %	Hor %	n	Vert %	Hor %	Total
0	484	11.44	56.41	374	26.41	43.59	858
01-09	1486	35.11	71.86	582	41.10	28.14	2068
10-49	1402	33.13	81.56	317	22.39	18.44	1719
50-249	584	13.80	83.67	114	8.05	16.33	698
250-999[9]	195	4.61	88.24	26	1.84	11.76	221
1000+	80	1.89	96.39	3	0.21	3.61	83
10 000+	1	0.02	100.00	0	0.00	0.00	1
Total	4232	100.00	74.93	1416[10]	100.00	25.07	5648

Furthermore, smaller firms are also more likely to decertify. Companies with 0 and 1-9 employees have a decertification rate of 44% and 28% respectively, while companies with more than 1000 employees have a decertification rate of roughly 4%.

Again, one can explore the differences in the average overall BIA scores between certified and decertified B Corps to explore possible patterns. Table 4 shows that there are no significant differences in the means of BIA overall scores of certified and decertified firms in all size categories, except for 1000+ (see Appendix). In 1000+ size category, decertified B Corps have a higher BIA score significant at the 5%-level[11]. However, one must mention that the sample is highly unbalanced since there are only three decertified companies compared to 80 certified B Corps.

Table 4: Two sample t-test for size categories[12]

Size	Certified mean	Decertified mean	Observations
0	95.53	95.56	958
01-09	94.05	93.74	2068
10-49	93.72	94.35	1719
50-249	94.81	94.88	698
250-999	92.95	98.06	216
1000+	93.53	117.77	83

---

[9] In the dataset there was a size of 250+, however it was added to 250-999 due to redundance purposes.
[10] There are three missing values in the dataset about the size of decertified firms.
[11] The p-value of the test for 1000+ category is 0.02.
[12] There was no need to conduct the t-test for 10 000+ category since there is only one certified firm.

Over the time B Lab has managed to expand globally and based on the dataset is currently present in 79 countries. To have a better overview of the descriptive statistics of the geography, countries will be categorized into continents (Africa, America, Asia, Europe and Oceania)[13]. While countries with the most B Corp certification count, such as Brazil, Canada, U.S., United Kingdom and Australia, will be explored separately (see Table 5). Intuitively, the U.S. accounts for almost 38% of all B Corps as B Lab was founded in the United States. In fact, 34% of all certified B Corps are American, while 51% of all decertified B Corps are also American. What is more, the United States also has the highest attrition rate compared to other regions. The attrition rate is 34% in the U.S. followed by Australia that has an attrition rate of 27%. On the contrary, the United Kingdom has the lowest attrition rate, which is 8%. The UK accounts for 11% of all the B Corps, 14% of total certified and 4% of total decertified B Corps. What is more, B Lab's presence in Africa is almost negligible. The data show that African countries account for only 1% of the certified as well as decertified B Corps.

Table 5: Current status of certified and decertified B Corps by geography

	Status by geography						
	Certified			De-certified			
Region	**n**	**Vert %[14]**	**Hor %[15]**	**n**	**Vert %**	**Hor %**	**Total**
Africa	50	1.18	73.53	18	1.27	26.47	68
Brazil	181	4.28	79.74	46	3.24	20.26	227
Canada	323	7.63	70.07	138	9.73	29.93	461
USA	1418	33.51	66.29	721	50.81	33.71	2139
Americas	465	10.99	76.23	145	10.22	23.77	610
Asia	144	3.40	73.47	52	3.66	26.53	196
UK	590	13.94	91.61	54	3.81	8.39	644
Europe	716	16.92	84.73	129	9.09	15.27	845
Australia	296	6.99	73.09	109	7.68	26.91	405
Oceania (NZ)	49	1.16	87.50	7	0.49	12.50	56
Total	4232	100.00	74.89	1419	100.00	25.11	5651

---

[13] In the appendix, one can find the characteristics of each country.
[14] Vertical % = n/ (total number of firms certified or decertified).
[15] Horizontal % = n/ (total number of firms certified or decertified in the same region).

To further examine each region, t-tests comparing the overall scores of certified and decertified B Corps within a region were conducted. The t-test results reveal that only Brazil and Asia have statistically different means at the 5%-level[16]. As one can see in Table 6, the decertified companies in Brazil as well as in Asia have higher average BIA scores.

Table 6: Two sample t-tests for regions

Region	Certified mean	Decertified mean	Observations
Africa	101.48	109.78	68
Brazil	94.28	99.22	227
Canada	96.71	94.27	461
USA	95.40	94.41	2139
Americas	93.35	91.95	610
Asia	92.60	97.23	196
UK	93.49	92.79	644
Europe	92.78	92.80	845
Australia	91.40	91.59	405
Oceania (NZ)	90.84	84.97	56

The last classification will be based on the sectors of the B Corps. As mentioned before B Lab classifies B Corps into five sectors (see Section 3). One must explore if there are any differences between active and inactive B Corps within each section.

Table 7: Current status of certified and decertified B Corps by sector

Sector	Status by Sector						
	Certified			De-certified			
	n	Vert %	Hor %	n	Vert %	Hor %	Total
Agriculture/Growers	117	2.76	78	33	2.33	22	150
Manufacturing	589	13.92	81.81	131	9.23	18.19	720
Service	8	0.19	53.33	7	0.49	46.67	15
Service with Minor Environmental Footprint	2310	54.58	73.08	851	59.97	26.92	3161

---

[16] Both of them share a p-value of 0.05.

	363	8.58	78.06	102	7.19	21.94	465
Service with Significant Environmental Footprint							
Wholesale/Retail	845	19.97	74.12	295	20.79	25.88	1140
Total	4232	100.00	74.89	1419	100.00	25.11	5651

Table 7 reveals that B Corps that offer services with minor environmental footprint are by the largest sector as solely this sector accounts for 56% of all the active and inactive B Corps while having an attrition rate of 27%. This sector has also the second highest attrition rates after the sector 'Service'. Since the 'Service' sector accounts for only 15 firms in the whole dataset, the decertification rate within the sector does not necessarily provide interpretational value.

The second largest sector is the Wholesale/Retail sector that is comprised of 1140 active and inactive B Corps, accounting for 20% of all B Corps. While the third largest sector is 'Manufacturing' with 720 companies. The attrition rate in this sector is lowest with 18%. Followed by 'Services with Significant Environmental Footprint' that has 465 B Corps and an attrition rate of 22%.

Table 8: Two sample t-tests for sectors

Sector	**Certified mean**	**Decertified mean**	**Observations**
Agriculture/Growers	95.67	99.65	150
Manufacturing	93.22	94.76	720
Service	90.75	96.39	15
Service with Minor Environmental Footprint	95.21	94.50	3161
Service with Significant Environmental Footprint	93.05	97.50	465
Wholesale/Retail	92.25	93.38	1140

The t-test results reveal that there are no statistically significant differences in the means of certified and decertified B Corps in all the sectors except for the sector 'Service with Significant Environmental Footprint'. Inactive B Corps that offer services with significant footprint have a

slightly higher average BIA score than active B Corps in the same sector. The result of the t-test is significant at the 2%-level[17].

Last, one conducted an OLS regression to test the impact of B Corp certification count on the GDP of the United States. To test this relationship, one recalls formula (1) mentioned in the methodology section. Overall, one can see that the model performs quite well based on the adjusted R2 as well as the F-Statistic (see **Error! Reference source not found.**). Based on the adjusted R2, the independent variables chosen in the model explain 72.6% of the variation in the GDP. One might suspect multicollinearity with such a high R2. To test multicollinearity, the variance inflation factor (VIF) scores were calculated. The VIF measures to what extent variances of regression coefficients are inflated due to collinearity. If the VIF score exceeds the value five than multicollinearity is present in the model (Gareth et al., 2013). Based on the results, none of the VIF values exceeded the threshold. In fact, none of the variables had a VIF value higher than three and consequently multicollinearity is not present in this model[18].

Back to the F-Statistic, one can observe that it is significant at the 1% level indicating that the chosen independent variables improve the fit. The model was also tested for autocorrelation using the Durbin-Watson test. However, since the sample size is small the bootstrapped Durbin-Watson test was conducted as it performs in the case of small sample sizes better than the usual Durbin-Watson test (Akter, 2014). If one rejects the null hypothesis in the Durbin-Watson test, then autocorrelation is present. Nevertheless, in this case one fails to reject the null hypothesis of the test at any appropriate significant level as the p-value is 0.29. Hence, autocorrelation is absent in the model. Last, the model was tested for heteroskedasticity using the Breusch-Pagan test. Same as in the Durbin-Watson test, the null hypothesis in the Breusch-Pagan test implies absence of heteroskedasticity. Since the Breusch-Pagan test had a p-value of 0.87, one was able to accept the null hypothesis. Thus, this model is homoscedastic. To sum up, one can mention that with the absence of multicollinearity, autocorrelation and heteroskedasticity the results of the regression are more reliable.

It is worth mentioning, that the estimates in this model might be inflated and thus overestimating the effect of each coefficient on GDP. The overestimation of the coefficients might be a result of omitted variable bias (Wooldridge, 2009). As many variables that are crucial to forecast GDP

---

[17] In fact, the p-value is 0.013. See appendix for p-values of other results.
[18] VIF(BCC) = 2.56; VIF(IF) = 1.07; VIF(FER) = 2.87; VIF(ER) = 2.06

are not included in the regression, such as commodity price growth, real M2 growth, employment indicators, industrial production etc. (Ingenito & Trehan, 1996; Kitchen & Monaco, 2003), the model relies only on the given variable and thus overestimates them to forecast GDP. However, due to the limited data available and the scope of this study this model will rely only on the aforementioned variables.

But it is noteworthy to say that the model also included at first yearly unemployment rate, educational attainment distribution in the U.S. (percentage of high school graduates) and yearly average interest rates. The unemployment rate was considered in the regression due to the Okun's law. Okun's law predicts a three-percentage point increase in the economic growth if the unemployment rate decreases by one-percentage point. Intuitively, a decrease in unemployment rates would lead to an increase in the labor supply, working hours, productivity etc. and thus economic growth (Prachowny, 1993). Educational attainment was considered as it tends to partly explain the variation in the economic growth in the long run in the United States. One also considered including the yearly average U.S. interest rates as they are forward-looking and thus useful to forecast economic growth (Estrella & Hardouvelis, 1991; Stock & Watson, 1998). Based on Dotsey (1998) the net interest rates spread has a similar movement to the real GDP throughout the history and thus is a good indicator for the economic growth in the future. Nevertheless, those variables were removed from the regression as they were highly correlated with other variables, especially certification count, and thus the model was suffering from multicollinearity.

Now one can analyze the behavior of the independent variables in the model. As expected, the inflation rates (IF) are positively correlated with the GDP of the United States at a 5% significance level. The positive correlation can be backed up by the Balassa-Samuelson effect (see Section 4). Intuitively, the foreign exchange reserves (FER) are also positively correlated with the GDP. One expected FER to be positively correlated with the GDP since it leads to a depreciation of the exchange rate which in turn leads to an increase in the exports, as other countries are now able to afford more of the American products, and thus the GDP increases (Polterovich & Popov, 2003). Nevertheless, the coefficient is not significant at any appropriate significance level. Vice versa, the exchange rate (USD to EUR) must be negatively associated with the GDP of the U.S., as an increase in the exchange rate leads to a decrease in the exports, since foreign countries are able to afford less of the American product, hence the GDP decreases. The ER coefficient is only significant at the 10% level.

Table 9: Regression results

	Dependent variable
	log(GDP)
BCC	0.044***
	(0.013)
IF	0.781**
	(0.349)
log(FER)	11.820
	(7.766)
ER	-12.149*
	(5.467)
Constant	-84.787
	(82.124)
Observations	15
R2	0.804
Adjusted R2	0.726
Residual Std. Error	1.643 (df=10)
F Statistic	10.263*** (df = 4; 10)

Note: *p<0.1; **p<0.05; ***p<0.01

However, the coefficient of interest, B Corp certification count (BCC), has a significant positive impact on the GDP at the 1% significance level. In fact, an increase of the certification count by one unit leads to a 4.50% increase in the U.S. GDP[19]. Aforementioned, the coefficient is overestimating the impact of BCC on the GDP due to possible omitted variable bias.

Finally, one can answer the research question provided in Section 1. One can say that the current state of certified and decertified B Corps has improved over the year by an increase in the certification count as well as a decrease in the overall attrition rate. In most of the classifications, may it be size class, sector or region there are no significant differences in the overall BIA scores of active and inactive B Corps indicating that those firms share similar characteristics. However, based on the regression results one was able to prove that B Corp state does not only

---

[19] $(\text{Exp}(0.044) - 1) * 100 = 4.50\%$

influence the private sector but also the public sector and might have a positive impact on the performance of a company.

5. Discussion

There might be three possible explanations for the attrition downward trend in Figure 1. First, B Lab are putting much effort to improve their policies and certification process to avoid decertification. Second, firms started acknowledging the benefits of the B Corp certifications and thus are less likely to decertify. Based on the review of the literature, firms decide to decertify when the costs of certification exceed the benefits (Kafel & Nowicki, 2014; Martin, 2020; Podrecca et al., 2021). Thus, B Lab might have been working on reducing the costs of certification as much as possible so that firms can benefit from the certifications. Nevertheless, as mentioned above firms still decide to decertify even though they have routinized the certification process. Third, while the corporate world is becoming more aware of the consequences of operating unsustainably, more firms have the need to show their stakeholders that they are operating sustainably (Darnall et al., 2018). In other words, players in the market are demanding from suppliers, retailers etc. to act sustainable and there is no way around except for doing so. In turn, this leads to an increase in third-party certifications.

Though the decertification rate decreased from 2012, the total attrition rate has increased in the past two years. Kim (2021) reported an attrition rate of 23.7% from year 2007 to 2020. While the current decertification rate is at 25.11%. Hence, more companies have decertified in the past two years. But why do firms decertify? As mentioned by Kim (2021) and Cao et al. (2018) it is not possible to give a straightforward answer to this question with the currently available data. As some firms might have gone bankrupt or simply do not exist anymore (Cao et al., 2018). Or as in the case of Etsy, abandoning the certificate as it requires the firm to restructure (Martin, 2020). Additionally, some firms might have not reached the 80-point BIA threshold and therefore were not able to attain the certificate. As seen in the literature review there are several possible reasons behind firms' decertification but to provide a straightforward answer to this question, B Corp must provide more information about the decertification of companies.

As mentioned before there are no significant differences in the overall BIA means of active and inactive B Corps. The statistical insignificance of the averages could indicate that prior to decertification, currently inactive firms were not outperformed by their competitors in terms of

scores and consequently the main reason behind decertification are the costs of certification rather than the sustainability performance.

The concentration of high decertification rates in smaller size categories (see Table 3) can be explained by the fact that smaller firms do not always have available resources, such as human capital, investments etc. to bear the cost of certification and thus many of them decide to abandon the certification (Hatanaka et al., 2005).

In Table 4, one can notice that the overall scores of decertified smaller firms are very similar to the score of larger firms. Hence, this stresses the fact that one of the main reasons why those firms decertify is the lack of resources based on their size and not the difficulty of reaching the 80-point benchmark. Again, this stresses the fact that the costs for the certification are too high for small firms and thus they end up forgoing the certification. Another possible explanation provided by the literature that supports this reasoning is that decertified ISO 9000 and ISO 14000 firms decided to follow the standards and requirements of ISO even after decertification (Kafel & Nowicki, 2014). Consequently, inactive B Corps are likely to operate sustainably even after decertification.

If one analyzes the most interesting geographies, one can see in Table 5 that the U.S. has the highest attrition rate of all countries. The high decertification rate in the U.S. can be explained by the theory of Podrecca et al. (2021). They state that decertified SA8000 are located rather in developed countries as firms in developing countries need TPCs to legitimize their actions. While companies in developed countries are already facing strict systems to operate sustainably and therefore do not need to legitimize their actions through TPCs. However, it is more likely that the high attrition rates in the U.S. is due to the increased adoption of Benefit Corporation legislation and consequently managers view the B Corp certification as unnecessary as it does not bring any additional value to the firms Kim (2021).

On the other hand, the United Kingdom managed to have the lowest attrition rate of all other regions. Surprisingly, B Lab has arrived in England only in 2015 but has been growing steadily since then. The low attrition rate of B Corps in the UK might be mainly due to the benefits B Corp certification in the UK. Based on a report from Morley and Goodchild (2020) published by the B Lab Movement in the UK, B Corp SMEs have experienced higher turnover growth, employee retention, levels of innovation and diversity compared to other British SMEs.

Between 2017 and 2019, B Corp SMEs the average annual turnover growth was by 21% higher than the other SMEs. The employee retention rate decreased by at least 6% and 45% of the B Corp SMEs received R&D tax credits while only 3% of the non-B Corp SMEs received tax credits in the last three years (Morley & Goodchild, 2020). B Lab succeeding more in the UK compared to other countries, especially neighboring or developed countries in Europe, might be due to the UK's policy supporting sustainable businesses or due to B Lab's policy and requirements in the UK. B Lab must seek to adapt similar policies in other countries that share the same characteristics in the UK so that other SMEs can maximize their benefits from the certification and in turn decrease the attrition rate. Nevertheless, the high recertification rate might be also due to British embracing the B Corp culture by valuing the norms and values more than other cultures.

The dominance of developing countries in Africa might explain the very low presence of B Corps in that region. Aforementioned, to obtain a certification, technology, human capital as well as investments are needed. Firms in third world countries do not have the privilege of bearing those costs and therefore decide not to obtain certification (Hatanaka et al., 2005). Another possible explanation is that the values and norms of B Corp might not be inherited in the African cultures yet and thus managers rather seek to maximize shareholder's wealth. This is shown in the business track record of Africa that consists of labor exploitation, environmental destruction and political corruption (Christian Aid, 2004; Hishan et al., 2019; Malan, 2005; UN Security Council, 2002).

The statistically higher overall BIA scores of decertified B Corps in Brazil and Asia support the notion of decertification as a result of high costs of recertification rather than poor performance (see Table 6). Based on OECD (2022) the SME sector in Brazil as well as Southeast Asia accounts for almost 99% of the enterprises, hence most of the B Corps from Brazil and Asia are rather small in size. Even though the SME size is large in Brazil it does not increase the economic growth due to institutional weakness and policies for innovation (De Negri, 2021; Van Stel et al., 2005). Thus, SMEs in Brazil are lacking resources to recertify. B Lab must take into consideration the role of the government in each country and adapt among other criteria the requirements depending on the support the institutions provide.

Another possible categorization of countries can be based on the income. World Bank classifies countries into four categories: low-income countries, lower middle-income countries, upper

middle-income countries and high-income countries. Hence, Peprah (2021) classified B Corps based on income and found that B Corps in the high-income class have a higher attrition rate than the low-income and upper middle-income classes. To put into numbers, the low-income B Corps have the lowest attrition rate of 18.2% while lower middle-income B Corps have the highest attrition rate of 34.5% and upper middle-income and high-income B Corps have a decertification rate of 18.3% and 25.2% respectively. One might find it surprising that high-income B Corps have the second highest decertification rates while low-income B Corps have the lowest decertification rates. Nevertheless, the country with the highest number of certified as well as decertified B Corps is the United States. Since the U.S. is classified as a high-income country, it is having a disproportionate effect on the attrition rates of high-income B Corps.

Moreover, if one analyses the results in Table 7 that are based on the different sectors of the B Corps, one can see that the largest sector 'Service with Minor Environmental Footprint' has an attrition rate of almost 27%. Intuitively, this sector has already a clear mission of pursuing CSR as they already offer service with minor environmental footprint. Hence, one can argue that those companies are not in need of the advocacy of B Corp certification as most of their customers might be aware of their sustainable business. Thus, managers decide to allocate the costs of certification into other sectors. In other words, the B Corp certificates do not provide any additional value to those inactive B Corps especially since they might have already claimed identity (Kim et al., 2016).

As expected, the Wholesale/Retail sector is the second largest. As mentioned in the literature review, TPC have several advantages for retailers such as quality assurance and the shift or responsibility to B Lab itself. Thus, this might explain why many B Corps are in the retail sector. The attrition rate within the sector is by roughly 26%, however there are several possible explanations for the high attrition rate such as costs of certification, the change of leadership, cost of restructuring etc. (Martin, 2020). It remains unclear why this sector has a high attrition rate while it is one of the sectors with the most benefits from third party certifications (Hatanaka et al., 2005). B Corps in the 'Services with Significant Environmental Footprint' sector might have an attrition rate of 22% due to the efforts they must exert to attain the certificate. Those companies already produce with a high environmental footprint. Thus, to attain the certificate they have to restructure the way they operate to reach a certain level of sustainability to pass the BIA score of 80 points. Of course, this restructuring can be costly for some companies, especially if they are small in size or lack resources, and thus they decide to decertify.

Based on the dataset, about 73% of the total B Corps that offer services with significant environmental footprint have up to 49 employees supporting the fact that they are less likely able to afford such a restructuring. This is the only sector with a significant difference in the means of overall BIA scores. Within this sector inactive B Corps outperform active B Corps. This could be linked to the assumption of the high recertification costs. One could argue that those companies decertify due not being able to bear the costs of certification, especially since they have to invest more than others in order to decrease their footprint. However, B Lab considers those additional efforts prior to assessment (B Lab, 2021).

Now, one can discuss the impact of the B Corp certification count on the GDP of the U.S. As expected, the certification count increases a GDP of a country, as B Corp certificates increase the following: (a) turnover growth rates of firms, (b) revenue growth rates and (c) sales growth rates. These are all factors that indirectly influence the GDP. Turnover growth rates are highly dependent on strategic choices of companies. One of the common strategic choices adapted by firms that is positively correlated to turnover growth rates is entering a new export market (Roper, 1999). Entering a new export market leads to an increase in the exports and in turn an increase in the GDP. While revenue growth rates also have an indirect positive effect on the GDP. Since revenues have to be taxed, a firm that generates more revenue consequently pays more tax revenue. Based on Castro and Camarillo (2014), GDP and tax revenues are positively correlated, indicating that an increase in tax revenue leads to an increase in the GDP. This theory could also be applied to the sales growth rates, as firms have to pay more tax on their sales.

In other words, B Corp certificates have a set of requirements and standards that firms must follow in order to attain the certificate. If a firm reaches the 80-point benchmark than it must have been investing in R&D, technologies, human capital etc. that in turn has a positive impact on a country's development.

6. Future Implications

Kim (2021) stated that B Corps are less likely to decertify if they have gone through at least three rounds of recertification as the process becomes routinized. Nevertheless, some of the firms still decided to decertify even after three rounds of certification. For example, three firms that were in the first cohort back in 2007 have abandoned the certificate in the past two years. Those firms might have willingly decided to decertify rather than being kicked out because of low scores. Here comes the role of B Lab, as they must avoid the opting out of companies that have already routinized the recertification process. A possible way to do so is by increasing the period between recertification. Firms that have passed the BIA successfully more than three times, should have the right to recertify after more than two years. Intuitively, this would reduce the certification costs for those firms and will reduce the amount of recertification rounds.

However, since it is not clear why those firms actually abandon the certificate, B Lab must provide additional information regarding decertification in their datasets, so that scholars, organizations and societies can understand the reason behind decertification. The necessity of more information regarding decertification has been already mentioned several times in the literature (Cao et al., 2018; Kim, 2021; Peprah, 2021).

Based on the t-test results and the exploratory analysis conducted, companies are more likely to decertify due to high certification costs. Thus, B Lab must reassess their BIA, especially for smaller sized firms since the decertification rates are higher for smaller firms. This is also backed up by Kim (2021) who found that the BIA is overwhelming for smaller firms. B Lab can waive some of the requirements for SME to decrease the attrition rates.

What is more, B Lab must take into account the geography of companies and set different requirements based on the location. Cao et al. (2017) shed lights on the difficulty of firms to stand out in the U.S. with the B Corp certificate. They mention that for some states it is easier to stand out than for others. Additionally, as one has seen in the Discussion sector, one of the main possible reasons to decertify in the U.S. is the adoption of Benefit Corporation. Benefit Corporations already enjoy the benefits of B Corps without being B Corps as the "state statue of Benefit Corporations are based on the model law of B Lab." (Hiller, 2013) Therefore, B Lab must somehow try to add value to firms that are already Benefit Corporations or maybe waive for them the recertification processes as long as they are Benefit Corporations so they can keep

both statuses. Waiving the recertification process for Benefit Corporations might be a logical solution as Benefit Corporation already follow the standards and requirements to become a B Corporation.

Moreover, for B Lab to be present in developing countries it must work closely with the public sector to fill the gap in education and embrace the culture of sustainability. As one has seen, B Corps are doing great in England mainly due to the culture, work environment and policies set by the government. On the other hand, B Lab is barely present in Africa and the work environment in Africa is fueled by corruption and personal gains. First, the African governments must work on educating its people about sustainability and their responsibility towards their planet and create policies that serve the societies best interests. Second, the private sector must also contribute by creating jobs and driving growth. B Lab can contribute by offering some free workshops and guidance on how businesses can become more sustainable,

Governments must also cooperate with third party certifiers to help improve the economy. For example, governments should verify the certifications of third-party certifiers so that consumers are more likely to trust those certifications while also assuring a better quality. Based on a study conducted by Ortega et al. (2014), there is a lack of trust from the consumers side if the government does not monitor third party certifications. Hence, governments' involvement is to some extent important to increase credibility of TPCs.

7. Conclusion and Limitations

To sum up, this paper explores the state of certified and decertified B Corps by analyzing the B Corp Impact dataset issued by B Lab itself. Based on the analysis 63% of the firms that were first certified in 2007 manage to keep their certification until now. The results show that number of decertified B Corps has decreased over the years nevertheless firms still opt to decertify. The U.S. accounts for most of the active and inactive B Corps while the United Kingdom accounts for lowest decertification rates. The majority of the B Corps are rather small in size. Hence, smaller firms tend to apply for certification as well as decertification rather than large firms. While the concentration of B Corps is in the service sector with minor environmental footprint. Based on the t-tests and the literature review conducted one can assume that companies decertify due to cost of certification rather than failure of recertification due to low scores.

What sets this study apart from other papers exploring B Corps is the OLS regression that examines the relationship of the B Corp certification count with GDP of the United States. Intuitively the certification count indicates the development of a country and its capability to innovate. Thus, the certification count is expected to have a positive impact on the GDP.As shown in the results, the certification count is indeed positively correlated with the GDP at 1% significance level. This empowers future research to further examine the relationship of TPC on the GDP.

However, no study comes without limitations. In this study, there were several limitations that have to be mentioned: First, the reasons behind decertification still remain unclear and cannot be further explored with this dataset. One can solve this issue by either conducting interviews with decertified companies or if B Lab decides to update the dataset with more information regarding decertification. The former was not possible in this study due to the limited timeframe. The latter depends on the confidentiality agreement B Lab has with those companies. One can believe that information regarding reasons of abandoning B Corp certificates is credential and cannot be disclosed. Second, the sample size of the OLS regression is small (14 observations) and thus one cannot be sure if the certification indeed positively impacts the GDP. However, a larger sample size while observing the solely U.S. is not possible since B Lab has been existing only from 2007. One can avoid this by adding other developed countries to sample, such as OECD countries. This would increase the sample size while also generalizing the hypothesis tested. Due to the availability of the data, one was only able to

observe the United States. Third, as mentioned before the regression model might be suffering from omitted variable bias. The solution to this is simply adding other variables that might further forecast the GDP. But due to the unavailability of these data, they were not taken into consideration. Moreover, this study focuses only on B Corp certificates while there are several other third-party certifiers that also have an impact on the economy.

REFERENCES

- Aid, C. (2004). Behind the Mask. The Real Face of Corporate Social Responsibility, London, Christian Aid.

- Aka, B. F., & Dumont, J. C. (2008). Education and Economic Growth: Testing for Long-Run Relationships and Causal Links in the United States. Applied Econometrics and International Development, 8, 101-110.

- Akter, J. (2014). Bootstrapped Durbin–Watson Test of Autocorrelation for Small Samples. ABC Journal of Advanced Research, 3, 137-142.

- Alič, M. (2014). Impact of ISO 9001 Certification Cancellation on Business Performance: A Case Study in Slovenian Organisations. Total Quality Management & Business Excellence, 25, 790–811.

- Amel-Zadeh, A., & G. Serafeim. (2018). Why and how Investors use ESG Information: Evidence from a Global Survey. Financial Analysts Journal 74, 87–103.

- Anderson, J. C., Busman, G. and O'Reilly, C.A. III. (1982). The Decertification Process: Evidence from California. Industrial Relations, 21, 178- 195.

- Andrés, J., & Hernando, I. (1999). Does Inflation harm Economic Growth? Evidence from the OECD. The Costs and Benefits of Price Stability. University of Chicago Press, 315-348.

- Arnould, E., Plastina, A., & Ball, D. (2009). Does Fair Trade Deliver on its Core Value Proposition? Effects on Income, Educational Attainment, and Health in three Countries. Journal of Public Policy and Marketing, 28, 186–201.

- Ayyoub, M., Chaudhry, I. S., & Farooq, F. (2011). Does Inflation Affect Economic Growth? The Case of Pakistan. Pakistan Journal of Social Sciences (PJSS), 31, 51-64.

- B Lab Spain. (2018). Memoria Annual. Retrieved (30.01.2022) from: https://issuu.com/bcorpspain/docs/memoria_anaul_b_lab_spain_2018

- B Lab. (2021). About B Corp Certification. Retrieved (30.01.2022) from: https://www.bcorporation.net/en-us/certification

- B Lab. (2021). B Corp Directory. Retrieved (30.01.2022) from: https://bcorporation.net/directory

- Bain, C., & Busch, L. (2004). Standards and Strategies in the Michigan Blueberry Industry. East Lansing, MI, Michigan Agricultural Experiment Station, Michigan State University. Report 585.

- Balassa, B. (1964). The Purchasing Power Parity Doctrine: A Reappraisal. Journal of Political Economy, 72, 584-596.

- Barrett, H.R., Browne, A.W., Harris, P.J.C., & Cadoret, K. (2002). Organic Certification and the UK market: Organic Imports from Developing Countries. Food Policy 27, 301–318.

- Beurden, P., & Gössling, T. (2008). The Worth of Values – A Literature Review on the Relation Between Corporate Social and Financial Performance. Journal of Business Ethics, 82, 407-424.

- Blackman, A., & Rivera, J. (2011). Producer-level Benefits of Sustainability Certification. Conservation biology, 25, 1176-1185.

- Bolwig, S., Gibson P., & Jones S. (2009). The Economics of Smallholder Organic Contract Farming in Tropical Africa. World Development, 37, 1094-1104.

- Brønn, P. S., & Vidaver-Cohen, D. (2009). Corporate Motives for Social Initiative: Legitimacy, Sustainability or the Bottom Line? Journal of Business Ethics, 87, 91–109.

- Busch, T., & Friede, G. (2018). The Robustness of the Corporate Social and Financial Performance Relation: A Second-order Meta-analysis. Corporate Social Responsibility and Environmental Management, 25, 583-608.

- Cao, K., Gehman, J., & Grimes, M. G. (2017). Standing Out and Fitting in: Charting the Emergence of Certified B Corporations by Industry and Region. In Hybrid ventures. Emerald Publishing Limited, 19, 1-38.

- Castro, G. Á., & Camarillo, D. B. R. (2014). Determinants of Tax Revenue in OECD Countries over the Period 2001–2011. Contaduría y Administración, 59, 35-59.

- Chafetz, I., & Fraser, C.R.P. (1979). Union Decertification: An Exploratory Analysis. Industrial Relations, 18, 59-69.

- Chiarini, A. (2019). Why are Manufacturing SMEs Cancelling their ISO 9001 Certification? Research from Italy. Production Planning and Control, 30, 639-649.

- Christmann, P., & Taylor G. (1999). Globalization and the Environment: Evidence from China. Greening of Industry Network Conference 1999, Best Paper Proceedings.

- Cohen, J.R., L. Holder-Webb, & V.L. Zamora. (2015). Nonfinancial Information Preferences of Professional Investors. Behavioral Research in Accounting 27, 127–153.

- Cooke, W. N. (1983). Determinants of the outcomes of union certification elections. Industrial and Labor Relations Review, 36, 402-414.

- Corbett, C. J., & Kirsch, D. A. (2001). International Diffusion of ISO 14000 Certification. Production and Operations Management, 10, 327-342.

- Corsi, C., Prencipe, A., & Boffa, D. (2020). Emerging Elements and Traits of a New Hybrid Organization Model: The Certified Benefit Corporation: An Exploratory Analysis of the European Context. Advances In Management, 13, 30–39.

- Dahlgaard-Park, S., Chen, C., Jang, J., & Dahlgaard, J.J. (2013). Diagnosing and Prognosticating the Quality Movement – A Review on the 25 years Quality Literature (1987–2011). Total Quality Management & Business Excellence, 24, 1–18.

- Darnall, N., Ji, H., & Vázquez-Brust, D. A. (2018). Third-party Certification, Sponsorship, and Consumers' Ecolabel use. Journal of Business Ethics, 150, 953– 969.

- Data.world. (2022). About Us. Retrieved (30.01.2022) from: https://data.world/company/about-us/

- De Magistris, T., Del Giudice, T., & Verneau, F. (2015). The Effect of Information on Willingness to Pay for Canned Tuna Fish with different Corporate Social Responsibility (CSR) Certification: A Pilot Study. Journal of Consumer Affairs, 49, 457– 471.

- De Negri, F. (2021). New Pathways for Innovation in Brazil. Institute for Applied Economic Research.

- Diez-Busto, E., Sanchez-Ruiz, L., & Fernandez-Laviada, A. (2021). The B Corp Movement: A Systematic Literature Review. Sustainability, 13, 2508.

- Divya, K. H., & Devi, V. R. (2014). A Study on Predictors of GDP: Early Signals. Procedia Economics and Finance, 11, 375-382.

- Dixon-Fowler, H.R., Slater, D.J., Johnson, J.L., Ellstrand, A.E. & Romi, A.R. (2013). Beyond does it Pay to be Green? A Meta-analysis of Moderators of the CEP-CFP Relationship. Journal of Business Ethics, 112, 353-366.

- Dotsey, M. (1998). The Predictive Content of the Interest Rate Term Spread for Future Economic Growth. FRB Richmond Economic Quarterly, 84, 31-51.

- Estrella, A., & Hardouvelis, G. A. (1991). The Term Structure as a Predictor of Real Economic Activity. Journal of Finance, 46, 555–76.

- Etilé, F., & Teyssier, S. (2016). Signaling corporate social responsibility: Third-party Certification Versus Brands. The Scandinavian Journal of Economics, 118, 397– 432.

- European Central Bank. (2022). US Dollar (USD). Retrieved (30.01.2022) from: https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/eurof xref-graph-usd.en.html

- Fagan, J. (2003). A Successful Example of an Independent, Third-party, Private Certifcation System. Symposium: Product Differentiation and Market Segmentation in Grains and Oilseeds: Implications for Industry in Transition. Economic Research Service, USDA and the Farm Foundation, Washington, DC.

- Fagerland, M. W. (2012). T-tests, Non-parametric Tests, and Large Studies—A Paradox of Statistical Practice? BMC Medical Research Methodology, 12, 1-7.

- Fair Trade International (2022). The Fairtrade Marks. Retrieved (30.01.2022) from: https://www.fairtrade.net/about/fairtrade-marks

- Faria, J, R. & Carneiro, F. G. (2001). Does High Inflation Affect Growth in the Long Run and Short-Run? Journal of Applied Economics, 4, 89-105.

- Filho, W.L., Tripathi, S.K., Guerra, J.B., Giné-Garriga, R., Lovren, V.O., & Willats, J. (2019). Using The Sustainable Development Goals Towards A Better Understanding Of Sustainability Challenges. International Journal of Sustainibilty Development & World Ecology, 26, 179–190.

- Financial and Operational Performance of B Corporations in the UK. B Lab Movement, United Kingdom.

- Fort, R., & Ruben, R. (2008). The Impact of Fair Trade on Banana Producers in Northern Peru. Wageningen Academic Publishers, Wageningen, The Netherlands, 49- 73.

- Fort, R., & Ruben, R. (2008b). The Impact of Fair Trade on Coffee Producers in Peru. Wageningen Academic Publishers, Wageningen, The Netherlands, 75-98.

- Gamble, E.N., Parker, S.C. & Moroz, P.W. (2020). Measuring the Integration of Social and Environmental Missions in Hybrid Organizations. Journal of Business Ethics, 167, 271–284.

- Gareth, J., Daniela, W., Trevor, H., & Robert, T. (2013). An Introduction to Statistical Learning: with applications in R. Spinger.

- Gereffi, G., Garcia-Johnson, R., & Sasser, E. (2009). The NGO-industrial Complex. Foreign Policy, November.

- Golan, E., Kuchler, F., Mitchell, L., Greene, C., & Jessup, A. (2001). Economics of Food Labeling. Journal of Consumer Policy 24, 117–184.

- Graafland, J., & Mazereeuw-Van der Duijn Schouten, C. (2012). Motives for Corporate Social Responsibility. De Economist, 160, 377-396.

- Grimes, M. G., Gehman, J., & Cao, K. (2018). Positively Deviant: Identity Work through B Corporation Certification. Journal of Business Venturing, 33, 130-148.

- Harjoto, M., Laksmana, I., & Yang, Y. W. (2018). Why do Companies Obtain the B Corporation Certification? Social Responsibility Journal, 15, 621–639.

- Hatanaka, M., Bain, C., & Busch, L. (2005). Third-party Certification in the Global Agrifood System. Food policy, 30, 354-369.

- Henson, S., & Northen, J. (1998). Economic Determinants of Food Safety Controls in Supply of Retailer Ownbranded Products in United Kingdom. Agribusiness 14, 113–126.

- Hiller, J. S. (2013). The Benefit Corporation and Corporate Social Responsibility. Journal of Business Ethics, 118, 287-301.

- Hishan, S. S., Khan, A., Ahmad, J., Hassan, Z. B., Zaman, K., & Qureshi, M. I. (2019). Access to Clean Technologies, Energy, Finance, and Food: Environmental Sustainability Agenda and its Implications on Sub-Saharan African Countries. Environmental Science and Pollution Research, 26, 16503-16518.

- Hutcheson, G. D. (1999). Ordinary Least-squares Regression. In the Multivariate Social Scientist, 56-113.

- Ingenito, R. & Trehan, B. (1996). Using Monthly Data to Predict Quarterly Output. Federal Reserve Bank of San Francisco Economic Review, 3, 3-11.

- International Organization for Standardization (2022). Management System Standards. Retrieved (30.01.2022) from: https://www.iso.org/management-system-standards.html

- Jamali, D. (2008). A Stakeholder Approach to Corporate Social Responsibility: A Fresh Perspective into Theory and Practice. Journal of Business Ethics, 82, 213-231.

- Joubert, B. (1998). ISO 9000: International Quality Standards. Production and Inventory Management Journal, 39, 60–65.

- Kafel, P., & Nowicki, P. (2014). Functioning of Environmental and Quality Management Systems after Resignation of Management Standard Certification: Case Study of Polish Organizations. International Journal for Quality Research, 8, 505–516.

- Kelly, T.F. & Chen, X. (2015). B-Corps - A Growing Form of Social Enterprise: Tracing their Progress and Assessing their Performance. Journal of Leadership & Organizational Studies, 22, 102–114.

- Kim, S., Karlesky, M. J., Myers, C. G., & Schifeling, T. (2016). Why Companies are Becoming B Corporations. Harvard Business Review, 17, 1-5.

- Kim, Y. (2021). Certified Corporate Social Responsibility? The Current State of Certified and Decertified B Corps. Corporate Social Responsibility and Environmental Management, 28, 1760-1768.

- Kitchen, J., & Monaco, R. (2003). Real-time Forecasting in Practice: The US Treasury Staff's real-time GDP Forecast System.

- Lo, L.K. & Chang, D.S. (2007). The Difference in the Perceived Benefits between Firms that Maintain ISO Certification and Those that do not. International Journal of Production Research, 45, 1881-1897.

- Lyngbaek, A., Muschler R., & Sinclair F. (2001). Productivity and Profitability of Multistrata Organic versus Conventional Coffee farms in Costa Rica. Agroforestry Systems 53: 205– 213.

- Macrotrends. (2021). Federal Funds Rate - 62 Year Historical Chart. Retrieved from (30.01.2022) from: https://www.macrotrends.net/2015/fed-funds-rate-historical-chart

- Malan, D. (2005). Corporate Citizens, Colonialists, Tourists or Activists? Ethical Challenges facing South African Corporations in Africa. Journal of Corporate Citizenship, 18, 49-60.

- Malik, G. & Chowdhury, A. (2001). Inflation and Economic Growth: Evidence from Four South Asian Countries. Asia-Pacific Development Journal, 8, 123-135.

- Martin, C. (2020). An Investigation into the Reasons Organizations Forgo Their B Corp Certification Status. Golden Gate University. Available at SSRN 3714514.

- Moir, L. (2001). What do we Mean by Corporate Social Responsibility? Corporate Governance: The international journal of business in society.

- Moravcikova, K., Stefanikova, Ľ., & Rypakova, M. (2015). CSR Reporting as an Important Tool of CSR Communication. Procedia Economics and finance, 26, 332-338.

- Morgan. J.P. & Rockefeller Foundation. (2010). Impact Investments: An Emerging Asset Class.

- Morley, C., & Goodchild, M. (2020). An Independent Comparative Study into the Financial and Operational Performance of B Corporations in the UK.

- Nason D., (2020). 'Sustainable Investing' is Surging, Accounting for 33% of Total U.S. Assets Under Management. CNBC. Retrieved (30.01.2022) from: https://www.cnbc.com/2020/12/21/sustainable-investing-accounts-for-33percent-of-total-us-assets-under-management.html

- OECD. (2020). Financing SMEs and Entrepreneurs. An OECD Scoreboard. Retrieved (30.01.2022) from: https://www.oecd-ilibrary.org/

- Orlitzky, M., Schmidt, F., & Rynes, S. (2003). Corporate Social and Financial Performance: A Meta-Analysis. Organization Studies, 24, 403-411.

- Ortega, D. L., Wang, H. H., Wu, L., & Olynk, N. J. (2011). Modeling Heterogeneity in Consumer Preferences for Select Food Safety Attributes in China. Food Policy, 36, 318-324.

- Paelman, V., Van Cauwenberge, P., & Vander Bauwhede, H. (2020). Effect of B Corp Certification on Short-term growth: European Evidence. Sustainability, 12, 8459.

- Peprah, K. (2021). An Exploratory Analysis of B Corp Decertification. Doctoral dissertation, Creighton University.

- Plambeck, N. & Weber, K. (2009). CEO Ambivalence and Responses to Strategic Issues. Organization Science, 20, 993-1010.

- Podrecca, M., Orzes, G., Sartor, M., & Nassimbeni, G. (2021). The Impact of Abandoning Social Responsibility Certifications: Evidence from the Decertification of SA8000 Standard. International Journal of Operations & Production Management, 40, 100-126.

- Polterovich, V., & Popov, V. (2003). Accumulation of Foreign Exchange Reserves and Long-Term Growth. New Economic School, Moscow, Russia.

- Porter, M.E. & Van der Linde, C. (1995a). Toward a New Conception of Environment-Competitiveness Relationship. Journal of Economic Perspectives, 9, 97-118.

- Porter, M.E. & Van der Linde, C. (1995b). Green and Competitive: Ending the Stalemate. Harvard Business Review, 73, 120-134.

- Prachowny, M. F. (1993). Okun's Law: Theoretical Foundations and Revised Estimates. The Review of Economics and Statistics, 75, 331-336.

- Putnam Rankin, C., & Matthews, T. L. (2020). Patterns of B Corps Certification: The Role of Institutional, Economic, and Political Resources. Societies, 10, 72.

- Rodrik, D. (2008). The Real Exchange Rate and Economic Growth. Brookings Papers on Economic Activity, 2008, 365-412.

- Romi, A., Cook, K. A., & Dixon-Fowler, H. R. (2018). The Influence of Social Responsibility on Employee Productivity and Sales Growth: Evidence from Certified B Corps. Sustainability Accounting, Management and Policy Journal, 9, 392-421.

- Roper, S. (1999). Modelling Small Business Growth and Profitability. Small Business Economics, 13, 235-252.

- Sáenz Segura, F., & Zúñiga-Arias G. (2008). Assessment of the Effect of Fair Trade on Smallholder Producers in Costa Rica: a Comparative Study in the Coffee Sector. Wageningen Academic Publishers, Wageningen, The Netherlands, 117-135.

- SAI. (2020). SA8000 Certification Statistics. Retrieved (30.01.2022) from: www.saasaccreditation.org/certfacilitieslist

- Samuelson, P. (1964). Theoretical Notes on Trade Problems. Review of Economics and Statistics 46, 145-54.

- Santoro, M.A. (2003). Beyond Codes of Conduct and Monitoring: An Organizational Integrity Approach to Global Labor Practices. Human Rights Quarterly 25, 407–424.

- Sidrauski, M. (1967). Rational Choice and Patterns of Growth in a Monetary Economy. American Economic Review, 57, 534-544.

- Social Accountability International (2022). Audit Assurance. Retrieved (30.01.2022) from: https://sa-intl.org/services/assurance/

- Steiner, I. (2017). Etsy Gives Up B Corp Status to Maintain Corporate Structure. Retrieved (30.01.2022) from: https://www.ecommercebytes.com/2017/11/30/etsy-gives-b-corp-status-maintain-corporate-structure/

- Stock, J. H., & Watson, M.W. (1989). New Indexes of Coincident and Leading Economic Indicators. NBER Macroeconomics Annual, 4, 352–94.

- Tanner, B. (2000). Independent Assessment by Third-party Certification Bodies. Food Control, 11, 415–417.

- U.S. Department of Treasury. (2021). US International Reserve Position. Retrieved (30.01.2022) from: https://home.treasury.gov/data/us-international-reserve-position

- UN Security Council. (2002). Final Report of the Panel Experts on the Illegal Exploitation of Natural Resources and other Forms of Wealth of the Democratic Republic of Congo. United Nations, UNDP, Brussels.

- US CIF. (2020). Report on US Sustainable and Impact Investing Trends. US SIF Foundation, 13.

- Van Stel, A., Carree, M., & Thurik, R. (2005). The Effect of Entrepreneurial Activity on National Economic Growth. Small Business Economics, 24, 311–321.

- WBCSD. (1999). Corporate Social Responsibility, World Business Council for Sustainable Development.

- Winston, M. (2002). NGO Strategies for Promoting Corporate Social Responsibility. Ethics and International Affairs 16, 71–87.

- Wooldridge, J. M. (2009). Omitted Variable Bias: The Simple Case. Introductory Econometrics: A Modern Approach. Mason, OH: Cengage Learning, 89-93.

- World Bank Group. (2021). Inflation, Consumer Prices (Annual %) – United States. Retrieved (30.01.2022) from: https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=US
- Zimon, D., & Dellana, S. (2019). A Longitudinal Exploratory Study of ISO 9001 Certification Abandonment in Small-and Medium-sized Enterprises. International Journal of Quality and Reliability Management, 37, 53-67.

Appendices

- To see if the overall score variable is normally distributed, a density graph was conducted:

Figure 2: Density graph with BIA overall scores
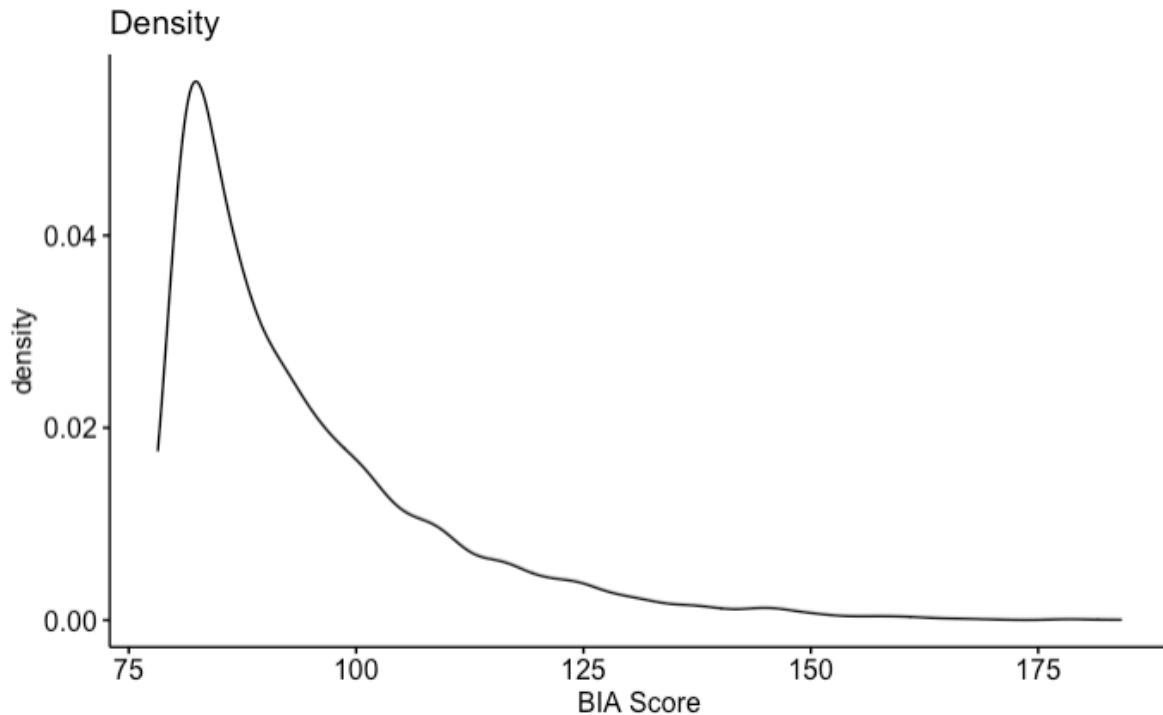
- **T-test results for all certified and decertified firms from R Studio output:**

```
2    t.test(my_data[certified == 0, overall_score] , my_data[certified ==
1, overall_score])
3      ##
##  Welch Two Sample t-test
##
## data:  my_data[certified == 0, overall_score] and my_data[certified ==
1, overall_score]
## t = 1.0028, df = 2329.8, p-value = 0.3161
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.4533269  1.4022217
## sample estimates:
## mean of x mean of y
##  94.63354  94.15910
4    t.test(impact_area_community ~ current_status, data = my_data,
        var.equal = TRUE, alternative = "less")
5      ##
##  Two Sample t-test
##
## data:  impact_area_community by current_status
```

```
## t = -13.399, df = 5649, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is less than 0
## 95 percent confidence interval:
##        -Inf -5.169287
## sample estimates:
##    mean in group certified mean in group de-certified
##                   27.48582                   33.37865
6     t.test(impact_area_customers ~ current_status, data = my_data,
         var.equal = TRUE, alternative = "less")
7       ##
##   Two Sample t-test
##
## data:  impact_area_customers by current_status
## t = -4.7321, df = 5318, p-value = 1.14e-06
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is less than 0
## 95 percent confidence interval:
##        -Inf -1.476387
## sample estimates:
##    mean in group certified mean in group de-certified
##                   13.09333                   15.35653
8     t.test(impact_area_environment ~ current_status, data = my_data,
         var.equal = TRUE, alternative = "greater")
9       ##
##   Two Sample t-test
##
## data:  impact_area_environment by current_status
## t = 1.7641, df = 5649, p-value = 0.03888
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is greater than 0
## 95 percent confidence interval:
##  0.04720025        Inf
## sample estimates:
##    mean in group certified mean in group de-certified
##                   17.60019                   16.90035
10    t.test(impact_area_governance ~ current_status, data = my_data,
         var.equal = TRUE, alternative = "greater")
11      ##
##   Two Sample t-test
##
## data:  impact_area_governance by current_status
## t = 15.807, df = 5649, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is greater than 0
## 95 percent confidence interval:
##  1.732886        Inf
## sample estimates:
##    mean in group certified mean in group de-certified
##                   13.92122                   11.98703
12    t.test(impact_area_workers ~ current_status, data = my_data,
         var.equal = TRUE, alternative = "greater")
13      ##
##   Two Sample t-test
```

```
##
## data:  impact_area_workers by current_status
## t = 19.86, df = 4964, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is greater than 0
## 95 percent confidence interval:
##  5.061936      Inf
## sample estimates:
##    mean in group certified mean in group de-certified
##                   25.75905                   20.23992
```

- **T-test results based on size categories from R Studio output:**

```
14    size0 <- subset(my_data, size== "0")
t.test(overall_score ~ current_status, data = size0, var.equal = TRUE)
15    ##
##   Two Sample t-test
##
## data:  overall_score by current_status
## t = -0.027571, df = 856, p-value = 0.978
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -2.096897  2.038803
## sample estimates:
##    mean in group certified mean in group de-certified
##                   95.53058                   95.55963
16    size1 <- subset(my_data,size == "1-9")
t.test(overall_score ~ current_status, data = size1, var.equal = TRUE)
17    ##
##   Two Sample t-test
##
## data:  overall_score by current_status
## t = 0.44581, df = 2066, p-value = 0.6558
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -1.037607  1.648154
## sample estimates:
##    mean in group certified mean in group de-certified
##                   94.04926                   93.74399
18    size2 <- subset(my_data, size == "10-49")
t.test(overall_score ~ current_status, data = size2, var.equal = TRUE)
19    ##
##   Two Sample t-test
##
## data:  overall_score by current_status
## t = -0.66372, df = 1717, p-value = 0.507
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -2.460870  1.216463
## sample estimates:
```

```
##      mean in group certified mean in group de-certified
##                    93.72354                    94.34574
20    size3 <- subset(my_data, size == "50-249")
t.test(overall_score ~ current_status, data = size3, var.equal = TRUE)
21    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -0.043312, df = 696, p-value = 0.9655
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -3.424553  3.276722
## sample estimates:
##      mean in group certified mean in group de-certified
##                    94.80942                    94.88333
22    size4 <- subset(my_data, size == "250-999")
t.test(overall_score ~ current_status, data = size4, var.equal = TRUE)
23    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -1.4412, df = 214, p-value = 0.151
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -12.102760   1.879463
## sample estimates:
##      mean in group certified mean in group de-certified
##                    92.95026                    98.06190
24    size5 <- subset(my_data, size == "1000+")
t.test(overall_score ~ current_status, data = size5, var.equal = TRUE)
25    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -2.3675, df = 81, p-value = 0.02029
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -44.603266  -3.867567
## sample estimates:
##      mean in group certified mean in group de-certified
##                    93.53125                   117.76667
```

- **Current status of B Corps in each country:**

AFRICA		
country	certified	de-certified
Benin	1	0
Burkina Faso	1	0

	certified	de-certified
Egypt	1	0
Ghana	1	1
Kenya	19	9
Mauritius	2	0
Mozambique	1	0
Nigeria	0	1
Rwanda	2	0
Senegal	3	0
Sierra Leone	1	0
South Africa	9	3
Tanzania	2	2
Uganda	6	1
Zambia	1	1
TOTAL	50	18

AMERICAS		
country	certified	de-certified
Argentina	119	27
Bahamas	0	1
Belize	1	0
Bolivia	2	0
Brazil	181	46
Chile	136	59
Colombia	60	21
Costa Rica	9	1
Dominican Republic	4	0
Ecuador	20	2
Guatemala	5	3
Haiti	1	0
Honduras	1	0
Mexico	53	12
Nicaragua	1	2
Panama	4	0
Paraguay	11	3
Peru	28	8
Puerto Rico	0	1
Uruguay	9	5
Venezuela	1	0
TOTAL	646	191

ASIA		
country	certified	de-certified
Afghanistan	0	1
Bangladesh	1	1
China	27	6
Cyprus	1	0
Hong Kong	14	3
India	8	5
Indonesia	3	2
Israel	2	13
Japan	8	1

Lebanon	0	1
Malaysia	1	0
Mongolia	0	1
Myanmar	1	0
Philippines	2	1
Singapore	15	2
South Korea	16	5
Taiwan	33	8
Thailand	3	1
Turkey	6	0
UAE	1	0
Vietnam	2	1
TOTAL	144	52

EUROPE		
country	certified	de-certified
Austria	3	2
Belgium	28	2
Bulgaria	0	1
Czech Republic	1	1
Denmark	38	2
Finland	3	0
France	151	10
Germany	41	12
Greece	1	0
Hungary	2	0
Iceland	1	0
Ireland	7	0
Italy	134	23
Luxembourg	4	1
Malta	0	1
Netherlands	126	28
Norway	5	1
Poland	4	1
Portugal	17	7
Russia	1	1
Serbia	1	0
Spain	88	19
Sweden	8	2
Switzerland	52	15
UK	590	54
TOTAL	1306	183

NORTH AMERICA		
country	certified	de-certified
Canada	323	138
USA	1418	721
TOTAL	1741	859

OCEANIA		
country	certified	de-certified
Australia	296	109
New Zealand	49	7
TOTAL	345	116

- **T-test results based on geography from R Studio output:**

```
26    brazil <- subset(my_data, country== "Brazil")
t.test(overall_score ~ current_status, data = brazil, var.equal = TRUE)
27    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -1.949, df = 225, p-value = 0.05254
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -9.93696304  0.05473868
## sample estimates:
##    mean in group certified mean in group de-certified
##                   94.27845                   99.21957
28    canada <- subset(my_data, country == "Canada")
t.test(overall_score ~ current_status, data = canada, var.equal = TRUE)
29    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = 1.6503, df = 459, p-value = 0.09957
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -0.4640849  5.3286428
## sample estimates:
##    mean in group certified mean in group de-certified
##                   96.70619                   94.27391
30    usa <- subset(my_data, country == "United States")
t.test(overall_score ~ current_status, data = usa, var.equal = TRUE)
31    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -0.013374, df = 2137, p-value = 0.9893
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -1.454541  1.434837
## sample estimates:
##    mean in group certified mean in group de-certified
##                   95.39556                   95.40541
32    uk <- subset(my_data, country == "United Kingdom")
t.test(overall_score ~ current_status, data = uk, var.equal = TRUE)
33    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = 0.37078, df = 642, p-value = 0.7109
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
```

```
##  -3.043966  4.461053
## sample estimates:
##    mean in group certified mean in group de-certified
##                   93.49373                   92.78519
34    aus <- subset(my_data, country == "Australia")
t.test(overall_score ~ current_status, data = aus, var.equal = TRUE)
35    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -0.13082, df = 403, p-value = 0.896
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -3.049055  2.668562
## sample estimates:
##    mean in group certified mean in group de-certified
##                   91.39966                   91.58991
36    nz <- subset(my_data, country == "New Zealand")
t.test(overall_score ~ current_status, data = nz, var.equal = TRUE)
37    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = 1.3384, df = 54, p-value = 0.1864
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -2.924057 14.666914
## sample estimates:
##    mean in group certified mean in group de-certified
##                   90.84286                   84.97143
38    africa <- subset(my_data, continent == "Africa")
t.test(overall_score ~ current_status, data = africa, var.equal = TRUE)
39    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -1.315, df = 66, p-value = 0.1931
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -20.910423   4.303756
## sample estimates:
##    mean in group certified mean in group de-certified
##                   101.4800                   109.7833
40    asia <- subset(my_data, continent == "Asia")
t.test(overall_score ~ current_status, data = asia, var.equal = TRUE)
41    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -1.9363, df = 194, p-value = 0.05428
## alternative hypothesis: true difference in means between group certifie
```

```
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -9.35386655  0.08602467
## sample estimates:
##    mean in group certified mean in group de-certified
##                   92.60069                   97.23462
42    americas <- subset(my_data, continent == "Americas")
americas <- americas[!(americas$country=="United States" | americas$countr
y=="Brazil" | americas$country=="Canada"),]
t.test(overall_score ~ current_status, data = americas, var.equal = TRUE)
43    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = 1.0412, df = 608, p-value = 0.2982
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -1.240991  4.041733
## sample estimates:
##    mean in group certified mean in group de-certified
##                   93.34796                   91.94759
44    europe <- subset(my_data, continent == "Europe")
europe <- europe[!(europe$country=="United Kingdom"),]
t.test(overall_score ~ current_status, data = europe, var.equal = TRUE)
45    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -0.014609, df = 843, p-value = 0.9883
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -2.602981  2.564518
## sample estimates:
##    mean in group certified mean in group de-certified
##                   92.77612                   92.79535
```

- **T-test results based on sector from R Studio output:**

```
46    agri <- subset(my_data, sector== "Agriculture/Growers")
t.test(overall_score ~ current_status, data = agri, var.equal = TRUE)
47    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -1.266, df = 148, p-value = 0.2075
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -10.196045   2.233186
## sample estimates:
##    mean in group certified mean in group de-certified
##                   95.67009                   99.65152
```

```
48    manu <- subset(my_data, sector== "Manufacturing")
t.test(overall_score ~ current_status, data = manu, var.equal = TRUE)
49    ##
## Two Sample t-test
##
## data: overall_score by current_status
## t = -1.0322, df = 718, p-value = 0.3023
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
## -4.454521 1.384509
## sample estimates:
##    mean in group certified mean in group de-certified
##                   93.22835                   94.76336
50    service <- subset(my_data, sector== "Service")
t.test(overall_score ~ current_status, data = service, var.equal = TRUE)
51    ##
## Two Sample t-test
##
## data: overall_score by current_status
## t = -0.93194, df = 13, p-value = 0.3684
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
## -18.700084 7.428655
## sample estimates:
##    mean in group certified mean in group de-certified
##                   90.75000                   96.38571
52    swm <- subset(my_data, sector== "Service with Minor Environmental Foo
tprint")
t.test(overall_score ~ current_status, data = swm, var.equal = TRUE)
53    ##
## Two Sample t-test
##
## data: overall_score by current_status
## t = 1.1712, df = 3159, p-value = 0.2416
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
## -0.4783019 1.8973623
## sample estimates:
##    mean in group certified mean in group de-certified
##                   95.20589                   94.49636
54    sws <- subset(my_data, sector== "Service with Significant Environment
al Footprint")
55    t.test(overall_score ~ current_status, data = sws, var.equal = TRUE)
56    ##
## Two Sample t-test
##
## data: overall_score by current_status
## t = -2.4881, df = 463, p-value = 0.01319
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
```

```
##  -7.9713430 -0.9361598
## sample estimates:
##    mean in group certified mean in group de-certified
##                  93.04821                  97.50196
57    retail <- subset(my_data, sector== "Wholesale/Retail")
t.test(overall_score ~ current_status, data = retail, var.equal = TRUE)
58    ##
##  Two Sample t-test
##
## data:  overall_score by current_status
## t = -1.2135, df = 1138, p-value = 0.2252
## alternative hypothesis: true difference in means between group certifie
d and group de-certified is not equal to 0
## 95 percent confidence interval:
##  -2.9581278  0.6972473
## sample estimates:
##    mean in group certified mean in group de-certified
##                  92.24651                  93.37695
```