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Towards a better model for intangible asset valuation

Samer Ajour El Zein

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Towards a Better Model for Intangible Asset Valuation

Samer Ajour El Zein

PhD Thesis directed by
Dr. Carolina Consolación

PhD Thesis co-directed by
Dr. Rúbén Huertas

Departament d'Organització d'Empreses
UNIVERSITAT POLITÈCNICA DE CATALUNYA - BARCELONATECH



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This thesis is presented as a compendium of the published articles in accordance with the regulations on official university courses defined by Royal Decree 99/2011 and applied to the doctoral degree courses offered at the Technical University of Catalonia. The references of publications, which are an integral part of the same line of research, as well as their quality indicators have been listed below:

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of Test Engineering and Management)
2. FIRM RISK: A RESPONSIBLE BUSINESS GUIDE CONTROL
TO BUILD BETTER BRAND EQUITY AND FIRM VALUE
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Abstract

Context: Intangible assets have recently come under the spotlight because of their growing importance within the business world. Finance, Accounting, Business Strategy and Economics are gradually understanding the importance of this category of intangible assets as a fundamental component of a company. In the augmenting offer of products and services, intellectual capitals are crucial drivers for investment decisions. Thus, Brand Equity, considered a strategic asset, makes up a substantial intangible asset for most companies and to maximize this asset, current research proposes various brand equity models. Furthermore, firms' behavior has changed with innovations incorporated in the development of businesses. Companies seek to optimize all the components of their value chain. And, a major source, is the intangible value referred to as brand equity that has so many behavioral drivers. An analysis of Brand Equity's internal and external determinants such as a firm's financial risk (second article), firm behavior (third article), ethical investments, and sustainability (fourth article) have been discussed in this thesis.

Objectives: To develop a new integrated valuation model and understand the factors that affect brand equity. This research explores, as well, some sources of brand equity from both internal and external perspectives at its behavioral and financial level to achieve a more accurate brand equity measurement approach. The factors we consider are firm risk, competitiveness, intellectual company weight, the weight of ethical and sustainable investments, governance dimensions of brand equity value and, in addition, the financial structure of the firms.

Method: The methodology used is exploratory and follows a deductive and inductive process. The method combines an exhaustive revision of literature to determine the most relevant factors as well as collecting financial information from a list of publicly traded companies of major brand values and generic companies in the United States of America and Europe (S&P500 & EUR600). Applying an eclectic statistical analysis using correlation and regression analysis on a model, it tests the variables that further explain brand equity and the composition of brand equity valuation model. This research also intends to understand the nature of intangible assets, to improve Damodaran's brand equity model as an important intangible asset, and aims to understand the factors that affect the brand equity from both internal and external perspective to contribute to both the firm and the society.

Results: The first article, *Understanding the Complexity of Intangible Assets* presents the main developments in intangible assets valuation, an exhaustive literature review and provides empirical evidence for the positive relationship between the increase in the proportion of intangible assets and the rise in market capitalization and sales.

The second article, *Financial Firm Risk: A Responsible Business Guide Control to Build Better Brand Equity and Company Value*, provides practitioners with a simple method to determine a more adjusted value to the reality of brand equity for a branded Company (without bias). As well as studying the factors related to the financial risk of the firm, the findings show that the less risk a company has, the higher their brand equity value is.

The third article, *Firm Behavior, an Engineering Tool for a Better Brand Value in all Sectors*, shows which are the main factors contributing to the improvement of brand value. The sectorial analysis states that corporate socially responsible practices, contribute significantly to improving the company's brand value.

The fourth article, *The Role of Sustainability in Brand Equity Value in the Financial Sector*, analyzes some determinants of brand equity in the financial sector (e.g., ethical investments, sustainability, and firm behavior) and, the results obtained raise awareness of the positive impacts of sustainable investments on the brand value in the financial sector.

Implications: The main contributions to the literature include both theoretical and methodological aspects created, as well as, considerations on intangible assets, the valuation model and behavioral factors. This thesis proposes a model and a methodology to find a fair value for a branded company by using the average sector as a generic item. It considers the performance factors that affect this intangible asset and aims for a better brand equity value. The results motivate practitioners to enhance their business models to minimize business risk and help managers take the initiative to bring about improved changes in the organization through more appropriate practices.

Resumen

Contexto: Los activos intangibles han estado bajo el foco de atención debido a la creciente importancia que está adquiriendo en el mundo de los negocios. Tanto finanzas, contabilidad, estrategia comercial y economía están asimilando cada vez más la importancia de este tipo de activos como un componente fundamental para la empresa. En el contexto de una oferta creciente de productos y servicios, los capitales intelectuales son factores cruciales para la toma de decisiones de inversión. Por lo tanto, la equidad de marca constituye un activo intangible sustancial para la mayoría de las empresas. Para intentar maximizar este activo, la investigación actual ha propuesto varios modelos de valoración de marca. Además, el comportamiento de las empresas ha cambiado con la incorporación de las innovaciones en el desarrollo de los negocios. Las empresas hoy en día buscan la optimización de toda su cadena de valor. Y una fuente importante de valor, es el valor intangible de la equidad de marca, que tiene muchos factores que afectan a su comportamiento. En esta tesis se discuten algunos factores determinantes como el riesgo financiero de la empresa (segundo artículo), el comportamiento de la empresa (tercer artículo), las inversiones éticas y la sostenibilidad (cuarto artículo), como fuentes internas y externas que determinan la equidad de la marca.

Objetivos: Desarrollar un nuevo modelo de estimación integrado y comprender los factores que afectan la equidad de marca. Esta investigación también explora algunas fuentes del valor de marca tanto desde perspectivas internas y externas como a nivel conductual y financiero para lograr un enfoque más preciso de medición de la equidad de marca. Los factores que se han considerado son: el riesgo de la empresa, la competitividad, el peso intelectual de la empresa, el peso de las inversiones éticas y sostenibles, las dimensiones de gobernanza del valor de marca y, además, la composición financiera de las empresas.

Metodología: La metodología utilizada es exploratoria y sigue un proceso deductivo e inductivo. La metodología combina una revisión de la literatura para determinar los factores más relevantes, así como la recopilación de información financiera de una lista de compañías que cotizan en bolsa de los principales valores de marca y empresas genéricas de Estados Unidos y Europa (S&P500 y EUR600). Se ha aplicado un análisis estadístico ecléctico usando análisis de correlación y regresión en un modelo, probando las variables que explican mejor la equidad de marca y la composición de elementos del modelo de valoración de la equidad de marca. Esta investigación intenta entender la naturaleza de los activos intangibles, con la intención de mejorar el modelo de Damodaran de valoración de marca, como activo intangible, y comprender los factores que afectan al valor de marca desde una perspectiva interna y externa para contribuir tanto a la empresa como a la sociedad.

Resultados: El primer artículo, *Understanding the Complexity of Intangible Assets*, presenta tanto los principales desarrollos en la valoración de activos intangibles como una revisión de la literatura sobre los mismos, además de proporcionar evidencia empírica sobre la relación positiva entre el aumento en la proporción de activos intangibles y el aumento de cotización en el mercado de capitales y las ventas.

El segundo artículo, *Financial Firm Risk: A Responsible Business Guide Control to Build Better Brand Equity and Company Value*, proporciona a los profesionales un método simple para determinar un valor más ajustado a la realidad de la equidad de marca de empresas con marcas relevantes (sin desviaciones). Además de estudiar los factores relacionados con el riesgo financiero de la empresa, los resultados muestran que cuanto menos riesgo tiene una empresa, mayor es el valor de marca.

El tercer artículo, *Firm Behavior, an Engineering Tool for a Better Brand Value in all Sectors*, muestra cuales son los factores que mas contribuyen a la mejora del valor de marca. El análisis sectorial indica que, las prácticas de responsabilidad social corporativa contribuyen significativamente, a la mejora del valor de marca de la compañía.

El cuarto artículo, *The Role of Sustainability in Brand Equity Value in the Financial Sector*, analiza los determinantes de la equidad de marca en el sector financiero (por ejemplo, inversiones éticas, sostenibilidad y comportamiento de la empresa) y, los resultados obtenidos apuntan y crean conciencia sobre los impactos positivos que tienen las inversiones sostenibles en el valor de marca en el sector financiero.

Implicaciones: Las principales contribuciones a la literatura incluyen tanto aspectos teóricos como metodológicos, así como consideraciones sobre los activos intangibles, el modelo de valoración y los factores de comportamiento. Esta tesis propone un modelo y una metodología para encontrar el valor razonable de la marca de la empresa, mediante el uso del promedio del sector como valor genérico de referencia. También considera los factores de rendimiento que afectan a este activo intangible y apuntan hacia una mejor valoración de la marca. Los resultados proporcionan motivos a los profesionales para mejorar sus modelos de negocio y minimizar el riesgo de empresa, y, además, ayudan a los directivos a tomar la iniciativa para lograr mejores cambios en la organización a través de prácticas más apropiadas.



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Glossary of Acronyms

EU	European Market
UK	United Kingdom
US	United States
USA	United States of America
SME	Small and Medium Sized
OLS	Ordinary Least Squared
GAAP	Generally Accepted Accounting Principles
GDP	Growth Domestic Product
LLC	Limited Liability Company
S&P	Standard and Poor's
R&D	Research and Development
FASB	Financial Accounting Standards Board
EV	Equity Value Integrated Moving
E/S	Equity/Sales
BICS	Bloomberg Industry Classification Systems
VIF	Variance Inflation Factor
BP	Breusch Pagan
ESG	Environmental, Social and Governance
CSR	Corporate Social Responsibility
UN	United Nations
ROA	Return on Assets
PER	Price to Earnings
ROS	Return on Stocks
ROI	Return on Investments
ROE	Return on Equity
ISS	Institutional Shareholder Service
SR	Sustainalytics Rank
CDP	Company Disclosure Performance
ETF	Exchange-traded funds



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P A R T



Report

Introduction

This thesis is about the use of intangible asset models and the contribution of these assets in the performance of the industry. The growing importance of investment in intangible assets for strategic innovation in leading companies makes the valuation of intangible assets a controversial issue for academics, practitioners, and policymakers. In particular, this research aims to analyze one of the intangible assets, the brand equity. Furthermore, it aspires to understand the factors that affect the brand equity and proposes a new integrated brand equity evaluation model. Besides, it explores the sources that generate brand equity, both from internal and external perspectives, that is, at the performance and financial level to achieve a more accurate brand equity measurement approach. These sources and factors could be firm risk, the weight of ethical and sustainable investments, governance dimensions of brand equity and financial composition of the firms. The effects on the brand value that integrate the performance factors create awareness in the industry, and the implementation is crucial to achieve a green brand intangible asset.

The thesis is built as an article compendium preceded by this introduction that presents the set of articles and closed by the conclusions and results derived from them.

Section 1.1 introduces the major topics of this thesis. In Section 1.2, the objectives are described by the articles. Finally, Section 1.3 sets out an outline of the thesis and the article compendium.

1.1. Intangibles, Brand Value, and the Society

Intangible Assets

Companies invest in Machinery, a tangible asset that can be physically touched and valued through the classical accounting rules to improve their productivity

and maintain their competitive advantage (Cohen, 2011). They also invest in license contracts, an intangible asset that cannot be physically touched but still has a value which is much more difficult to find and establish (Joia, 2000). The value of tangible assets is assigned based on the future benefits these assets are expected to yield (Laughton, Guerrero, & Lessard, 2008). But, on the other hand, the value of intangible assets is not so easy to assign because of the volatility attached to their future relevance (Choi, Kwon, & Lobo, 2000). This difference in criteria is because of the different nature of both assets. It is vital to understand that the main difference between an intangible and a tangible asset is the virtual perception assigned to it (Allee, 2008). For instance, two investors could assign different values to the same intangible asset because the virtual benefit delivered could be perceived differently (Axtle-Ortiz, 2013). Therefore, the subjective nature of intangible assets makes the valuation process more difficult and harder to standardize (Penman, 2009). An illustrative example of the differences in intangible asset valuation is the case of McDonald's brand. It is more expensive to acquire a McDonald's license in Kuwait compared to France (Hall, Jaffe, & Trajtenberg, 2005). The parent brand is the same, the service provided is the same, but there exists an extra benefit for customers that pushes this brand to be valued differently. Churchill describes this idea by stating that the critical element in the evaluation method is the lack of better measures of the variables assigned to intangible assets (Churchill, 1978). Although these assets receive a value, how this value is determined is not yet standardized for several reasons.

This topic is attracting significant attention from experts, and there is still an ongoing debate over its features, starting from its definition. For example, Anson and Drews identified intangible assets, which comprised items such as patents, trademarks, copyrights, brand names, logos, and other elements that constitute a firm's goodwill (Anson & Drews, 2007). Smith and Parr defined them as those elements of a business enterprise that exist in addition to capital, labor and tangible assets that allow a business to operate, and they can be the primary contributors to a firm's success and competitive advantage (Smith & Parr, 2000). This view is supported by the growing importance of innovative firms in the global market, not only from a global perspective but also from a financial perspective (Cañibano, Garcia-Ayuso, & Sanchez, 2000). Simply observing the trajectory of the giants such as Apple, Microsoft and Google, among others, explain how important intangible assets are for a company's profitability, future growth and sustainability. However, due to the very recent discovery of intangible assets from accounting, they are still challenging to deal with (Austin, 2007). In particular, how its accounting treatment should be is a major concern for both firms, academia and politics (Brennan & Connell, 2000). In some cases, intangible assets are considered as an expense while in other situations, they can be capitalized. Thus, it is still unclear how they should be treated. Bodie, Kane and Marcus addressed this issue by summarizing some of the most important accounting rules, related to valuation methods and how they apply to intangible assets according to the US GAAP (Bodie, Kane, & Marcus, 2003). Scholars like Lev (2003) mention the inability of these methods to convey the actual value of intangible assets.

For all these reasons noted above, we can see the need to shed light on the nature and classification of Intangible Assets (Gröjer, 2001). If the attempt is an approach to a model for valuation of intangibles, then we should be aware of the elements that constitute this measurement and the way they are classified (Hunter, Webster, & Wyatt, 2005). The problem is that there are numerous intangible assets without a standardized classification in accounting (Andriessen, Tissen, Tissen, & Frijlink, 2000) and without a concrete definition (Nichita, 2019) which creates an accumulated conflict of intangible asset determination. This makes it difficult to find a standard valuation method (Córcoles, 2010) and to achieve a standard result (Gelb, 2002). Ailawadi, Lehmann and Neslin (2003) defined the value of intangible assets as revenue premium with respect to a referent value, that is, the difference in the unit price or total revenue between a branded good and a benchmark good (i.e., a good with a retailer brand) (Ailawadi, Lehmann, & Neslin, 2003). In consequence, many researchers have been focusing on this topic to reveal a stronger relation between value- drivers, concept and hence the resultant value (Choi, Kwon, & Lobo, 2000). Roos and Roos (1997) studied the systematic visualization and measurement of different forms of intellectual capital and described it as the difference between a company's market value and its book value. On the one hand, the book value of an intangible asset is a valuation done internally and reflected in the accounting books of a company and, on the other hand, the market value is based on many factors which are summarized at the convergence between supply and demand. The last asset represents an estimate of the expected value gained from specific future cash flows. Besides, this expected value may vary between an investor and another (Khurana, Martin, & Pereira, 2006), since the factors that can be considered for their estimation are not standardized (Richardson, 2006). These weaknesses of the current models (Hussi, & Ahonen, 2002), together with the lack of transparency and consistency regarding the underlying assumptions, make the estimation of these values particularly vulnerable to manipulation and, thus, could lead to generating an unfair value (Barth & Schipper, 2008). From the academy, these weaknesses have been pointed out, and the need for more studies on the construction of asset valuation models is suggested (Matsuura, 2004). Due to the complexity of intangible assets, **the goal of this thesis is dual**. Firstly, to understand the nature of intangible assets and reviewing all the previous valuation models published in the literature. Secondly, proposing some models that could be standardized to estimate intangible assets models.

Brand Value

One of the intangible assets particularly valuable for companies and at the same time, very difficult to measure is Brand equity (Calder, 2019) which after the publication of the book "Managing Brand Equity" (Aaker, 1991) aroused great interest in determining better brand value. Brands are one of the most strategic assets of a firm, capable of obtaining a sustainable competitive advantage over competitors (Doyle, 2001). In addition, brand equity can be seen from different perspectives: from the consumer perspective, perception or behavioral value or from the financial perspective, revenue differential between a branded and a generic product (Atilgan, Aksoy, & Akinici, 2005). There is no consensus in the

literature on the meaning or how to measure a brand. Authors use both terms, brand equity and brand value indistinctly to do so (Wood, 2000; Feldwick, 1996, and Motameni & Shahrokhi, 1998). Thus, we use brand equity indistinctly to refer to a financial perspective.

Literature in this field investigates the nature and the strength of the relationship between consumers and brands (Farris, Shames, & Gregg, 2018). Since the brand value is from stated and revealed preferences by consumers towards a specific brand, that is, from subjective assessments, there is considerable skepticism in the literature about the possibility of reaching a brand value until the ontological and epistemological debate is closed (Abratt & Bick, 2003); (Beccacece, Borgonovo, & Reggiani, 2013); Fernandez, 2017). For example, the authors who consider a portfolio perspective suggest that brand equity can be measured by deducting the value of tangible assets from its total market capitalization (Farquhar, 1989), which is undoubtedly risky given that it does not take into account the presence of other intangible assets, such as knowledge capital, (Simon & Sullivan, 1993). Damodaran (2006) examined the four asset valuation models and proposed a taxonomy of approaches combining the variables used in the different models: *Discounted cash flow valuation*, based on future cash flows, *Liquidation and accounting valuation*, based on the book value of existing assets, *Relative valuation*, based on the pricing of asset comparisons such as earnings, cash flows, book value, or sales, and *Contingent claim valuation*, based on real options. Among all, the third approach of a "relative valuation" considers the use of a base value that serves as a benchmark for the evaluation of other assets. Although this approach requires the existence of consistency in prices, usually by expressing them into multiples of earnings, book values or sales, its greatest weakness is the difficulty in finding similar firms that allow comparison, since no two firms are totally alike. Companies in the same industry can have a different risk exposure, growth potential, cash flows and strategies, resulting in an inconsistent estimation of this asset value. Another perspective to address this estimation could be the future cash flow approach as this method relies on the expected market reaction and given the uncertainty of the future, this valuation could generate biased intangible asset valuation. They also depend on what investors expect: from an optimistic perspective, it could lead to an overvaluation, while from a pessimistic perspective, to an undervaluation of an intangible asset. Both values could be justified. However, it is not a suitable method when two different results can be obtained (Yasyshena & Pyliavets, 2019). In other words, the question of how to control these differences, having several firms of the industry in the model, becomes essential (Balmer & Gray, 2003). Although there is a margin of error in any valuation model, the lack of clearness and consistency regarding the available assumptions in these valuations of intangible assets makes them particularly exposed to decontrol and thus to the generation of a biased value (Sharma & Kaur, 2019).

Regarding the brand value components, Barth, Clement, Foster and Kasznik (1998) underlined prices, returns and some specific accounting variables such as those most positively related to brand value. In line with this proposal, Yandiev (2009) suggests that the difference between the return on equity and the depositary

receipt, reflected in a numerical value, can be used as an estimator of changes in brand value. Also, when analyzing customer behavior, they value brand equities by comparing them with other brands, either through market share (Cravens & Guilding, 1999) or price differences (Allard & Griffin, 2017). Both the analysis of consumer preferences regarding brands and the measurement of brand equity must be a relative measurement (Ambler, 1997).

Another vital element is the perception of uncertainty that different brands arouse. A larger brand image automatically generating greater brand recognition in the Equity Markets translates into a lower perceived risk against companies without brand recognition (Brown & Kapadia, 2007). The perceived risk has been linked to the relationship between the degree of customer satisfaction and the value of the shares, that is, greater stated customer satisfaction improves share's value and in turn reduces perceived risk (Gronholdt, Martensen, & Kristensen, 2000; (Singh & Pattanayak, 2014). Given the importance the Brand Equity represents for most companies (Gupta, Grant, & Melewar, 2008), there is a need to further investigate brand accounting (Günther & Kriegbaum-Kling, 2001).

Regarding the determinants of valuation of intangible assets, much of the current literature has highlighted the internal determinants, leaving aside the external determinants and their impact on the optimization of the value of these intangible assets. For example, the role played by share values and their respective volatility, as an important external determinant of brand equity, lacks in-deep research. In addition, Keller and Brexendorf (2019) also expressed a major concern in brand equity measurement, because it is based on the assumption that clients will carry on with their investment at the historical rate, without taking into account the full risk they assume. That is, although the relationship between brand capital stock and perceived risk has been shown (Belo, Lin, & Vitorino, 2014), cash flows are still discounted regardless of risk. This is because of the lack of a stable risk measure to reflect the value of intangible assets, such as brand equity (Beccacece, Borgonovo, & Reggiani, 2013).

Although in recent years sophisticated measures of volatility have been proposed to estimate volatility (Brownlees & Gallo, 2010), simpler ones may have similar performance, such as Parkinson's (Parkinson, 1980), who used the standard deviation of stock returns to measure equity-holder risk (Rego, Billett, & Morgan, 2009). Investors and managers evaluate potential investments in terms of risk and return (Modigliani & Leah, 1997). The positive effect that customer satisfaction has on brand equity (Torres & Tribó, 2011) and on return (Homburg, Klarmann, & Schmitt, 2010) and risk (Fornell, Rust, & Dekimpe, 2010), made Rego, Billett and Morgan suggest that managers should consider brand management as part of the firm's risk management strategy.

The mission of any firm is value creation or value appropriation, and, for this, strategies are designed and implemented. For example, Raggio and Leone (2009) presented the diverse drivers of long-term brand value, strategies for appropriating brand value, valuation methodologies and uses of brand valuation in practice. However, as Salinas and Ambler (2009) point out, there are several

methods to evaluate the results of the strategies developed. In fact, they analyze over twenty methods to evaluate brand value and classify them into four categories: Cost-based methods, Brand sale comparisons, Income-based methods and other methods. Trying to shed light on this system is so entangled that after an in-depth analysis, they consider that it is possible to develop a taxonomy with five essential criteria: “(1) Treatment of risk, (2) Determination of the income attributable to the brand, (3) Audience that the model addresses (corporate brand vs consumer brand), (4) Source, i.e. origin of the method, (5) The usage” (Salinas and Ambler 2009, p.12). Therefore, more research is needed to develop general measures of brand value and to understand better how to create value (Raggio & Leone, 2009). Also, given the intangible nature of brand value, there is a need to identify the factors that act as main drivers of its valuation and propose a method that can help to minimize biases in the measurement. Thus, to fill this gap in the literature, the **second goal** of this thesis is to propose an improvement in a model to assign a fair value of intangible assets and expand the literature by determining the important factors that affect brand value, such as the risk assumed by the firm.

Society

Investing in brand value was pointed out as a tactic to increase competitiveness (Vilanova, Lozano, & Arenas, 2009). In addition, sustainability and competitiveness are positively correlated (Lee & Ball, 2003). Building a competitive strategy with a sustainable approach will allow for improved business performance (Buono & Kerber, 2010). To make this possible, it is necessary to have sustainable business drivers (Bharadwaj, Varadarajan, & Fahy, 1993) that allow to build green brand value and, in turn, create a strategic position in the market (Amini, Darani, Afshani, & Amini, 2012). The recognition of this is not enough to achieve a long-term positioning, but it also requires proper management, as suggested by current conceptual models, for building and sustaining brand value (Perez-Batres, Miller, & Pisani, 2010). However, this becomes complicated when the main competitive determinants are still to be explored (Morgan & Rego, 2009).

Another corporate management instrument is the implementation of a corporate social responsibility policy. It is a governance tool (Harmon, Fairfield, & Behson, 2009) that, once implemented, encourages businesses to adopt it as a core tool (Germanova, 2008) and that becomes a core element of the corporate image (Kaplan & Norton, 2008). Therefore, it is advisable that business leaders adopt a corporate social responsibility policy for two essential reasons: firstly, the development of a competitive strategy based on responsible values will achieve a better brand value (Balmer & Gray, 1999) and, secondly, it is a sustainable strategy for differentiation (Sengupta, 2005).

Today, environmental sustainability has become a global political issue (Dabelko & Conca, 2019). The United Nations Framework Convention on Climate Change and its Kyoto Protocol exemplify this global concern and the degree of intergovernmental cooperation that has been achieved to address this problem

(Andonova, Betsill and Bulkeley, 2009). All this results from the enormous social pressure exerted by citizens of many nations to take measures to combat climate change, and, part of this pressure, has also reached companies (Garcia, Mendes-Da-Silva, & Orsato, 2019). In addition to environmental pressure, the economic impact suffered by citizens after the financial crisis in the US has also contributed to the establishment of a new set of theories on how to exercise corporate social responsibility (Kemper & Martin, 2010). However, due to the lack of generalization of these policies, it is still necessary to take into account the degree of implementation and responsibility of companies to adopt these governance criteria in their core business (Eberlein, 2019).

All transnational political and social pressure acts as a frame of reference and raise awareness of the need for a change in management criteria, where the danger of putting the brand value at risk may be the trigger for the adaption of new tools (Eberlein, Abbott, Black, Meidinger, & Wood, 2014). Brand Value has been explored from many perspectives. For example, Kamakura & Rusell (1993) who, based on scanner data, constructed two measures of brand value. The tangible value which measures the perceived quality after discounting the price paid and recent advertising exposures; and the intangible value which measures the value created by other factors, such as brand associations and perceptual distortions. Among the other perspectives, we highlight the quality associated with the geographical origin of production (Johansson & Nebenzahl, 1986), cultural and consumption value (Park & Rabolt, 2009), stockholder's value (De Mortanges, 2003), and social marketing (Hoeffler & Keller, 2002). The majority of those studies rely on the perception of the agents that participate in the brand market, which constitute a major limitation in interpreting the brand ontologically and epistemologically of each brand's value drivers (Fernandez, 2017). Thus, we propose to study the impact of environmental, social, and governance drivers can generate on the brand value, among 10 business sectors (Sanders & Wood, 2019). The **third goal** of this thesis proposes an analysis of Brand Equity determinants to test the impact of some internal and external factors on the brand equity value within each sector.

There are previous references in the literature that describe the relevance of sustainability measures within the business framework. In the last 30 years, companies have been incorporating the principles of sustainable corporate development, and this has become a fundamental organizational pillar (Bansal, 2005). As Porter and Kramer (2006) proposed, given that business strategies occur in a social context, companies must work to establish a new link between business and societies (Porter, & Kramer, 2006). For instance, in an investigation conducted in the 1990s, challenges were present for the supply chain managers who carried out environmentally sound management. They had to know consumers' attitudes, current legislation and link sustainable management with supplier evaluation, total quality management, efficient supply and collaborative supply strategies to achieve a balance between sustainability and profitability (Lamming & Hampson, 1996). The changes represented an investment in the sector, despite being forced by consumers' pressure who prefer sustainable products that generate a minimal environmental impact. This pushed companies

to consider the balance between sustainability and pragmatism, which, in turn, affected the brand equity of the whole sector (Giuntini, 1996).

Many authors have tried to find the effect of sustainability and corporate social responsibility on financial performance (Lenssen, Van den Berghe, Louche, Van de Velde, Vermeir, & Corten, 2005). Corporate Social Responsibility includes a company's social activities, demonstrating the inclusion of social and environmental concerns in business operations (Peloza, 2009). The idea that the only responsibility of a business is to increase its profits goes back to the 1970s (Friedman, 2007). At that time, companies in both the industrial and service sectors were more worried about possible indirect losses than indirect gains that could be generated by developing a corporate social responsibility policy (Vance, 1975). Since the late 1970s, researchers have observed a positive correlation between CSR and financial performance (Wang, 2011), which led them to extend their research during the following decade, showing that less-diversified businesses have better corporate social performance (Aupperle, Carroll, & Hatfield, 1985). On the other hand, at the beginning of 2000, it was demonstrated that the reaction of the capital market to CSR policies was linked to the amount of information disclosed (Richardson, Welker, & Hutchinson, 1999). Subsequently, as a result of the 2008 financial crisis, considerable researches studied how companies reacted to external challenges and have shown that large-capitalization firms have become less responsible (Høgevold, Svensson, Wagner, Petzer, Varela, ... & Ferro, 2014). Therefore, one of the challenges facing the firms of the financial sector is to change the way they interact with the environment (Cramer, 2002).

The United Nations (UN) (Ireton, Valido, & Ramirez, 2017) has been reporting sustainability indicators in the financial sector. Also, other private initiatives, such as the Asset Owners Disclosure Project, develop sustainability rankings of financial institutions that can help to promote transparency, especially if governments promote their use. Since it allows investors and other market agents to know the position of each company in the ranking, this affects its reputation. The UN is not the only international organization to highlight the importance of sustainable investments and to propose the use of indices to measure them. The European Commission (European Commission, 2018) also recently advised investors that they may increase their focus on environmental, social and governance indices during the investment process. Similarly, Jeucken (2010) not only suggested resorting to the use of legal and social incentives but also stressed the importance of resorting to price incentives, to internalize the cost of negative externalities on the environment to maximize the social welfare.

The development of new financial products in the banking sector is strongly correlated with the interest in facing social challenges (Kaufer, 2014). However, despite the vital relationship between financial management and sustainable development, some researchers point out the scarcity of research and, therefore, the need to expand the knowledge on these topics (Carolina Rezende de Carvalho Ferreira, Amorim Sobreiro, Kimura, & Luiz de Moraes Barboza, 2016). This advantageous knowledge could increase managers' awareness of the effects their

decisions have on society (Epstein & Roy, 2001). The management of the financial sector can generate both positive and negative external effects on society and its sustainable development, so there is a need to conduct research in this area to detect the positive impact (Wiek, & Weber, 2014) in respect to the factors influencing CSR performance (Weber, Diaz, & Schwegler, 2014). To fill this gap, the **fourth goal** of this thesis is to analyze the impact of the brand equity determinants, such as sustainability factors, in the financial sector.

1.2. Goals

The goals of this research are to develop a new integrated brand equity valuation model, as an intangible asset, and understand the factors that affect brand equity. This research explores the sources of brand equity from both internal and external perspectives, from both consumers and financial behavior, to achieve a more accurate brand equity measurement approach. Among the sources and factors of the brand equity we have considered the firm risk, weight of ethical and sustainable investments, and governance dimensions of firms. There are four goals in this thesis, and they are addressed within four articles.

Frist Goal

Given the ontological problem to achieve a specific definition of intangible assets and, epistemologically to achieve a standard accounting measure, there are so many classes of intangible assets, and this constitutes an aggregate conflict (Kaufmann, & Schneider, 2004; Nichita, 2019; Bodie, Kane, & Marcus, 2003). The consequences of this lack of standardization is a different result depending on the chosen method for its measurement (Wickerath, 2008). Other scholars, such as Lev (2003), also mention the inability to convey the actual value of intangible assets (Lev, 2003). Therefore, further studies on asset valuation models are necessary (Matsuura, 2004). Due to the need for understanding the complex nature of intangible assets, the **first goal** of this thesis is to review all existing valuation models and provide reasons to continue looking for standardized models for intangible assets.

Thus, article 1, **Understanding the Complexity of Intangible Assets** has the following objectives to accomplish the first goal:

- To review the literature of intangible assets with bibliometric measures.
- To determine the relationship between intangible assets, market capitalization, sales, and price-per-earnings ratio and, to check their effect on a firm's valuation.

The propositions presented in article one to accomplish the first goal are:

- P1:** There is a relationship between the increase in the proportion of intangible assets and the increase in market capitalization and sales.
- P2:** An increase in intangible assets has an impact on price-per-earnings ratio.

Findings of Paper 1 support the first proposition P1 but do not support the second proposition P2.

Those results accomplish the first goal of this thesis, presenting the main developments in intangible assets valuation models and providing empirical evidence on the influence of intangible assets on investors' decisions and firm valuation.

Second Goal

After accomplishing the first goal, we found in the literature that one intangible asset being particularly valuable to companies and very difficult to measure is Brand equity (Calder, 2019). Specifically, since the publication of the book "Managing Brand Equity" (Aaker, 1991), the interest of determining a better brand value has increased enormously. For example, Damodaran (2006) conducted an in-depth analysis of four relative asset valuation models and, in particular, focused on analyzing the use of multiples and comparison criteria for their evaluation. In addition, he studied whether relative valuation models produce more accurate estimates of assets than those models that use discounted cash flow as a valuation criterion, the results were puzzling, which caused great concern in the usage of these models (Damodaran, 2006).

Although there is a margin of error in any valuation model, the lack of clearness and consistency in assumptions and components that must be used in these valuations of intangible assets makes them particularly exposed to decontrol and result in biased or unfair values (Sharma & Kaur, 2019). Given the importance of Brand Equity for most companies (Gupta, Grant, & Melewar, 2008), it is necessary to further investigate how to measure and account the brand value (Günther & Kriegbaum-Kling, 2001). Current literature reviews are very focused on internal determinants of the intangible asset valuation, but it is also necessary to shed light on the external determinants and their effect on estimating the value of intangible assets. Raggio & Leone (2009) propose to differentiate between actions aimed to create value with those of appropriate value. While it is evident that the value must be created before it is appropriated, research shows that the stock market reward further increases the appropriation of value over the creation of value. Therefore, it is necessary to understand the various drivers of long-term brand value creation, the appropriation strategies, the methodologies and uses of brand valuation in practice (Raggio & Leone, 2009). As such, given the importance of intangible assets for the building of brand value, there is a need to analyze further and identify the factors that act as the main drivers of their valuation and, at the same time, to derive a methodology that can help to minimize possible biases in the measurement of brand value. To fill this gap, the **second goal** of this thesis is to intend to propose an improvement in the current model. This is to assign a more adjusted value to the reality of brand equity and expand the literature by determining the important factors that affect brand value, such as firm risk.

Thus, Article 2, **Financial Firm Risk: A Responsible Business Guide Control to Build Better Brand Equity and Company Value**, has the

following objectives to accomplish the second goal:

- Intend to improve an existing model that can be used to determine fair value (without bias) for a branded company.
- To show that the firm's financial risk directly impacts brand equity value.

The propositions presented in article two to accomplish the second goal of this thesis are:

P3: The use of average data from the industrial sector, as a proxy of the Generic Company in Damodaran's comparative model, allows a satisfactory reduction in some arbitrariness, sometimes hidden in many models. Thus, the dependent variable of brand equity is based on The Bloomberg Industry Classification Systems (BICS), and this approach represents an improvement in the literature.

P4: There a significant negative relation between brand equity and risk factor.

The results of Article 2 support propositions P3, and P4.

Those results accomplish the second goal of this thesis, by aiming to improve Damodaran's model to provide practitioners with a simple method that can be used to determine a fair value for a branded company, as well as expanding the literature in determining the important factors that affect brand value, such as a firm's financial risk.

Third Goal

After accomplishing the second goal, we found in the literature that sustainability is a global political issue (Dabelko & Conca, 2019) resulting in a shift towards the emergence and application of policies aimed at fighting climate-change in companies (Garcia, Mendes-Da-Silva, & Orsato, 2019). There is a need to study the impact of environmental, social and governance drivers on the brand value among each of the 10 business sectors (Sanders & Wood, 2019). To fill this gap, the **third goal** of this thesis proposes an analysis of Brand Equity determinants and to test the impact of some internal and external factors on the creation of brand equity in each sector.

Thus Article 3, **Firm Behavior, an Engineering Business Tool for a better Brand Equity**, to accomplish the third goal has the following objectives:

- To analyze brand equity determinants and compare them in each of the 10 sectors.
- To raise awareness of the positive impacts of the firm behavior in brand equity with a sectoral analysis.

The proposition presented in article three to accomplish the third goal of this thesis is:

P5: There is a positive relationship between firm behavior and the creation of brand equity, and, besides, this varies between the various sectors.

The results of Article 3 support P5.

Those results accomplish the third goal of this thesis by analyzing brand equity determinants and comparing them in each of the 10 sectors. In addition, it contributes to raising awareness of the positive impacts of the firm behavior in the brand equity, which varies among the sector but still provides a win-win scenario in enhancing business models with corporate social responsibilities practices.

Fourth Goal

After accomplishing the third goal of this thesis, we found that the United Nations (UN) (Ireton, Valido, & Ramirez, 2017) are preparing reports with indicators of the degree of sustainability of companies in the financial sector. The publication of these indices could increase managers' awareness of the relationship between society and the firm when making their decisions (Epstein & Roy, 2001). The financial sector contributes, both positively and negatively, to sustainable development, so there is a need to conduct research in this area to highlight the elements that contribute the most to the positive effect (Wiek, & Weber, 2014). Despite the fact that sustainable awareness is growth in the financial sector (Dubauskas, 2012), further research is needed on the factors that most influence CSR performance (Weber, Diaz, & Schwegler, 2014). To fill in this gap, the **fourth goal** of this thesis is to analyze the impact of certain determinants, such as sustainability factors in the financial sector, on brand value.

Thus, Article 4, **The Role of Sustainability in Brand Equity Value in the Financial Sector**, has the following objective:

- To examine the relationships between sustainability scores or diversity measures and firms' valuation in the financial sector.
- To raise awareness of the new channels of social investments, in the financial sector, to achieve a green brand.

The proposition presented in article four to accomplish the fourth goal of this thesis is:

P6: There is a positive relationship between the weight of ethical and sustainable investments and the value that brand equity achieves in the financial sector.

The results of Article 4 support P6.

Those results accomplish the fourth objective of the thesis by analyzing brand equity determinants in the financial sector (e.g., ethical investments, sustainability, and firm behavior) and by raising awareness of the positive impacts of sustainable investments in the financial sector.

As a result, the four goals in this thesis and their accomplishments help to develop a new integrated brand equity valuation model and understand the factors that affect brand equity.

This research explores the sources of brand equity from both internal and external at the behavioral and financial level to achieve a more accurate brand equity measurement approach. Such sources and factors are firm risks, the weight of ethical and sustainable investments, governance dimensions of brand equity valuation and the financial composition of the firms. There are four goals in this thesis, and they are accomplished by four articles.

1.3. Thesis Outline

The results of the present investigation are comprised of four published papers in several journals. They are divided into goals, as shown in Section 1.2. It is important to point out that the results of the thesis are presented in the two blocks. Papers composing Chapter 2, Chapter 3, Chapter 4, and Chapter 5, respectively. The conclusions composing Chapter 6 are derived from the papers, including the global results and future lines of research.

Block I: Literature Review of Intangible Assets

1. UNDERSTANDING THE COMPLEXITY OF INTANGIBLE ASSETS
(2020, Test Engineering & Management, vol 82, Pages 16522-16532
| Published: 2020-02-28, printed publication)
Scopus Q4, SJR (1999): Impact Factor 0,1, Q4, Management Testing:
2011-ongoing. ISSN 01934120. H Index: 5

Block II: Application of Intangible

2. FIRM RIRK: A RESPONSIBLE BUSINESS GUIDE CONTROL
TO BUILD BETTER BRAND EQUITY AND FIRM VALUE
(2020, Journal of Advanced Research in Dynamical and Control
Systems, vol 12 (2), 1474- 1487 | Published: 2020-04-10, online publication)
DOI: 10.5373/JARDCS/V12I2/S20201188
Scopus Q4, SJR (2018): Impact Factor 0,11, ISSN 1943023X. H Index: 5
3. FIRM BEHAVIOR, AN ENGINEERING BUSINESS TOOL
FOR A BETTER BRAND VALUE IN ALL SECTORS
(2020, Test Engineering & Management, vol 82, 7169 - 7178 |
Published: 2020-02-03, printed publication)
Scopus Q4, SJR (1999): Impact Factor 0,1, Q4, Management Testing:
2011-ongoing. ISSN 01934120. H Index: 5
4. THE ROLE OF SUSTAINABILITY IN BRAND EQUITY
VALUE IN THE FINANCIAL SECTOR
(2020, Sustainability, vol 12 (12), 254 | Published: 2019-12-27, online publication)
DOI: <https://doi.org/10.3390/su12010254>
JCR category rank: 105/250 (Q2) with Impact factor: 2,592:
2009-ongoing. ISSN 2071-1050. H Index: 53

Table1.1. Summary of the Inputs and Outputs

Inputs	Chapter	Outputs
<ul style="list-style-type: none"> ✓ Bibliometric review of the current literature. ✓ To analyze the relationship between intangible assets, market capitalization, sales and price-earnings ratio. 	<p>Chapter 2</p>	<ul style="list-style-type: none"> ✓ Summary of current literature on intangible assets and valuation models. ✓ An increase in intangible assets increases market capitalization and sales but has no significant impact on price-per-earnings ratio. ✓ Intangible assets valuation might affect firm's valuation and, therefore, there is a need of a framework to assign a value for the intangible assets.
<ul style="list-style-type: none"> ✓ Model testing to offer a fair value for brand value and offer an improvement in an existing model. ✓ To check on the financial risk impacts on brand equity value. 	<p>Chapter 3</p>	<ul style="list-style-type: none"> ✓ An improvement to Damodaran's current model offered to practitioners. ✓ The firm's financial risk negatively impacts brand equity value.
<ul style="list-style-type: none"> ✓ To analyze brand equity determinants and compare them in each of the 10 sectors. 	<p>Chapter 4</p>	<ul style="list-style-type: none"> ✓ The firm's behavior positively impacts the value of brand equity that varies among the 10 sectors.
<ul style="list-style-type: none"> ✓ To examine the relationships between elements such as sustainability scores or diversity measures and firms' valuation in the financial sector. 	<p>Chapter 5</p>	<ul style="list-style-type: none"> ✓ There is a positive relationship between the weight of ethical and sustainability investments and the value of brand equity in the financial sector. ✓ The new channels of social investments in the financial sector to offer a green brand.

P A R T 

Published Articles

Understanding the Complexity of Intangible Assets

Samer Ajour El Zein^{1,*}, Carolina Consolacion-Segura² and Ruben Huertas-Garcia³

¹School of Business Administration, Technical University of Catalonia, Barcelona
C. Jordi Girona 1-3, 08034 Barcelona, Spain

²School of Telecommunications Engineering, Technical University of Catalonia, Barcelona
C. Jordi Girona 1-3, 08034 Barcelona, Spain; Carolina.consolacion@upc.edu

³Economics and Business Administration Department, University of Barcelona,
Avenida diagonal 690, 08034 Barcelona, Spain; rhuertas@ub.edu

*Correspondence: samer.ajour@upc.edu

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Abstract:

The growing importance of strategic innovation in connection to the development of leading companies heavily investing in intangible assets makes intangible asset valuation a delicate issue for academics, practitioners, and policy makers. Yet, there is still no common and standardized method to value intangible assets. This paper presents the main developments in intangible assets valuation and provides empirical evidence on the influence of intangible assets on investor decisions and firm valuation. In particular, this paper analyses the relationship between intangible assets, market capitalization, sales and price-earnings ratio. It uses an OLS and Fixed Effects approach and finds evidence that an increase in intangible assets increases market capitalization and sales, but has no significant impact on price-per-earnings ratio. The results suggest that intangible assets valuation might affect firm's valuation and, therefore, there is a need of a framework to assign a value for the intangible assets.

Keywords:

Brand Valuation, Intangible Assets, Valuation Models

2.1. Introduction

Companies invest in Machinery, a tangible asset that can be physically touched and valued through the classical accounting rules (Cohen, 2011). At the same time, they also invest in license contracts, an intangible asset that can't be physically touched but still has a value which is much more difficult to find and establish (Joia, 2000). Tangible assets' values are assigned based on the future benefits these assets yields (Laughton, Guerrero, & Lessard, 2008). Intangible assets instead are not that easy to value because of the volatility assigned to their future relevance (Choi, Kwon, & Lobo, 2000). This is because the nature of this asset is different. It is key to understand that the main difference between an intangible asset and a tangible asset is the virtual perception assigned to it (Allee, 2008). For instance, two investors would assign different values to the same intangible asset because there exists a virtual benefit delivered that is perceived differently (Axtle-Ortiz, 2013). Therefore, the subjective nature of intangible assets makes the valuation process more difficult and harder to standardize (Penman, 2009). An illustrative example of the differences in intangible asset valuation is the case of McDonalds. It is more expensive to acquire the license of McDonalds in Kuwait compared to France (Hall, Jaffe, & Trajtenberg, 2005). The parent company is the same, the service provided is the same but there exists an extra benefit to the final users that pushes this brand to be valued differently. Churchill (Churchill, 1978) describes this idea stating that the critical element in the evaluation is the lack of better measures of the variables assigned to intangible assets. Although such assets receive a value, the way this value is determined is not yet standardized due to several reasons. The purpose of the paper is to provide an evidence of the need of a framework to assign a value for the intangible assets. Previous literature provides empirical evidence on how tangible book value is diverging from the market value (Egginton, 1990). This paper shows that there exists a positive relationship between intangible assets and market capitalization, giving some insights that intangible assets might have been a factor in causing the gap between tangible book value and market value (Barth & Clinch, 1998).

The paper is organized as follows: Section 2 exposes the main issues that intangible assets valuation face throughout literature review. Section 3 describes the panel of US firms analysed in this work and presents an econometric analysis and finds evidence that intangible assets affects firm value. Section 4 concludes.

2.2. Literature Review

Intangible assets have been under the spotlight because of their growing importance within the business world (Kaplan & Norton, 2004). In fact, innovation, which seems to be the key word in today's business, cannot be separated from the concept of intangible assets because they represent the intellectual capital of a firm as well as its potential growth through innovation (Jarboe & Ellis, 2010). Even if this topic is catching significantly the attention of several experts, there

is still an ongoing debate referring to its features starting from its definition (Wyatt, 2005). For example, Anson (Anson, 2007) refers to intangible assets as those assets including patents, trademarks, copyrights, brand names, logos, and other elements that constitute the firm's goodwill. Smith and Parr (Smith & Parr, 1994) define intangible assets as those elements of a business enterprise that exist in addition to working capital and tangible assets. Therefore, intangible assets according to Smith and Parr are those elements along with working capital and tangible assets that allow businesses to operate and can be the primary contributors to a firm's success factors and competitive advantage. This view is supported by the growing importance of innovative firms in the global market, not only from a global perspective, but also from a financial perspective (Cañibano, Garcia-Ayuso, & Sanchez, 2000). Simply looking at giants, such as Apple, Microsoft and Google among others, explains how important intangible assets are for a company's profitability, future growth and sustainability. However, due to the very recent discovery of intangible assets from an accounting perspective (Austin, 2007), and their nature, they are still very difficult to deal with. In particular, their treatment is a major concern for firms as well as the academic and policy world (Brennan & Connell, 2000). In some cases, intangible assets are considered as an expense while in other situations they can be capitalized. Thus, it is still not yet clear how they should be treated. Bodie, Kane, and Marcus try to address this issue by summarizing some of the most important accounting rules related to valuation and how they apply to intangible assets according to the US GAAP (Bodie, Kane, & Marcus, 2003). Other outstanding scholars such as Lev (Lev, 2003) mention the inability of these methods to convey the actual value of intangible assets.

Following data from The Conference Board (Erumban & De Vries, 2016), investment in intangible assets, measured as % of GDP, has been steadily growing since the Second World War and it has even surpassed investment on tangible assets on recent years. However, these investments remain largely invisible in financial statements (they are reported in the income statements) and firms carry some intangible assets in their balance sheet (Barth & Beaver, 1996), but not all of them (Adams & Oleksak, 2010). At the same time, as we can observe in Figure 1, the book value of tangible assets and market value of firms have been diverging (Hirschey, 1985), especially since 1985, with intangible assets being a key factor in explaining the gap. The methodology followed by Ocean Tomo LLC (Barney, McHardy, Hartstein, & Ramer, 2007) is to decompose the market value of a firm in tangible and intangible assets. The procedure is as follows: First, they calculate the tangible book value; then, if market capitalization is above the tangible book value, they assign this difference to intangible assets and call it Intangible Asset Market Value (Elsten & Hill, 2017). It is as if the market agents were valuing the intangible assets by themselves, but this approach remains quite problematic (Ballester, Garcia-Ayuso, & Livnat, 2003). Both the increasing investment in intangible assets and the divergence between tangible assets and market capitalization gives a good view of the growing importance of intangible assets and highlights the need for a standardized method to value them (Hagelin, 2002).

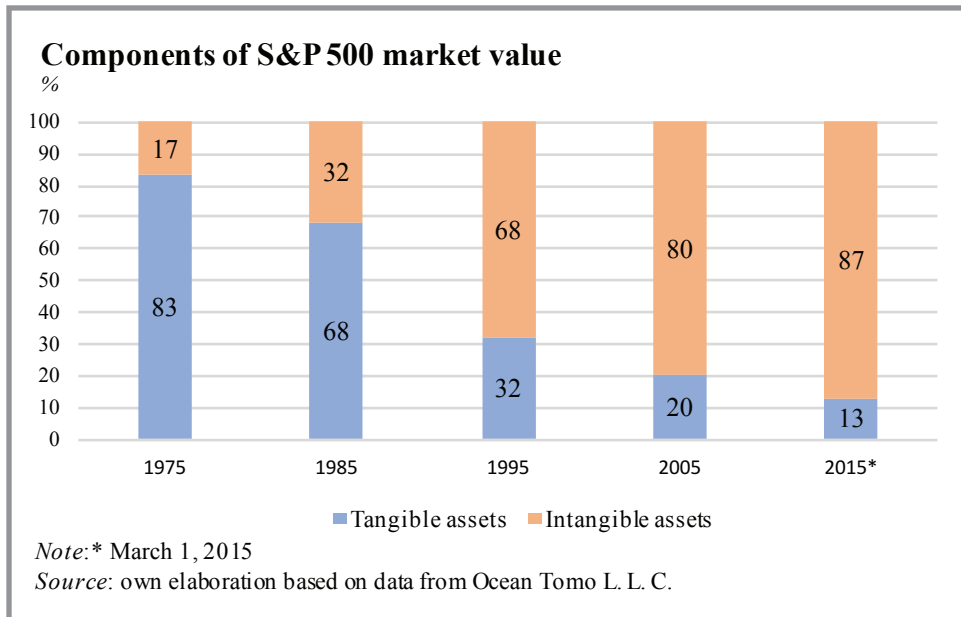


Figure 2.1. Components of S&P500 Market Value

However, it is always difficult to derive what is the part of the cash flow attributable to intangible assets. Even when applying the most known valuation techniques in the private industry, there is still no exact technical way to evaluate intangibles (Leitner, 2005). In a way, fair value accounting provided some extra tools to deal with this issue, but still most of the intangible assets do not have market value (Chalmers, Clinch, & Godfrey, 2008), hence the same challenge keeps playing its role. There is a notable exception to this in the case of companies acquiring other firms: according to the US legislation, the purchaser has to record on its balance sheet the full value of the acquired company (Rodov & Leliaert, 2002). In this way, even if the firm that is bought did not record any intangible assets, these will then show up in the new consolidated accounts, albeit not with a detailed breakdown and not fully differentiated from goodwill (Johnson & Petron, 1998). Another major concern surrounding the intangible capital or intangible assets literature is the complexity of splitting them from their physical side (Bontis, Bart, Wakefield, & Kristandl, 2007). There are several studies addressing this issue. For example, Basu and Waymire (Basu & Waymire, 2008) do not believe that tangible and intangible assets can be split. One reason for their argument is that a firm gets value out of an intangible only if this asset is produced and commercialized. Moreover, another stream of thought represented, for instance, Marr (Marr, 2007) considers that some kind of intangible assets are too complex to evaluate simply because they can be seen as public goods belonging to the society, such as education and human skills in general.

Another of the key aspects in reference to the valuation of intangible assets is the impact they have on the macroeconomy. Corrado, Hulten, and Siche discuss the impact of R&D expenses not only for the firm implementing them but also for the macroeconomic system as a whole (Corrado, Hulten, & Sichel, 2005). In summary, their point of view is that the treatment of R&D investments might

affect differently the economy depending on how they are valued. If they are simply treated as expenses, then their contribution to the economic growth in terms of GDP is underestimated; however, if they are capitalized, their impact on the economy is taken into account. In addition, they believe that it is possible to see their value not only from a firm point of view, but also from a macroeconomic perspective.

After briefly seeing and understanding how the valuation of intangible assets can be relevant from different perspectives, let us take a step back to understand more thoroughly what intangible assets actually are and how can we classify them. Walker (Walker, 2009) states that it is difficult to find any stated purpose for classification in many papers dealing with intangible assets. At the same time, for internal purposes management needs to evaluate its assets including intangibles and, to do so, they require a formal classification of them. Lev (Lev, 2004) classifies intangible assets and intellectual capital in four main categories:

1. Discovery/learning; ex: R&D
2. Customer-related; ex: brands, trademarks, distribution channels
3. Human-resource; ex: education, training and compensation systems
4. Organization capital; structural organization design, business processes, unique corporate culture

Other authors prefer to divide intangible assets into different categories. For instance, Kaufmann and Schneider (Kaufmann & Schneider, 2004) divide intangible assets into three categories based on the object these assets are related to: Human Capital when related to employees; Organizational Capital when related to internal structure and processes; Customer Capital when related to customers.

By simply looking at the two different classifications above, it is relatively easy to understand the complexity of the issue that arises when dealing with intangible assets, their nature and contribution. Luckily, if one is interested in the pure regulatory classification of them, it is possible to rely on the Financial Accounting Standards Board (FASB), (Powell, 2003) which classified these categories of assets as follows:

- Technology-based Assets
- Customer-based Assets
- Market-based Assets
- Workforce-based Assets
- Contract-based Assets
- Organization-based Assets
- Statutory-based Assets

Even if there is a formal classification of intellectual capital, this classification does not always hold true when dealing with managerial decisions (Trigeorgris, 2005)

simply because the valuation and employment of assets depend heavily on their nature and purpose. The problem arises because the purpose of the asset might be assessed or reassessed after its acquisition depending on the performance (St-Pierre & Audet, 2011). This is a perfect introduction for another major problem companies and their managers face when dealing with intellectual capital and the way it can be regulated, as market participants can face increased trouble if definitions and standards are not harmonised and well-understood (Zambon, Lev, Abernethy, Wyatt, Bianchi, Labory, & Del Bello, 2003). The complexity of the issue for standards setters is demonstrated through the investigation conducted by Stolowy and Jeny-Cazavan (Stolowy & Jeny-Cazavan, 2001) that showed a considerable lack of consistency among 21 national and 2 international standard setters. The study of intangible assets' definition and recognition criteria in 23 national and international standards demonstrated the absence of any common framework of classification. According to them, this inconsistency is the result of each country treating the same intangible asset in several different ways depending on the business situation. Consequently, intellectual capital might have a significant influence on policy decisions (Brüggen, Vergauwen, & Dao, 2009). In fact, whether intangible assets should be capitalized or not, their importance relative to investor's decisions, and all other issues discussed above, clearly pose more than one question to policymakers. For this reason, policymakers should make sure that investors perceive the best information both in terms of quality and in terms of quantity so that they can make the best investment decisions. At the same time, we discussed how relevant and delicate this information could be for internal managerial decisions (Sacui & Szatmary, 2015). Some studies try to help policy decisions identifying how information about intangible assets might affect stocks' returns. For instance, Wyatt (Wyatt, 2008) addresses the issue of how some of the most relevant intangible assets of a firm affect financial performance. He investigates items such as R&D, human capital and organizational capital. Furthermore, his analysis assumes that investors use accounting information in order to make investment decisions, and this cannot be totally proved for all cases. As many other assumptions, the latter is very difficult to prove even if it logically makes sense. Basu and Waymire (Basu & Waymire, 2008) express another very interesting point of view related to the relevance of intangible capital information from a financial perspective. In particular, they state that abnormal returns can be explained by other relevant factors such as changes in regulations or other kind of government interventions (Jansen, & Tsai, 2010). Therefore, a simple correlation between investment in intangible assets and returns cannot be used as a strong proxy for their value relevance, as it might be biased by different policies.

The last section of this paper is related with the financial and accounting approach towards intangibles. However, as discussed at the beginning of this paper, the importance of intellectual capital is spread over all divisions of a business. For example, marketing and branding (Bayon, Gutsche, & Bauer, 2002) are very much interrelated when we think of branding as an intangible asset. From a strategic perspective, to value the competitive advantage of a firm, especially when dealing with high tech innovation focused firms, the strategic valuation of intangibles

becomes a key point (Clemons & Weber, 1990). Even from an economic/industrial organization perspective, when talking about competition and economies of scale, intangible assets might play a key role (Teece, 1998).

In consequence, many researchers have been focusing on this topic to reveal a stronger relation between value drivers, concept and henceforth value. Montaña and Nomen (Montaña & Nomen, 2007) ran many studies focusing on the value of companies' intellectual capital. From a financial perspective, the valuation of intangible assets is complex as well due to the various ways they can be classified (Corcoles, 2010). Roos and Roos studied the systematic visualization and measurement of the different forms of intellectual capital and described it as the difference between a company's market value and its book value (Roos & Roos, 1997). From one side, the book value of an intangible asset is a valuation approach done internally reflected in the accounting books of a company and from another side, the market value is based on so many factors and participants summarized as supply and demand. They assume that they should base the valuation on certain cash flows that this asset can provide in the future. The estimation of the future cash flows depends on factors such as the kind of asset, its usage or its lifetime, among others. This means that these cash flows can vary between one investor (Khurana, Martin, & Pereira, 2006) and another since the factors affecting their estimation are not standardized (Richardson, 2006). This is the main weakness of this model. Thus, on one hand, a standard critique of this particular valuation model is that it fails to account for the factors affecting those cash flows that are subsequently discounted to the present, and on the other hand, they are highly descriptive and inconsistent.

Academics realized there was a recognition of the need of further studies on the asset valuation models (Matsuura, 2004) to apply on the intangible assets due to the improper classification addressed above that in turns led to an unfair value. Consequently, Damodaran (Damodaran, 2007) examined the four asset valuation models focusing on one or several factors to add on to the previous researchers' findings with the intention of addressing various approaches. The four approaches are:

1. Discounted cash flow valuation, based on future cash flows
2. Liquidation and accounting valuation, based on book value of existing assets
3. Relative valuation, based on pricing of asset comparisons such as earnings, cash flows, book value or sales
4. Contingent claim valuation, based on real option

As previously stated regarding the first two approaches addressed before, the third one, with a "relative valuation", is based on a comparative methodology. A major factor addressed by Damodaran is that prices have to be standardized, usually by converting them into multiples of earnings, book values or sales. However, a major element neglected in his research is to keep in mind the need of finding similar firms, which is difficult to do since no two firms are identical and

firms in the same business can still differ on factors such as risk profile, growth potential, cash flows and strategies, resulting in an inconsistent estimation of this asset value. From another perspective, the future cash flow approach reflects the market reaction. Thus, basing the intangible asset valuation on this method could result in values that are too high when the market is overvaluing comparable firms, or too low when it is undervaluing them. Both results can be justified depending on investors' perspectives, which is considered a source for a bias in this method. In other words, the question that arises here of how to control for these differences having several firms in the industry, becomes a key one in this model.

While there is scope for bias in any type of valuation model addressed by all the studies above, the lack of transparency and consistency regarding the underlying assumptions in these valuations for intangible assets makes them particularly vulnerable to manipulation and thus might lead to an unfair value (Barth & Schipper, 2008).

In order to perform an appropriate investigation within the field of intangible assets, there is the need to understand what the purpose of such research is. For instance, if the interest lies in tackling the valuation literature and extending it to the intangible assets dimension, then the first step to go through would be to understand if the above-mentioned evaluation model as well as other selected ones could be applied to the so-called strategic assets. If this is not the case, then it is necessary to develop brand new valuation approaches to tackle the problem. The valuation literature spans from Finance, Economics and Accounting, so testing each one of the most recent existing valuation models to the intangible assets dimension would be challenging and time consuming (Wang & Halal, 2010). Perhaps the solution is to simply agree on some assumptions and try developing new approaches using the existing literature as a baseline. However, this task becomes even more challenging because as aforementioned there is not yet a common market valuation of intangible assets in particular because they tend to yield benefits in the long run and this future benefit is very difficult to forecast due to its outcomes' volatility (Jiang, 2019). Another big stream of research could be trying to identify the "macro" benefits that investments in intangible assets could yield. In fact, this would be another challenging task, which would involve understanding and testing many economic theories of welfare, industrial organization and innovation. Moreover, there would be room to introduce behavioural factors and experimental approaches. This would open a new door for collaboration between economics, anthropology, sociology and psychology. Even strategy could be considered part of this research because each one of the above-mentioned disciplines deals in some way with social welfare and utility maximization. Hence, such a stream of research would bring together many questions. At the same time, such line of research faces its challenges starting from the costs of implementation. It would be an extremely ambitious plan, which would require heavy research investments. Hence, the most plausible approach would be to try finding first some coordination among the academic disciplines, which could give some guidelines to the new possible research streams. Maybe even starting from an analysis of the current regulation to then get to suggestions on how to improve the latter.

After presenting several issues arising from not having standardized methods of valuation for intangible assets, in the next sections, this paper highlights the relevance of intangible assets from the investor’s perspective through an econometric analysis.

2.3. Econometric Analysis

2.3.1. Data Description

The data is obtained at the firm-level from a Bloomberg dataset. It includes a representative sample of leading firm’s population in United States (which are included in S&P 500 Index) from 2013 to 2017 (both years included). Before cleaning it, the sample contains 506 firms per year. To conduct the analysis, we proceed as follows to clean the data: First, we drop all firms with missing data in any year (from 2013 to 2017) for any variable (intangible assets, sales or market capitalization). This step reduces the sample to 432. Second, we validate internal consistency so that no zero and no negative values remain in the sample (the sample stays the same in this step).

2.3.2. Correlation and Regressions

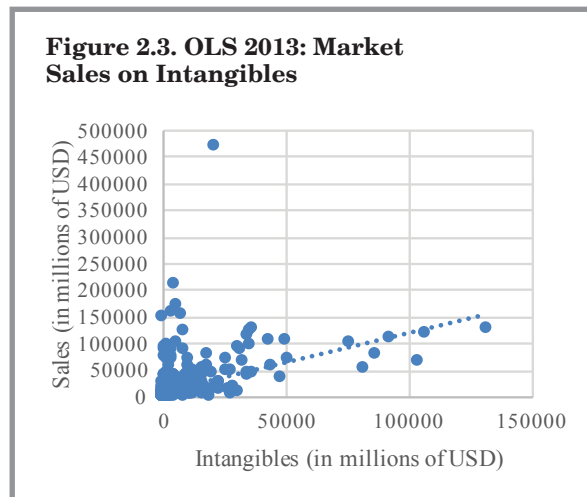
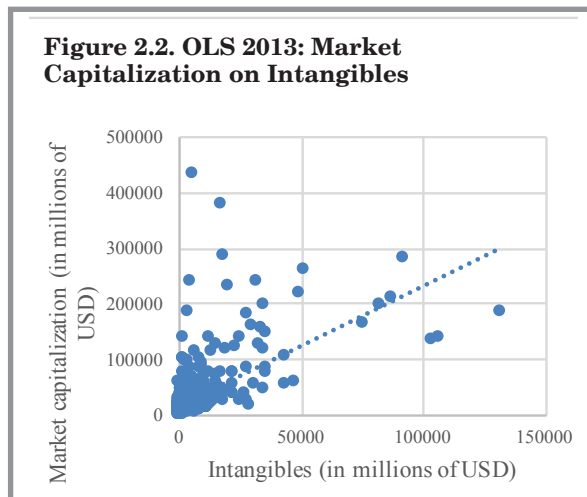
As stated before, tech giants as Apple, Microsoft and Google among others highlights how important intangible assets are in order to differentiate their products, their brand and their future growth. we test the hypothesis that more intangible assets have a positive effect on market capitalization and on sales. To illustrate this point, we run a correlation analysis:

Table 2.1. Correlation Analysis

Intangible assets against	2013	2014	2015	2016	2017
Market Capitalization	0.60	0.59	0.50	0.50	0.45
Sales	0.44	0.43	0.40	0.40	0.40

Source: Based on data from Bloomberg that includes 432 firms from S&P 500.

The table reports correlation between intangible assets against market capitalization and sales for years from 2013 to 2017. The results in Table 2.1 show a positive correlation between intangible assets and sales as well as a positive correlation between intangible asset and market capitalization. As a matter of illustration, in Figure 2.2 and 2.3, we plot an OLS regression for 2013. Although we find evidence that show a positive correlation between intangible assets and market capitalization, and sales, we cannot conclude that having greater intangible assets causes higher market capitalization and sales because there might be the typical issues when an OLS is involved (as omitted variable bias and simultaneous causality). For example, it might be that some variables that are not included in our regression is actually affecting both intangible assets (explanatory variable) and market capitalization or sales (dependent variable).



Therefore, firms with higher intangible assets have, on average, a higher market capitalization and a higher amount of sales. However, the direction of the effect is not clear and we can not talk about causality due to the potential omitted variable bias, and especially, potential simultaneous causality.

However, due to the fact that data is structured in a panel, it is better to exploit this extra information through panel data models. First, I run a pooled OLS. The results, obviously, can not be interpreted as causal due to the same problems of endogeneity that I have mentioned above. Furthermore, there might be unobserved fixed effects correlated with the explanatory variable and, therefore, the estimates would be both biased and inconsistent. In order to solve this problem, I apply a fixed effects model.

Table 2.2. Panel Data Estimates for Market Capitalization and Sales

	Market capitalization		Sales	
	(1) OLS	(2) Fixed Effects	(3) OLS	(4) Fixed Effects
Intangibles	1.895*** (0.043)	0.847*** (0.043)	0.98*** (0.030)	0.267*** (0.019)
Constant	15514 (645.40)		1134 (447.29)	
R-squared	0.28	0.09	0.17	0.04
Time FE	NO	YES	No	YES

(***), (**),(*) indicate statistical inference at 0.01, 0.05 and 0.1 level, respectively.

For the specification in which fixed effects are included, (2) and (4), an increase of 1 million of intangible assets would lead, in average, to an increase of 0.847 million in market capitalization and of 0.267 million in sales, respectively (see Table 2.2).

Furthermore, it would also be interesting to assess the question whether firms with higher intangible assets are overvalued (in terms of having a higher price-earning ratio). I find no empirical evidence of firms with higher intangible assets to have a higher price-earning ratio (see Table 2.3).

Table 2.3. Panel Data Estimates for Price-Earning Ratio

	Price-earning ratio	
	(1) OLS	(2) Fixed Effects
Intangibles	0	0
	0	0
Constant	42.9 (3.29)	
R-squared	0	0
Time FE	NO	YES

(***), (**),(*) indicate statistical inference at 0.01, 0.05 and 0.1 level, respectively.

2.4. Conclusions

In conclusion, although the current literature tends to address the financial valuation of intangible assets, even when dealing with policy implication, there should be more effort in trying to coordinate the various business disciplines to give at least a common characterization to these items. Therefore, intangible assets are definitely becoming important for the business environment within many dimensions, but before trying to define their political or financial impact, it would be interesting to figure out a common ground to test their importance and then proceed with a technical financial analysis. This would be a key point for the development of the field simply because, as previously analyzed, there is still no agreement on how to interpret and classify such important strategic items. The natural progression would be to addressing the importance of these assets using current findings in the various streams of research to understand where these disciplines do actually stand when dealing with strategic assets. Then, it would be interesting to merge the goals of scholars among different areas to finally reach a common ground to develop and exploit the intangible assets developments and applications. Based on this last statement, this paper is a contribution to the literature dealing with intangible assets as a report underlying the main challenges and possibilities behind this new stream of research to understand the nature of intangible assets. Particularly, this paper emphasizes the need for a common and standardized way to value intangible assets so that all economic agents may take choices based on as accurate as possible firm information. Finally, this paper finds evidence through a Fixed Effects model that, in the U. S., intangible assets value has a positive impact on both market capitalization and sales, what highlights the need for a common framework of intangible asset valuation. Therefore, intangible assets valuation might affect firm's valuation and future research will be needed to find a common framework in which investors might operate in financial markets with better information and fundamentals.

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Financial Risk: A Responsible Business Guide Control to a Better Brand Value and Company Value

Samer Ajour El Zein^{1,*}, Carolina Consolacion-Segura² and Ruben Huertas-Garcia³

¹School of Business Administration, Technical University of Catalonia, Barcelona
C. Jordi Girona 1-3, 08034 Barcelona, Spain

²School of Telecommunications Engineering, Technical University of Catalonia, Barcelona
C. Jordi Girona 1-3, 08034 Barcelona, Spain; Carolina.consolacion@upc.edu

³Economics and Business Administration Department, University of Barcelona,
Avenida diagonal 690, 08034 Barcelona, Spain; rhuertas@ub.edu

*Correspondence: samer.ajour@upc.edu

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Abstract:

Brand equity constitutes an ample intangible asset for most entities, and previous research has developed various brand equity models that aim to optimize this asset. Most approaches rely on only a single factor, focusing on brand revenue or future cash flow. There is a need for extensive research on factors related to a firm's financial risk including the effect of market share along with the intangible value of brand equity. This study identifies that the firm's financial risk directly impacts brand equity value. This study aims to expand the literature by determining the important factors that affect brand value. To do so, financial information was collected from a list of publicly traded companies with evident major annual brand value and generic companies in the US and Europe. Using financial data, a statistical analysis was performed using correlation and regression to facilitate the identification of important variables that affect brand value. This paper aims to improve Damodaran's model, which assigns values to intangible assets, by using the average sector as a proxy of a generic company. This approach helps to reduce the potential arbitrariness that can arise from the fact that the choice of a generic company might vary between sectors. This offers practitioners a simple method that can be used to determine a fair value for a branded company. The results suggest that a significant correlation exists between a firm's brand equity and financial risk.

Keywords:

Brand Equity Value, Firm Risk, Intangible Asset, Business Guide Control

3.1. Introduction

The following study intends to enrich the literature by developing a new integrated brand equity model. This research examines the components of brand equity from various perspectives to help management reveals a more accurate value. The objective of this research is to explore the link between determinants such as firm risk, index growth and intellectual company weight, affecting the range and impact of the of brand equity value in the intangible asset world from images within the various specific sectors.

Intangible assets have recently been considered a crucial business element due to their growing importance within the modern business mechanism. Finance, Accounting, Business Strategy and Economics are step by step understanding more and more the importance of this category of assets as a fundamental component of a company as a whole. Therefore, intangible assets according to Smith and Parr (Smith & Parr, 2000) are those elements along with working capital and tangible assets that allow the business to operate and can be the primary contributors to a firm's success factors and competitive advantage.

In 1990, United States (US) firms spent \$105 billion on research and development (R&D). One decade later, this number doubled up to \$200 billion. In 2013, this figure increased up to \$323 billion and reached \$400 billion in 2017, reflecting the growing importance of research and development performance in the last decades, especially in the most successfully firms of today's business world (Shackelford & Wolfe, 2017). In fact, top 1000 companies in terms of R&D spending invested 4.74% of its revenues to R&D in 2018. This figure was even higher if the focus is on top 25 firms with a 8.86% of R&D intensity (Skillicorn, 2018).

This view is supported by the growing importance of innovative firms in the global market, not only from a global perspective, but also from a finance perspective. Simply looking at giants such as Apple, Microsoft and Google among others explains how important intangible assets are for a company profitability, future growth and sustainability. This constitutes their brand equity as Aaker (Aaker, 1996) and Keller (Keller, 1993) referred to being an added – value, and as a revenue premium as per Ailawadi (Ailawadi, 2003). Nevertheless, the brand equity for Google in 2007 ranged from \$17 billion to \$66 billion – more than three times as much -depending on the measurement scheme employed (Knowles, 2008).

Firms are obligated to emphasize either value creation or value appropriation building a strategy. Raggio and Leone (Raggio & Leone, 2009) presented the diverse drivers of long-term brand value, strategies for appropriating brand value, valuation methodologies and uses of brand valuation in practice. Salinas and Ambler provided several methods in practice developing a taxonomy with five criteria among which is the treatment of risk (Salinas & Ambler 2009) as well as the financial impact of Perceptual Brand Attributes and risk adjustments (Mizik & Jacobson, 2008). Implications for developing measures of brand value have been proposed to understand how to create value (Raggio & Leone, 2009). Thus given the importance of intangible assets for brand value, there is a need

to further analyze and identify the factors that act as the main drivers of their valuation and, at the same time, to derive a methodology that can help to minimize possible biases in the measurement of brand value.

This study examines how brand equity is affected by financial risk measured as volatility using a panel of 1,100 firms distributed among 10 sectors from 2013 to 2017 in United States and Europe. Authors find evidence that volatility affects negatively to brand equity value. In particular, the results show that a one percent increase in volatility decreases the brand value by \$52,313.0 millions.

This paper is organized as follows: Section 2 presents a review of the literature on intangible asset valuation, and brand equity value with emphasis on its importance and classification. Section 3 reviews the methods applied by other authors for measuring brand value and proposes a new measure that aims to account for the important factors affecting its valuation as well as presenting the data and the variables. Section 4 explains the statistics used in our measure, and section 5 shows the result of its application. Section 6 concludes the paper.

3.2. Literature Review

Damodaran examined that tangible assets' values are assigned based on the future attributes that are numerically quantified to assign a fair value of this asset (Damodaran, 2006). Intangible assets being assets as well should follow the same rule; nevertheless, although an intangible asset is an asset by classification that is bought based on mutual agreement, it doesn't seem too easy to assign a fair value. The estimation can vary among investors depending on the variables included in the model (McNichols, 2002). Thus, the main weakness of this model relates to the standard critique of the discounted cash flow model that it fails to account for the factors affecting cash flow that are subsequently discounted to the present value. Such factors are highly descriptive and inconsistent (Dechow, 2002). According to the general accounting rule, an intangible asset is any entity-controlled resource for which the results from past events are estimated to flow to future economic benefits. Characterizing an asset as "intangible" requires it to be identifiable, able to generate future economic benefits, controllable, and classifiable. In general, further studies on asset valuation models are recognized as being necessary to incorporate intangible assets, since their improper classification, as addressed above, leads to the assignment of unfair values (Russ, 2014). Considering two companies of the same industry with the service and other factors being the same, there exists an extra benefit to the final users that push this brand to be evaluated differently (Susanti, Sumarwan, Simanjuntak, & Yusuf, 2019).

In order to perform an appropriate research within the field of intangible assets and its valuation models, there would be room to introduce behavioral factors and experimental approaches. It would open a new door for collaboration between economics, anthropology, sociology and psychology. Deephouse (Deephouse, 1996) triggered academics to study the phenomenon of reputations

on corporate performance and investments (Bodie, Kane, & Marcus, 2003), which was empirically proven by Iwu-Egwuonwu (Iwu-Egwuonwu, 2011). Hence, the most plausible approach would be to try finding first some coordination among the academic disciplines, which could give some guidelines to the new possible research streams. Maybe even starting from an analysis of the current regulation and then try to get to suggestions on how to improve the latter.

For this reason, we can see the need for the classification of Intangible Assets. If the attempt is an approach to a model for valuation of intangibles, then we should be aware of the elements that constitute this measurement and in specific the way they are classified. Since there exists so many classes of intangible assets and not a standardized classification in accounting, in the absence of a concrete definition, this constitutes an aggregate conflict of intangible asset determination (Nichita, 2019). This leads to difficulty in finding a standard valuation method. The consequences due to lack of standardization is a different result depending on the chosen method (Ailawadi, Lehmann, & Neslin, 2003) classified as revenue premium, equivalent to difference in unit price or total revenue between the branded good and a benchmark good.

One intangible asset that is particularly valuable to companies and at the same time very difficult to measure is Brand equity (Calder, 2019); and specifically since the publication of the book "Managing Brand Equity" (Aaker, 1991) the interest of determining a better brand value has increased enormously. A lot of concerns were found in the existing models, the portfolio perspective has suggested that brand equity can be measured by deducting the value of a firm's tangible assets from its total market capitalization (Farquhar, 1989) but classified as risky failing to account for other intangible assets, such as knowledge capital, (Simon & Sullivan, 1993).

The literature in this area investigates the nature and the strength of the relationship that consumers develop with brands (Farris, Shames, & Gregg, 2018) done for the fact to express their perspective towards this specific brand preference (Rajasekaran, 2019). Fernandez (Fernandez, 2017) mentioned that there is a lot of scepticism about brand value for this reason there still is a gap to fully determine brand concept and its value. Beccacece, Borgonovo, and Reggiani reviewed many models highlighting the lack of objectivity and arbitrariness in brand valuation (Beccacece, Borgonovo, & Reggiani, 2013).

Damodaran examined the four asset valuation models focusing on one or more than one factor to add on the previous researchers' findings with the intention of addressing various approaches (Damodaran, 2006). The four approaches are: Discounted cash flow valuation, based on future cash flows, Liquidation and accounting valuation, based on book value of existing assets, Relative Valuation, based on pricing of asset comparisons such as earnings, cash flows, book value or sales, and Contingent claim valuation, based on real options.

As previously commented on the first two approaches addressed before, the third approach of a "relative valuation" is based on a relative basis. A major factor addressed here is that prices have to be consistent, usually by expressing prices into multiples of earnings, book values or sales. However, a major element neglected in his research, is to keep in mind the need of finding similar firms, which is difficult to do since no two firms are exactly alike and companies in the same industry can still have a different risk exposure, growth potential, cash flows and strategies, resulting in an inconsistent estimation of this asset value. From another perspective, to address it to the future cash flow approach, this method relies on the market reaction, thus hinging the intangible asset valuation on this technique could lead to an unfair value. Unfair as this depends on investors expect the value to be; hence, an overvaluation leads to a higher intangible asset value and an undervaluation leads to a lower intangible asset value. Both values can be justified which are considered as a biased method (Yasyshena & Pyliavets, 2019). In other words, the question that arises here of how to control for these differences having several firms in the industry in this model, becomes an essential one.

While there is scope for bias in any type of valuation model addressed by all the studies above, the lack of clearness and consistency regarding the underlying available assumptions in these valuations for intangible assets make them particularly exposed to decontrol and thus to an unfair value (Sharma & Kaur, 2019).

Barth, Clement, Foster, & Kasznik underlined that brand value components are significantly positively related to prices and returns, and in specific cumulative to accounting variables (Barth, Clement, Foster, & Kasznik, 1998), followed by Yandiev (Yandiev, 2009) who based it on the financial markets' instruments being a digital value that estimates numerically the brand earnings. Customers and observed behaviors measure brand equity in a relative measurement to other brands such as market share and relative price since there is no absolute figure for a brand equity; hence brand equity value measurement according to Ambler (Ambler, 1997) is a relative measurement. Brown and Kapadia (Brown & Kapadia, 2007) gave importance to brand recognition in the Equity Markets stating that new firms without brand recognition have higher risk. Gronholdt, Martensen, and Kristensen contributed to the existing models a conceptual framework (Gronholdt, Martensen, & Kristensen, 2000) described with a reduction in risks to link the value of shareholders and client's contentment (Musa, Rashid, Bala and Mustapha, 2020) improving shareholder value being subject of a positive oral communication (Singh & Pattanayak, 2014). In the context of decisions, brands are major elements for procurement and decision making. This is the intangible asset for most companies. Current literature reviews highlighted frameworks on the internal determinates of the intangible asset valuation; however, there is still a need to shed the light on the external determinates and their impact to optimize the value of the intangible assets which will be tested in this study.

3.3. Methodology

There has been a lot of research on the equity valuation from a descriptive approach and the quantitative approach has received little attention in the market. There is not yet a standardized approach for this intangible valuation. There has been a few research on the direct relationship with different independent variables mentioned in this paper based on historical data and on the limitations of existing models.

The need of enhancing the brand value drawing relationships between the brand communities and the world of brand management stipulate the importance of the need of brand valuation. This is done by the finding relations between Finance and Marketing (Paranque & Cova, 2011). Brand Equity (value) is considered a signaling phenomenon (Erdem & Swait, 1998) linked to the corporate brand strategy, recognized as a requirement for a market driving approach (Tarnovskaya, Elg, & Burt, 2008). The theory of marketing assets is associated with theory that involves branding thinking with financial thinking (Baker, 2016) that shifted the way senior management view marketing management (Wilson, & Gilligan, 2012). Companies have to invest in everything they do to obtain concrete (product meets the physical needs of customers) and rational benefits (an image to match their emotional needs) thus moving from brand vision to brand evaluation to create powerful (De Chernatony, 2010) and successful brands (De Chernatony, 2006). Companies investing in branding could employ for brand management in 2025 (Segler, 2019) where their investment strategy will look different in 2025 as compared to today (Ottman, 2017) shifting from 2d to 3d virtual worlds (Nah, Eschenbrenner, & DeWester, 2011). There is rising need to build an enhanced and sustained long term brand equity (Kapferer, 2008) leveraged by internal factors such as corporate brand approach that can build a transparent brand (Uggla & Åsberg, 2009) and external factors to maximize long-term brand persistence and growth (Keller & Lehmann, 2009).

Although it was considered that there is no single brand valuation measure which is universally meaningful (Feldwick, 1996) many of these models rely on buyers' awareness of the brand, and their respective purchasing convention constitutes a major limitation. Fernandez summarized the limitations of current valuation models by stating that we are a long way from exactly defining the brand concept and explained the importance of identifying each brand's value drivers. He endeavored to illustrate the current knowledge of brand equity, help to understand the nature of this intangible asset, establish guidelines for the approach to intangible asset value, and determine the relevant external factors that affect this asset value and have not yet been fully determined (Fernandez, 2017).

Aaker (Aaker, 1996) referred to the best method for determining brand equity by considering how much more a consumer is willing to spend on one brand product versus another and that there is relevant branding shareholder value creation link (Madden, Fehle, & Fournier, 2006). Simon and Sullivan presented their technique of brand equity valuation based on a financial market value of a

firm (Simon & Sullivan, 1993). At a later stage, Damodaran (Damodaran, 2006) also examined this intangible asset as an incremental cash flow of branded to unbranded companies. His model assumptions were built on the presupposition that both the brand name company and a generic company that resembles it are both publicly traded. His proposition was based on the market observation on both companies, which leads to assign a value on the difference between both values.

The brand name value can be demonstrated out as follows:

$$Brand\ Name\ Value = \left[\left(\frac{EV}{Variable} \right)_{Brand\ Name} - \left(\frac{EV}{Variable} \right)_{Generic\ Brand} \right] * Variable_{Brand\ Name} \quad (1)$$

Under the assumption of using EV/Sales ratios as multiples for comparison, this would be modified as follows:

$$Brand\ Name\ Value = \left[\left(\frac{EV}{Sales} \right)_{Brand\ Name} - \left(\frac{EV}{Sales} \right)_{Generic\ Brand} \right] * Sales_{Brand\ Name} \quad (2)$$

Fernandez (Fernandez, 2017) underlined a further limitation behind his model stating that sales are not identical between the generic brand and the branded company, and suggested to express the formula as follows to take into account the different volumes:

$$Brand\ Name\ Value = \left(\frac{E}{S} \right)_{Brand\ Name} * Sales_{Brand} - \left(\frac{E}{S} \right)_{Generic} * Sales_{Generic}, \quad (3)$$

Where E: Equity calculated by Market Capitalization and S: Sales Volume

The dependent variable Brand Equity Value is composed of the Market Capitalization to Sales. Despite the limitations addressed by Fernandez on the sales volume, the author proposes various independent variables to test their significance and effect on the market capitalization. The following study intends to enhance this by providing a better brand equity framework that takes into account the significant factors. This paper highlights the components of brand equity from various financial perspectives to help management reveals a more accurate value.

The first possible weakness considered in this model is the choice of the generic company, Majerova and Kliestik (Majerova & Kliestik, 2015) stated this further limitation to Damodaran's model pointing out the difficulty involved in estimating the parameters of the generic product. In fact, the choice of the generic company can vary among the same sector. The ratio of branded to generic companies can vary among sectors and therefore would increase the chance of a hidden arbitrariness (Treynor, 1999) in the dependent variable. Therefore, the authors of this paper proposes to use the average industry as a proxy of the Generic Company to the dependent variable of brand equity based on The Bloomberg Industry Classification Systems (BICS) first level of detail (Bloomberg, 2018) with the intention of reducing this hidden arbitrariness.

For the independent variables, data has been collected and collated using publicly available annual reports from Bloomberg to find an approximation of firm risk, market share, the net intangibility assets. Fernandez (Fernandez, 2017) finalized in his paper the assumptions and limitations to the model among which brand risk has to be considered. An approach including for example a company's share value and its respective volatility as an important external determinant of brand equity, still lacks deep research. Belo, Lin, and Vitorino show that brand capital stock is a firm characteristic that is related to firms' risk (Belo, Lin, & Vitorino, 2014). In fact, it was pointed out in the literature about the need to resolve this limitation in the current models around the discount rate and growth rate (Kapferer, 2000). Furthermore, Beccacece, Borgonovo, and Reggiani stated that we still lack a solid risk quantification that would reflect a better valuation of this intangible asset, brand equity (Beccacece, Borgonovo, & Reggiani, 2013), and that currently cash flows are discounted at risk free, thus not taking into account the risk. Keller and Brexendorf (Keller & Brexendorf, 2019) summarized a major concern in brand equity measurement in the assumption that clients will carry on with their investment at the historical rate classifying this as a weakness of not revealing full risk elements. Brownlees and Gallo (Brownlees & Gallo, 2010) show that while more complex measures of volatility have been proposed in recent years, simpler estimates such as that of Parkinson (Parkinson, 1980) can have a similar performance and effectively the standard deviation of stock returns to measure equity-holder risk (Rego, Billett, & Morgan, 2009).

To find an approximation for the firm risk value, daily stock market prices for firms were retrieved from the Euro 600 and S&P 500 indices to calculate the annualized historically volatility. Thus, we consider a panel of 1100 firms across 10 different industry sectors. The sample spans from 2013- 2017. Specifically, we divide the closing price of the stock today by the previous market day's close. The next step is to apply the natural log of the quotient obtained in the first step, followed by calculating the standard deviation annualized over 252 days (Vince, 1992). Investors and managers evaluate potential investments in terms of risk and return (Modigliani & Leah, 1997). Customer satisfaction's positive effect on brand equity (Torres & Tribó, 2011) which leads to excess return is associated with low risk (Fornell, Rust, & Dekimpe, 2006). Since brand awareness is associated with firm performance to a certain level (Homburg, Klarmann, & Schmitt, 2010), Rego, Billett, and Morgan suggest that managers should make brand management part of the firm's risk management strategy stating that brand value is associated with firm risk that was based on credit reports (Rego, Billett, & Morgan, 2009). Since the stock market return is a measure of the change in expected future cash flows—associated with brand equity components (Lane & Jacobson, 1995), we intend to quantify this effect of financial firm risk on brand value from the stock market perspective.

We also used other controls, all of which are tested in the section below to validate the appropriateness of the model. An important variable that supports our reasoning of the effect of volatility in brand value is "index growth", which represents the growth of the exchange-traded funds that track the S&P 500 and the Eurostoxx 600 (Nageswararao, 2019). This was used to capture trends that were not captured by our main dependent variable.

The other control variable used in our model is the Company Intangibility which is an approximation of net intangibles that is computed by Intangible assets – good will divided by Total Assets that represents the book value. Good Will is considered to be carried on new books after sale of business as an asset and will eventually be written off (Lynch, 2012).

3.4. Statistical Tests

Because there are registers for different years for every sector, we used panel data. Categorical variables were also accessible for 10 sectors classified by The Bloomberg Industry Classification Systems (BICS) to the first level of detail. OLS regression with Panel Data was applied, with “company intangibility” and “index growth” introduced as control variables. However, it was important to be aware of the potential multicollinearity among some variables and thus, tests for heteroscedasticity and autocorrelation of errors were conducted. If the null hypothesis was rejected, then HAC (Heteroskedasticity and Autocorrelation-Consistent) standard errors should be used.

Five years of individual data (2013--2017) were collected from the published annual report of 1100 international companies from S\&P 500 and EURO 600 (Bloomberg), producing 4935 overall. The companies included in the research were classified by The Bloomberg Industry Classification Systems (BICS) to the first level of detail as belonging to the following industries: financial, materials, industrial, energy, health, communications, basic consumption, public service, discretionary consumption, and technology (Bloomberg, 2018).

First, we tested for potential biases and established the type of variance of the errors to identify any problems in our data, such as multicollinearity, and the types of standard errors that needed to be computed based on the variance of the errors and their potential autocorrelations.

To test multicollinearity, the variance inflation factor was carried out. The results (see table 3.1) show that the variance of the estimated coefficient of Volatility is inflated by a factor of 1.03 and thus is very lowly correlated between any of the other variables. The VIF of all the other variables is low.

Table 3.1. VIF Test

Variable	Statistic
Volatility	1.010
Intangibility	1.002
Index growth	1.009

To test for heteroscedasticity in the linear regression model to check whether the variance of the errors from the regression is dependent on the values of the independent variables, the Breusch Pagan test was run (Breusch & Pagan, 1979). The results (see table 3.2) show a very low p-value thus the null hypothesis of homoskedasticity is rejected and heteroskedasticity is assumed here.

Table 3.2. BP Test

Statistic	Degrees of freedom	P-value
493.21	3	0.000

To test for Robustness checks, we checked if the results were sensitive to exclusion of single countries. The results were robust against this check. We also checked if the inclusion of time fixed effects would have influenced the results by re-estimating the models with time controls, the results did not change in any significant manner.

To validate the appropriateness of the model we are using, we perform residual analysis (difference between the predicted response and the actual response) and examine residual plots to evaluate how well the model fits the data and that the data meet the assumptions of the model (Fox, 2015). Residuals are plotted to understand whether the assumptions which have gone in building a linear model hold true or not. The residual plot for the Brand Value dependent value with each of the independent variables shows that most of the model validation centers around the residuals (essentially the distance of the data points from the fitted regression line) validating homoscedasticity that means that the residuals are equally distributed across the regression line, that is, above and below the regression line and the variance of the residuals should be the same for all predicted scores along the regression line. This accepts the assumption of validating the appropriateness of the model we are using. This is presented in the model validation graphs in the appendix section.

The ANOVA test was run to test whether the group means among pairs is different. The outcomes show, with a significant p-value, that some of the group means are different. The significant independent variables in Damodaran’s (Damodaran, 2006) adjusted model and the usage of the average industry as a proxy of the Generic Company in the dependent variable of brand equity based on The Bloomberg Industry Classification Systems (BICS) first level of detail with the intention of reducing this hidden arbitrariness can be considered satisfactory. This can be considered due to the significant F- Test and the realistic adjusted R2, explaining the model with 37,5 % which is realistic. Some variables are significant, and others are not.

This study also examines how brand equity is affected by volatility of the underlying company for all sectors in Europe and United States. Results (see

table 3.3) from the regression and paired-sample t-test methods show with a very high significance P – Value that the higher the volatility of underlying company among all the sectors, the lower is the brand equity value. The intangibility of a company does not influence the brand equity value assigned.

Table 3.3. Regression Results

Variable	Coefficient (standard error)
Volatility	-52,313.0*** (6,078.8)
Intangibility	3,095.1 (5,257.0)
Index Growth	-56,056.050*** (17,059.090)
Constant	-4,060.4** (1,691.3)
Observations	4,935
R ²	0.375
Adjusted R ²	0.375
F Statistic	987.471*** (df = 3)
Note:	*p<0,1; **p<0.05; ***p<0,01

(***), (**),(*) indicate statistical inference at 0.01, 0.05 and 0.1 level, respectively.

In fact, the magnitude of the coefficient indicates that a one percent increase in volatility decreases the brand value by \$52,313 millions. The variable index growth is also statistically significant and negatively related to brand value. This is not surprising, since the index represents the annual growth rate of exchange-traded funds, so it is another measure of volatility. Hence, we expected this variable to affect brand value in the same direction as that of our other measure of volatility.

After running the first regression in order to see whether volatility is an important factor explaining brand value and getting a significant negative coefficient on

volatility, we aimed to determine whether the effect of volatility on brand value differs between sectors. To address this question, we conducted an OLS regression with Panel Data, adjusted with fixed effects, for different sectors to determine whether there are significant differences among them.

3.5. Results

The outcomes of the regression (see table 3.4 in the appendix) and paired-sample t-test methods show with a very high significance P –value that the higher the volatility of underlying company among the sectors: Basic and Discretionary Consumption, Energy, Materials, Health, Public Service and Technology, the lower the brand equity value is. This doesn't seem to be highly significant among the Communications, Financial and Industrial sectors. The outcomes of the regression (see table 3.4) and paired-sample t-test methods show with a very high significance P –value that the higher the indexgrowth of underlying company among all the sectors, the higher the brand equity value is. As for the control variable Intangibility, the results of the regression (table 3.4), show with a high significance level in the communications sectors that the less intangible the communications sector is, the more brand equity value have which could be justified by the physical investments they have to make. In the Basic Consumption, Financial, Industrial and Health, the more intangible the company is, the higher is their brand equity. The other sectors will not be included in this analysis due to the low significance level (p – value).

Further tests:

The following tests are done to show the distributions of brand equity per sector and per year.

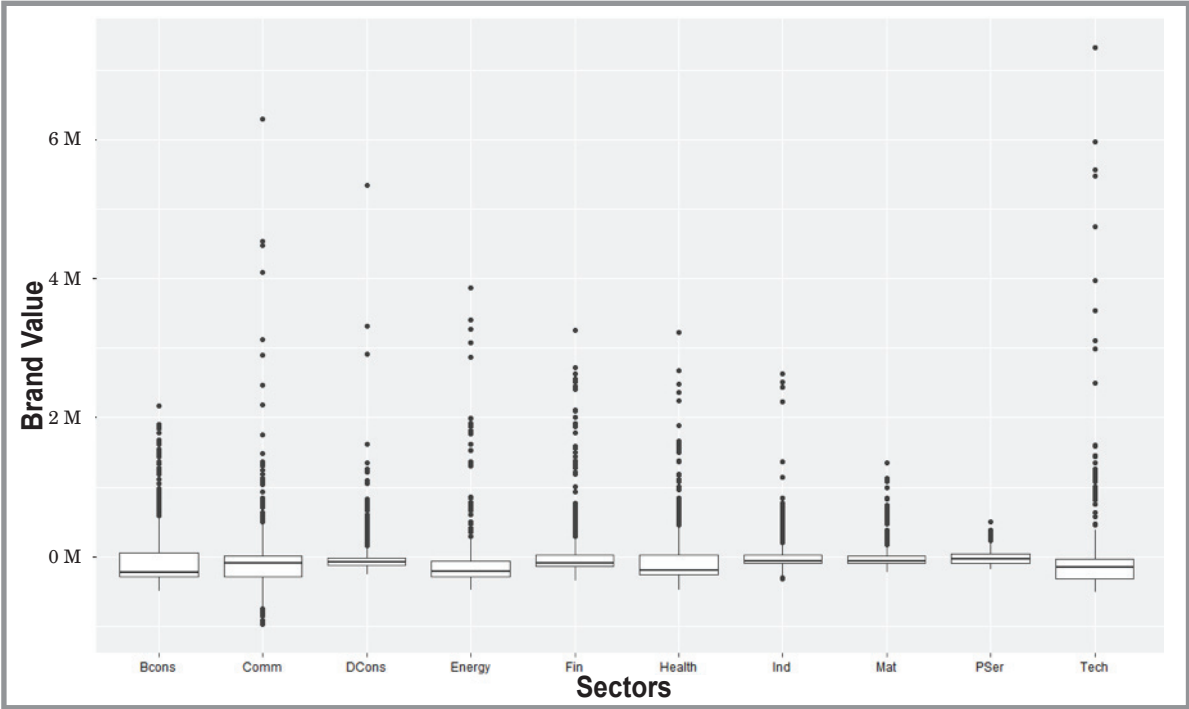


Figure 3.1. Brand Value Per Sector

In Figure 3.1 we show in a box plot the distribution of brand value per sector (dollar value in on y-axis). Intuitively, firms in the public sector, direct consumption and materials are more concentrated around a smaller range of value. On the contrary, although the technology sector has a lower median, it displays a significant number of extreme values with very high brand value.

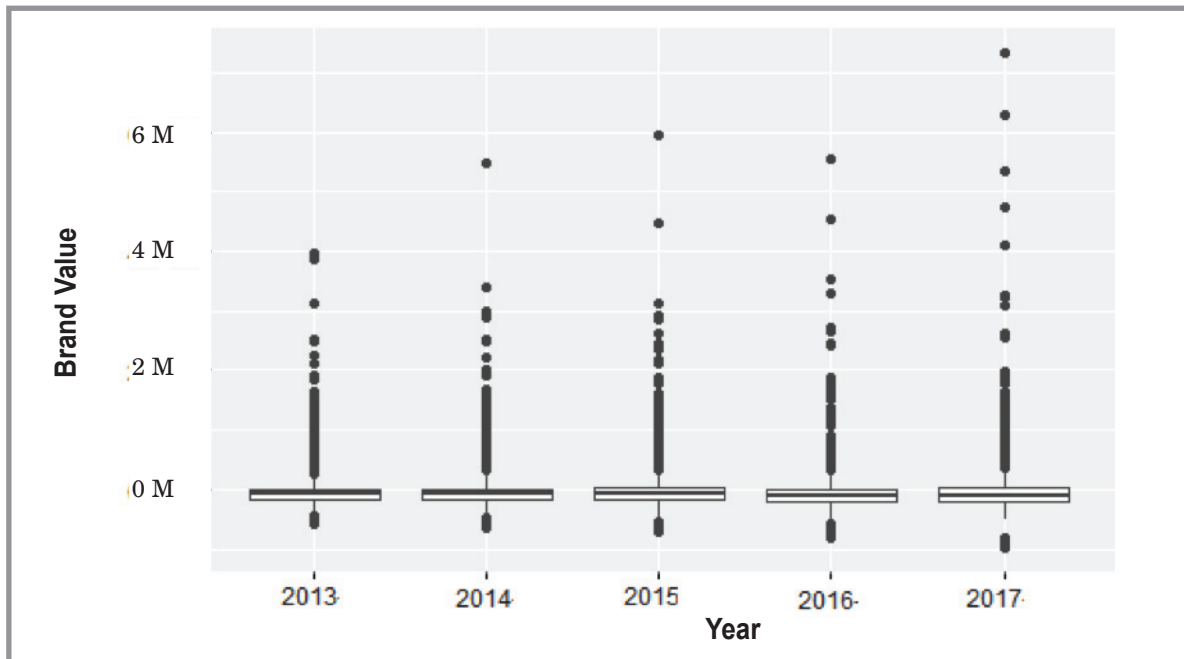


Figure 3.2. Brand Value Per Year

In Figure 3.2 we display the distribution of brand value in every year of our sample (dollar value in on y-axis). The median and the interquartile range have remained fairly stable, but one can grasp an increase in the highest values, with more single firms being far away from the central range.

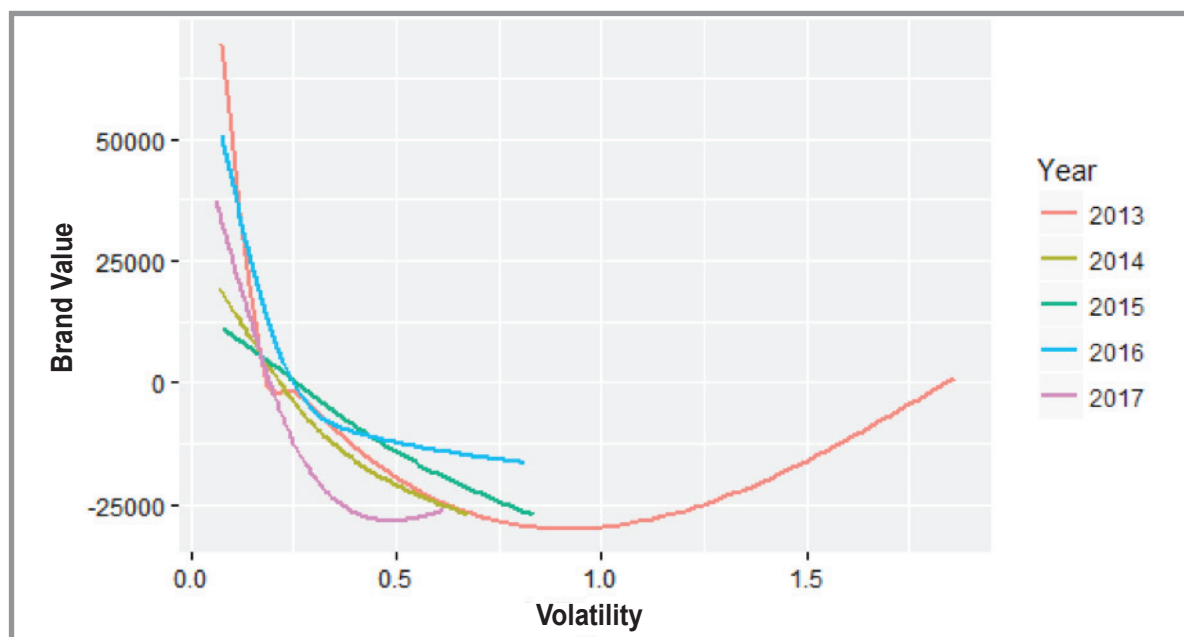


Figure 3.3. Brand Value And Volatility

In Figure 3.3 we display, for every year, the relation between brand value and volatility, simplified through a smoothing non-parametric function (Dollar value on y-axis). An increase on volatility tends to be negatively correlated with brand value, in particular for small levels of volatility. In our data set, there are just few outliers for one year that imply, at the most extreme values of volatility, a positive relation between these two variables.

For our main regression, we apply Peasaran's test (Pesaran, 2015) of Cross-section dependence. With a p-value of less than 0.000, we accept the alternative hypothesis of cross-sectional dependence, that is, there are idiosyncratic differences between our firms' brand values.

3.6. Conclusions

The proposed improvement to Damodaran's model involves assigning a financial value to the Brand Value (Anderson, 2011), by using the average sector as a generic item. This offers practitioners with an easy method to find a fair value for a branded company.

In addition to that, the results suggest with a reasonable significance level, that the less risky a company is, the higher their brand equity value is. Drawing the line from all of this statistical information, one idea can clearly be underlined: the relationship of risk with brand equity can be considered a business guide control to managers (Harmon, 2019). It could raise awareness to companies' decisions that would be reflected with the brand equity value (Simon & Sullivan, 1993) knowing that the components of brand valuation models have been found to positively impact financial market performance, and how they can create of a value, it is important that managers understand clearly what brand value is (Raggio & Leone, 2009). This is in alignment with the role of corporate reputation in value creation (Simon & Sullivan, 1993) maintaining a good reputation (Pitta, & Katsanis, 1995). Our research confirms the increasing recognition, by both managers and academics, of the significance of brands as sources of sustained competitive advantage (Louro, 2001) underlying organizations' brand strategies (Medina & Duffy, 1998). As a result, we raise awareness with our research integrating such factors on the brand value, and whose implementation is crucial to build a brand portfolio value (Petromilli, 2002).

Due to data availability, we focused on big firms in the US and EU markets; however, investments in SMEs might have a different brand orientation (Yin Wong & Merrilees, 2005) thus further research is needed to increase the robustness of the results and contrast them with new data-sets and estimates (Singh, Murty, Gupta, & Dikshit, 2009). The strong negative relationship between a firm's financial risk and brand equity should motivate practitioners to minimize this risk by attaining higher brand equity. Such activities will be stable investments and will minimize the business risk. However, these practices may vary depending on the sector evaluated, and depending on the situation.

Furthermore, while this is a general result, there are other external factors that could be important drivers of brand equity other than risk. These factors can be explored in future research for practitioners to optimize their brand value.

¹Bloomberg L.P. is a privately held financial, software, data, and media company headquartered in Midtown Manhattan, New York City. It was founded by Michael Bloomberg in 1981, with the help of Thomas Secunda, Duncan MacMillan, Charles Zegar, and a 30% ownership investment by Merrill Lynch

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Appendix 3

Table 3.4. Results of Regression

Variable	Communications	Basic Cons	Discr Cons	Energy	Financial
Volatility	-69,673.4 (44,935.5)	-161,793.2*** (32,362.8)	-71,724.0*** (13,962.0)	-41,813.5** (19,557.0)	-3,604.8 (7,913.9)
Intangibility	-79,941.7*** (28,427.3)	77,621.7*** (18,752.7)	-4,977.9 (11,691.2)	18,020.0 (22,886.8)	28,351.0*** (10,933.8)
Index Growth	-1,185,741.0*** (99,796.5)	-741,794.2*** (51,388.9)	-892,122.0*** (45,823.3)	-886,942.4*** (34,128.0)	-1,970,300.3*** (53,849.3)
Constant	-2,726.7 (12,955.8)	3,431.9 (7,970.1)	7,621.1* (3,937.6)	-19,828.3*** (6,798.0)	-16,230.0*** (2,056.2)
Observations	305	363	732	249	1,082
R ²	0.356	0.421	0.360	0.773	0.554
Adjusted R ²	0.350	0.416	0.357	0.770	0.553
F Statistic	55.563*** (df = 3)	86.833*** (df = 3)	136.206*** (df = 3)	277.508*** (df=3)	446.581*** (df=3)

Note: *p<0,1; **p<0.05; ***p<0,01

Table 3.4. Results of Regression (continued)

Variable	Industrial	Materials	Health	Public Serv	Technology
Volatility	-22,277.6* (11,416.0)	-20,745.2** (8,246.4)	-66,485.5*** (20,920.0)	-52,044.3*** (8,512.4)	-77,156.1** (31,313.3)
Intangibility	22,676.9*** (7,389.2)	-12,790.1 (16,128.9)	83,510.9*** (13,864.1)	10,669.6 (8,980.4)	-54,478.7* (33,040.7)
Index Growth	-1,238,139.0*** (36,972.1)	-375,203.5*** (23,019.4)	-837,293.4*** (67,764.8)	-316,337.8*** (20,856.9)	-1,604,277.0*** (70,730.5)
Constant	-14,834.5*** (2,881.7)	-2,877.5 (2,724.0)	-11,155.1* (6,482.9)	-1,531.3 (1,784.6)	-9,902.3 (9,638.2)
Observations	626	381	503	249	445
R ²	0.658	0.419	0.326	0.494	0.556
Adjusted R ²	0.656	0.414	0.322	0.488	0.553
F Statistic	398.143*** (df = 3)	90.515*** (df = 3)	80.466*** (df = 3)	79.807*** (df=3)	183.939*** (df=3)

Note: *p<0,1; **p<0.05; ***p<0,01

Model Validation Graphs

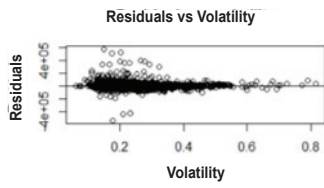


Figure 3.4. Residuals vs Volatility

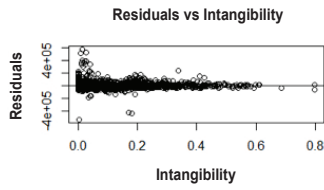


Figure 3.5. Residuals vs Intangibility

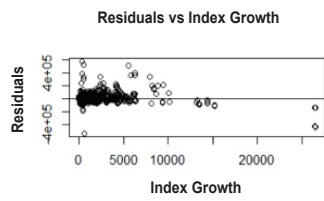


Figure 3.6. Residuals vs Index Growth

Firm Behavior, an Engineering Business Tool for a Better Brand Value in all Sectors

Samer Ajour El Zein^{1,*}, Carolina Consolacion-Segura² and Ruben Huertas-Garcia³

¹School of Business Administration, Technical University of Catalonia, Barcelona
C. Jordi Girona 1-3,08034 Barcelona, Spain

²School of Telecommunications Engineering, Technical University of Catalonia, Barcelona
C. Jordi Girona 1-3, 08034 Barcelona, Spain; Carolina.consolacion@upc.edu

³Economics and Business Administration Department, University of Barcelona,
Avenida diagonal 690, 08034 Barcelona, Spain; rhuertas@ub.edu

*Correspondence: samer.ajour@upc.edu

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Abstract:

In the last decade after the financial crisis, firms have been changing their behavior. Companies nowadays seek a better brand with the new perception of businesses. A major source of the companies' value is composed of their brand that reflect their practices and their business model. The methodology is performed by collecting information from publicly listed companies in the United States from all the sectors for 8 years after the financial crisis, to compare and analyze the firm practices among each sector and its impact on the brand value. The following paper contributes by highlighting the importance to developing a new engineering tool for a behavior change reflected by better brand value with sectoral analysis. This research helps managers to implement models affecting positively their firm behavior and their brand value. We can realize that among the majority of business sectors in the US, the more companies head towards corporate socially responsible practices the higher brand value they would have and thus implies a tool is needed to improve.

Keywords:

Corporate Social Responsibility, Brand Value, Governance, Engineering Tools, Financial Crisis, US Sectors

4.1. Introduction

Investing in brand value was pointed out as a tactic to increase Competitiveness (Vilanova & Arenas, 2008). Sustainability and competitiveness are positively correlated (Lee et al., 2003). However, competitive advantage to enhance a business performance has shifted from the classic approach to a more sustainable green way. Building a competitive strategy with a sustainable approach (Buono & Kerber, 2010) is meant to enhance a business performance, among which this approach should have sustainable business drivers (Bharadwaj et al., 1993) to build a green brand value which in turns build a strategic position in the market for corporations (Amini et al., 2012). The recognition of this fact is not enough but a long-term position requires a lot of attention as suggested by current conceptual models for building and sustaining brand value (Perez-Batres et al., 2010). Proper management of brand value through a change management strategy is needed to achieve competitiveness whose determinates are to be fully explored in this paper.

Business and sectors vary a lot and the drivers are different among the sector but sustainability factors have an effect on each sector to the degree that it has been classified as a new and growing financial risk factor pointing out the effect of its mismanagement that might have a drawback overall business causing a negative reputation and thus a worse brand value (Ogrizek, 2002). Sustainable investing is the art of long-term performance (Krosinsky & Robins, 2008) and has an impact on investors' financial returns as far as social and environmental challenges are taken into account (Bugg-Levine & Emerson, 2011). We can recognize that there is an importance of a full empirical study over the effect of governance drivers on brand value. There is a significant impact of Corporate Social Responsibility efforts on customer-based brand value perspective (Staudt et al., 2014), as well as a conceptual model in the business-to-business market to highlight the importance of the topic from a stakeholder perspective (Sheth & Sinha, 2015). However, there is not yet full attention to the deep research on the role of those firm behavior drivers on brand value due to the inconsistent theoretical ground reviewed (Malik, 2014).

4.2. Literature Review

4.2.1. Business Models and Intangible Assets

Innovation seems to be the key word in today's business and is considered a major element of the concept of intangible assets because it represents the intellectual capital of a firm as well as its potential growth (Corrado et al., 2013). Innovation plays the role of engineering management tools on our daily activities (Vince et al., 2003). From the other side, innovation has been found to enhance firm value and in particular before the 2008 financial crisis, corporate socially responsible innovative firms have been found to benefit a significantly higher value after adopting those tools (Mishra, 2017).

A good brand management preserves brand value (M'zungu et al., 2010). Even if

this topic is catching significantly the attention of several experts, there is still an ongoing debate referring to its features starting from its definition. Intangible assets stem from goodwill data, but the debate on the definition goes back in time (McInnis & Monsen, 2018). For example, intangible assets as those assets that include brand value and there exists the brand intangible asset (Costa et al., 2008). Considering two firms that belong to the industry with different business behavior models and other factors being the same, there exists an extra benefit to the final users that make this intangible asset to be evaluated differently.

Intangible asset is part of the new approach for business models in the new economies (Walter, 2004). Firms affect the value of their brand by the internal practices such as labor service (King et al., 2008) as well as by their external practices such as customer service (Brodie et al., 2009). Therefore, many factors affect the process, and, in this study, we would like to see the effect of environmental, social and governance drivers on the brand value among each of the 10 business sectors.

4.2.2. Environment, Social and Governance Effect

Corporate government codes are part of the company resources and part of management of firms (Wieland, 2009). For instance, a company's practice to the climate change could have an impact on a corporate brand value (First & Khetriwal, 2010) advising business leaders the importance of investing in environmental activities that does have an effect on the core business model (Konar & Cohen, 2001). Internal auditing is considered an effective tool for corporate governance (Karagiorgos et al., 2010) driving companies to seek new engineering tools with new action plans to accomplish a favorable position (Dyer & Singh, 1998), and focusing on social entrepreneurship connecting business to societies (Porter & Kramer, 2006) whose awareness help their business grow on the long run (Kerr & Rev, 2007). Corporate socially responsible is part of the corporate governance tool that shapes a business practice (Harmon et al., 2009) and thus driving businesses to adopt it as a core tool (Germanova, 2008). Thus, business leaders are advised to adopt such procedures in place being aware of the importance of creating a better brand value with a competitive strategy (Balmer & Gray, 1999) using those governance resources in practice that are classified as businesses core identification (Kaplan & Norton, 2008) as well as a strategy for differentiation (Sengupta, 2005).

Being a global environmental political issue, there is a need to a shift towards the emergence and implications of transnational climate-change in companies. A study on global affairs has been initiated (Andonova et al., 2009) and a set of core corporate social responsibility theories have been set after the economic impact of the financial crisis in the US (Kemper et al., 2010), but there is still a need to factor implementation and responsibilities from companies to adopt this governance behavior in their core business. Since brand value is a driver for businesses to adopt new tools, the transnational business governance acts a framework and raise awareness for a change (Eberlein et al, 2014). Despite the fact that there has been a study on firm practices in particular sectors between

the US and UK (Aguilera et al., 2006), the need of the sectoral study is driven from the new shift in the American markets among all the sectors putting the United States dream at risk shift with the economic downfall (Hacker, 2019).

There has been a lot of research on building a brand value from a descriptive approach and the quantitative approach is yet to be explored. Brand Value among the US market sectors has been explored from scanner data related to the product caliber (Kamakura & Russell, 1993), from geographic production quality (Johansson & Nebenzahl, 1986), from cultural and consumption value (Park et al., 2009), from a stockholder's value (De Mortanges, 2003), and from societal marketing (Hoeffler et al., 2002) where the majority of those studies rely their approach on the conduct of the market participants of the brand and their related perception constituting a major limitation in interpreting exactly what the brand principle is and explain the importance on identifying each brand's value drivers (Fernandez, 2017). Thus, this paper will check the impact of environmental, social and governance drivers on the brand value among each of the 10 business sectors.

4.3. Methodology

4.3.1. Model

The aim of this paper is not to correct Damodaran's model (Damodaran, 2006) who examined this intangible asset as an incremental cash flow of branded to unbranded companies. We adopt his model to check on the impact of the governance and socially responsible factors on the brand value being the dependent variable.

The brand value has been assessed as follows:

Value of the brand = $(E/S)_{\text{Brand name Sales Brand}} - (E/S)_{\text{generic Sales Generic}}$

where E: Equity calculated by Market Capitalization

S: Sales Volume

4.3.2. Variables and Data

The dependent variable Brand Value is composed of the Market Capitalization to Sales (Fernandez, 2017). The authors of this paper calculate the generic item by the average of the first level of the industry (Bloomberg, 2018) with the intention of reducing this hidden arbitrariness.

Investing in Brand value was pointed out as a tactic to increase Competitiveness (Pitta & Katsanis, 1995). For this reason, Competitiveness independent variable was introduced in the panel data to approximate the market share of each company in its sector calculated by the average net profit margin (compared with others in the same industry) to control for market participants' decisions associating brands with net profit margin (Smith et al., 2007).

The variable Company Intangibility to estimate the net intangibility of the firms

has been calculated by subtracting Good Will from Net Total Intangible Assets then divided by Total Assets that represents the book value. This is because Good Will which is deemed to be taken into account on the new accounting ledger of the company after the sale of business is wiped out (Lynch, 2014).

Whilst some companies haven't been providing information at all (CSR reporting, along with environment and workers' practice), procedures have been improving and transforming to provide better reports (Tschopp et al., 2014). A lot of firms are considering new CSR reporting methods as there is necessity for establishing its credibility (Crifo & Forget, 2013) pointing out the reason for implementation (Christofi et al., 2012) compared to the current existing reports (Fowler & Hope, 2007). The authors of this paper relied on third party CSR data extracted from the Bloomberg Data Service (Bloomberg, 2018). The variable ESG measures the Environmental, Social and Governance Analysis estimated with one value; followed by the ISS Quality Score (Institutional Shareholder Services) the world's leading provider of corporate governance and responsible investment solutions and the collective voice of the shareholders of board policies and decision making regarding sustainable investments (Huber et al., 2017). The model includes another variable, Sustainalytics rank, a good measurement indicator in each industry that covers at least 70 indicators in each industry, provided by a global investment firm that specializes in sustainability research and analysis, and checks if company reporting meets international best practice standards. The Sustainalytics variable has been added to reveal how transparent companies are in reporting their ESG scores (Huber et al., 2017). Lastly two governance variables on how much women have influence on board and employed (Bloomberg, 2018).

Despite the lack of so much data from companies not wanting to produce sustainability reports in some sectors (Stubbs, et al., 2013), 8 years of data was extracted, a panel data was constructed due to the usage of several variables. Categorical variables were introduced among 10 sectors with their first grade of detail (Bloomberg, 2018). An OLS panel data regression with fixed effects to control for the year was performed introducing the Company Intangibility and Competitiveness per sector control variables. BICS1, the sector allocation used here, contains 10 unique macro sectors, which are then disaggregated in further BICS (Bloomberg industry classification sector) classifications, up to a total of 2294 sectors. Problems that might be faced are Multicollinearity among some variables, followed by homoscedasticity which were be tested as well.

Eight years of data (2010 – 2018) have been collected from published annual report of US publicly traded companies to check on the governance factors in the American Market. Overall, 1,835 observations have been collected despite the lack of so much data. The sectors included in this study are listed below: Financial, Materials, Industrial, Energy, Health, Communications, Basic consumption, Public service, Discretionary consumption, and Technology (Bloomberg, 2018).

4.4. Empirical Results

The main intention of this study is to check the relationship between company behavioral factors and brand value checked among all sectors in United States after the financial crisis of 2008. The results show that among the majority of the sectors, the implication of environment, social and governance of underlying company, the higher is the brand value. This study also checks on the effect of Competitiveness on brand value of the underlying company for all sectors in US market. Results (see table 3) from the Panel data regression and paired-sample t-test methods show with a very high significance P – Value that the higher the competitiveness of a certain firm among all the sectors, the higher is the brand value regardless of the intangibility of a company. This is justified by the company behavior that would increase their competitiveness. Thus, business leaders are advised to adopt such procedures in place being aware of the importance of creating a better brand value with a competitive strategy (Balmer & Gray, 1999) using those governance resources in practice that are classified as businesses core identification (Kaplan & Norton, 2008). To take a deeper look at drivers affecting their behavior, the ISS Governance QuickScore a rate that provides each company with a risk score, from 1 to 10, in each of four governance-related categories: Board Structure; Compensation/Remuneration; Shareholder Rights & Takeover Defenses; and Audit & Risk Oversight (Huber et al., 2017), as well as an overall governance risk score. The scoring is such that “1” refers to a higher quality and lower governance risk, and “10” means lower quality and higher governance risk that were publicly introduced in Bloomberg (Sullivan & Cromwell, 2016).

To test multicollinearity, we relied on the variance inflation factor VIF. The results show that the variance of the estimated coefficient of all variables are moderately inflated (below 10). The VIF of all the other variables is low which indicated the low correlation among the independent variables, thus multicollinearity does not cause a problem for our explicative model used.

This tests statistically allows to use the model as predictive and explicative which is the main intention of the usage of this model in the sectoral analysis.

Table 4.1. VIF Tests

Variable	VIF
Intangibility	1.009
Competitiveness	1.075
ISS quality	1.096
Sustainalytics	1.345
ESG score	1.429
Women Directors	1.110
Women on Board	1.080
Women employed	1.078

To verify heteroscedasticity in the linear regression model and validate the appropriateness of the model we are using in this study, checking whether the

variance of the errors from the regression is dependent on the values of the independent variables, we rely on Breusch–Pagan. The results (see table 4.2) show a very low p-value thus the null hypothesis of homoskedasticity is rejected and heteroskedasticity is assumed here.

Table 4.2. BP Tests

Variable	BP
Statistic	208.46
Degrees of freedom	8
P-value	0.000

The results of regression are presented below (see table 4.3) followed by the regression per sector (see table 4.4). Some variables are significant, and others are not significant. Despite that fact that insignificant variables have to be removed (Xu & Zhang, 2001), the insignificant variables were not removed to highlight their importance in the sectoral analysis.

Table 4.3. Regression Results

Variable	Coefficient (standard error)
Intangibility	18,201.180* (10,950.110)
Competitiveness	919,643.700*** (28,617.860)
ISS quality	-561.387 (379.504)
Sustainalytics	108.063* (55.657)
ESG score	86.127 (114.842)
Women Directors	110.132* (56.910)
Women on Board	-4.344 (98.881)
Women employed	294.202*** (65.901)
Constant	-41,497.950*** (8 321.112)
Observations	1 835
R2	0.387
Adjusted R2	0.384
F Statistic	144.224*** (df = 8)
Note:	*p<0,1; **p<0.05; ***p<0,01

(***), (**),(*) indicate statistical inference at 0.01, 0.05 and 0.1 level, respectively.

In Figure 4.1, we show a Generalized Additive Model with integrated smoothness displaying the average Brand Value trend along with the average Sustainalytics index and the average ESG Score. We can realize that for both indexes and among the majority of the sectors, there is a positive correlation between sustainable firm behavior and their brand value in the US market.

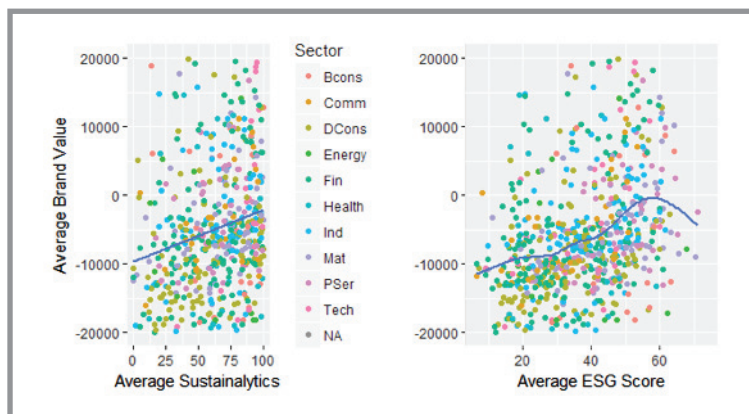


Figure 4.1. Average Brand Value vs Average Sustainalytics and ESG Score

4.5. Conclusions and Managerial Implications and Limitations

The results show with a low significance P – Value that a lower ISS score, leads to a higher brand value. Thus, the better sustainable company behavior practice, impacts positively with a higher brand value. Finally, in all sectors, the more women employed in the business, the higher is the brand value. With a high Significance, the better the ISS score among the sectors: Basis consumption, industrial, Health, and Technology, the better the brand value.

Table 4.4. Regression per Sector

Variable	Communications	Basic Cons	Discr Cons	Energy	Financial
Intangibility	-258,035.5*** (60,811.1)	62,865.8** (26,367.0)	23,335.2 (27,388.4)	916.5 (79,836.7)	-71,715.4 (75,936.0)
Competitiveness	1,348,994.0*** (142,137.1)	831,6189.5*** (62,027.0)	1,391,795.0*** (123,362.9)	936,395.2*** (53,006.3)	2,174.9*** (95,993.9)
ISS quality	4,758.7** (1,949.1)	-3,605.1*** (997.649)	-29.5 (910.6)	-973.863 (1,672.9)	1,870.0*** (571.3)
Sustainalytics	572.9* (294.7)	-24.8 (136.7)	-20.0 (132.6)	-390.9 (241.2)	-121.3 (90.1)
ESG score	-2,386.9*** (735.3)	1,166.9*** (328.1)	-581.0** (278.2)	882.5** (404.9)	73.6 (127.7)
Women Directors	434.7 (288.1)	-300.3* (159.8)	-103.0 (155.6)	110.5 (241.2)	-19.8 (82.9)
Woman on Board	433.1 (437.7)	287.5 (295.8)	-114.6 (228.2)	-164.4 (337.1)	133.2 (152.5)
Woman employed	-1,357.3*** (582.8)	-436.4 (217.4)	325.3** (135.1)	-531.0 (460.9)	-160.9 (179.6)

Constant	45,701.280 (42,728.270)	-34,001.6 (27,072.7)	6,539.2 (21,935.7)	-35,957.9 (32,400.0)	-10,339.8 (14,018.4)
Observations	111	163	256	92	385
R ²	0.560	0.561	0.359	0.845	0.626
Adjusted R ²	0.526	0.539	0.339	0.830	0.619
F Statistic	16.238*** (df=8)	24.644*** (df=8)	17.313*** (df=8)	56.662*** (df=8)	78.830*** (df=8)

Note: *p<0,1; **p<0.05; ***p<0,01

Table 4.4. Regression per sector (continued)

Variable	Industrial	Materials	Health	Public Serv	Technology
Intangibility	12,173.5 (8,889.4)	-45,511.6 (30,462.4)	143,567.8*** (35,980.1)	-7,846.3 (17,426.2)	-80,330.3 (105,926.2)
Competitiveness	796,228.8*** (56,763.7)	454,530.7*** (46,578.5)	596,779.0*** (140,065.9)	254,163.6*** (27,027.0)	1,844,756.0*** (159,788.6)
ISS quality	-532.9* (309.2)	-865.9 (557.0)	-4,173.2** (1,621.0)	-331.8 (314.1)	-8,532.8*** (2,694.6)
Sustainalytics	-44.2 (51.7)	248.6*** (73.139)	484.8* (260.9)	-87.5** (41.6)	-1,501.3*** (475.2)
ESG score	319.6*** (105.4)	-195.1 (165.2)	640.0 (552.8)	393.2*** (80.0)	1,151.1 (1,009.9)
Women Directors	-108.2*** (48.2)	55.1 (74.7)	141.7 (279.1)	0.7 (45.7)	919.7 (562.3)
Woman on Board	33.7 (81.7)	-13.5 (154.1)	-557.8 (512.2)	87.5 (57.0)	-1,885.6** (760.9)
Woman employed	-375.8*** (102.1)	330.8 (206.8)	-242.7 (428.9)	-111.7 (149.4)	263.3 (808.5)
Constant	-4,135.7 (6,385.2)	-19,817.4* (11,432.1)	-44,046.7 (43,561.2)	-21,320.2*** (7,742.7)	36,024.3 (74,515.2)
Observations	237	164	142	150	135
R ²	0.550	0.488	0.376	0.583	0.604
Adjusted R ²	0.535	0.462	0.338	0.560	0.578
F Statistic	34.900*** (df=8)	18.468*** (df=8)	10.010*** (df=8)	24.691*** (df=8)	23.976*** (df=8)

Note: *p<0,1; **p<0.05; ***p<0,01

The sustainability score only shows 2 sectors with a significant p – value (see table 4). The more sustainable the Materials sector is the better is their brand value and the less sustainable the technological sector is, the better is the brand value. In fact, a major challenge for technology firms is to offset sustainable attention with the traditional, profit-driven schemes (Du et al., 2013). We can realize that among all sectors, the more companies head towards sustainability the higher brand value they would have; and thus, sustainability is a key driver for brands that is considered an engineering tool for companies to implement strategies in their core businesses (Higgins et al., 2016). It is a win-win scenario in enhancing business models and corporate social responsibilities driving innovation (Nidumolu et al., 2009). All this being explained in a better brand value that helps managers take the initiative of changing organization towards practices (Doppelt, 2017).

The more women employed in the Discretionary Consumption sector, the higher is the brand value, and the less women in Communications and in the Industrial sector, the higher the brand value. The percentage of women on the management board was not found a significant variable for brand value in any of the sectors in this study which is in alignment of the study of the US corporations' gender on board and firm performance (Carter et al., 2010).

As for the ESG score, the more environmental the Social and Governing the Industrial, public service, Basic consumption and Energy sectors, the higher the brand value is, which coincides with the findings of Lai (Lai et al., 2010). In comparative research on industrial policy strategies, the interest has shifted from a broad vision to sectoral analysis (Kitschelt, 1991) which are enforced in our study where the majority of those sectors (Kang, 2012) require more depth analysis for each of those scores and their reporting that effect on their core business and on the Brand value (Maas et al., 2016).

Nevertheless, Communications and Discretionary consumption as well as the financial show a significant negative relationship. The latter could be because of the nature of the first two sector and can be considered a limitation to this study in the financial sector whose governance factor analysis measurement has been facing major changes since the financial crisis (Kirkpatrick, 2009). There corporate governance lessons from the financial crisis could help companies quantifying the corporate socially responsible variable in this sector improve the estimation to further test it on their brand value and customer perception. In the communications sector, a better-governed firm are relatively more profitable (Yasser, 2011) but the lack of governance indicators in the United States in this sector could be proposed for future research to test its effect with more in depth indicators on Brand value and Company practices.

Due to the absence data and lack of uniformity among data reporting sets (Hardt-Schultz, 2015), the approximation of the firm behavior factors is considered a limitation to this study, and there is a need for further research for a better reporting to make sustainability function (Epstein, 2018). The pharmaceuticals

industry is in process of a new paradigm shift (Blum-Kusterer et al., 2001); being a challenge to the event industry (Pelham, 2011), there is more interest for deep sectoral research for CO2 emissions report (Bernard et al., 2015) along with the acknowledgment of climate change that does impact sustainability practices positively (Elijido-Ten, 2017). Furthermore, we relied on publicly traded companies, so the need to check on the small and medium sized enterprises (O’Gorman, 2001) and the strategies for implementing sustainability is still a challenge (Crews, 2010) and in deed new tools in businesses can enhance those practices (Schaltegger, 2016).

Brands call the attention to consumers and enable them to recall the product or service (Nedungadi & Hutchinson, 1985) and due to the need of developing consciousness of the environment, social and governmental concept that is already in place (Herremans & Reid, 2010), it could be an engineering tools to be achieve a better brand value. Through this, more business sectors would improve their business practices, implement more governance tools and get a better brand value. This enforces the idea of the governance structure (Grandori, 1997) that was already stated an essential variable in the organizational analysis for management to consider a vital business driver in nowadays business (De Villiers et al, 2016). We suggest that our analysis and review in this paper provide a helpful basis for further exploration with detailed sectors to experiment how can sustainability improve business models (Bocken et al., 2016) and how can those drivers improve their business practices (Papagiannakis et al., 2014) to be part of every one’s tasks (Esty et al., 2010) reflected in a better brand value and better practices (Doppelt, 2017).

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The Role of Sustainability in Brand Equity Value in the Financial Sector

Samer Ajour El Zein^{1,*}, Carolina Consolacion-Segura² and Ruben Huertas-Garcia³

¹School of Business Administration, Technical University of Catalonia, Barcelona
C. Jordi Girona 1-3, 08034 Barcelona, Spain

²School of Telecommunications Engineering, Technical University of Catalonia, Barcelona
C. Jordi Girona 1-3, 08034 Barcelona, Spain; Carolina.consolacion@upc.edu

³Economics and Business Administration Department, University of Barcelona,
Avenida diagonal 690, 08034 Barcelona, Spain; rhuertas@ub.edu

*Correspondence: samer.ajour@upc.edu

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Abstract:

The behavior of firms is changing as new kinds of businesses evolve. In particular, companies are now seeking to optimize their value, especially their intangible value—referred to as brand equity value—which has many behavioral drivers. The analysis of brand equity determinants in the financial sector (e.g., ethical investments, sustainability and firm behavior) has received little attention. The methodology used in this study included the collection of information from publicly listed companies, followed by the execution of a statistical analysis to study the correlations between brand equity values and their determinants. We aimed to close this gap by raising the awareness of the positive impacts of sustainable investments in the financial sector and the need for a managerial implementation model to build a sustainability-oriented brand value. The objective of this research was to examine the relationships between elements such as sustainability scores or diversity measures and firms' brand value. Considering sectoral and regional effects, we observed a positive relationship between environmental and social governance scores and brand equity value.

Keywords:

Sustainability; Ethics; Brand Equity; Governance

5.1. Introduction

In recent years we have seen a growing interest for responsible investment, an approach that considers environmental, social and governance (ESG) factors in portfolio selection and management. In 2015, 218 US funds had integrated ESG factors into the investment process. In 2018, this number has increased up to 351, reflecting the growing importance of responsible investment, reaching \$161 billion of total assets under management [1]. However, not only United States investors are integrating ESG factors on investment decision but this is a worldwide trend. In fact, global sustainable investment has increased a 67% in the last four years from \$18,276 billion in 2014 to \$30,683 billion in 2018 in the five major markets [2]. This popularity of sustainable investment may be viewed as investors becoming aware of environmental sustainability, the treatment of companies to their employees and society as a whole, as well as in business policies such as the diversity of the board of directors and ethics business. Nevertheless, investors may not be as altruistic and base their investing choices on sustainable firms because they expect to get better financial returns. In fact, ESG factors may improve a business' image for its stakeholders and engage its clients, boosting brand value.

On the other hand, brands are one of the most strategic assets of a firm, able to get sustainable competitive advantage over competitors. However, companies' financial statements do not include them, so that estimating their values is a hard task. In fact, brand equity may be seen from the consumer perspective -perception or behavioral value- or the financial perspective -revenue differential between a branded and a generic product. Here, we use brand equity and brand value indistinctly, referring to the financial perspective. The brand value estimation is as proposed by Damodaran [3], where a well-known brand—with customer engagement—can charge a price premium relative to generic brands—without customer engagement. The intuition is the following—firms can charge higher prices for the same products, driving up profit margins and price-sales ratios, as well as firm value. The larger the price premium a firm can charge, the greater the brand value.

The need for this study has arisen from the availability of more modern sustainability data due to increased reporting [4] by public firms and the wide variety of firm valuation methods. We are not the first to describe the relevance of sustainability measures within the business framework. Corporate social responsibility (CSR) efforts have previously had significant impacts on the customer-based brand equity perspective [5] as well as the conceptual model in the business-to-business market, highlighting the importance of the topic from a stakeholder perspective [6]. The analysis of brand equity determinants in the financial sector such as ethical investments, sustainability and firm behavior—being important internal and external sources of brand equity determinants—has so far received little attention. We aimed to close this gap by increasing the awareness of the positive impact of sustainable investments in the financial sector.

In this paper, we go further ethical considerations and we seek to throw additional light on the ESG literature by estimating the impact of ESG investments on brand value. In particular we carry out this analysis on financial sector, which may have found an opportunity to recover its image, reputation and brand value by increasing its concern on social and environmental aspects after its image had sharply been reduced since 2008 financial crisis.

We use an OLS model controlling by region and time effects, what allows us to infer a linear relationship among brand value and ESG factors but not causal effects. Our results suggest that environmental, financial and governance factors are drivers for boosting brand value. That is, the more important are ESG factors for a company, the higher the brand value.

In spite of vast literature on ESG and financial performance, there is a lack of literature on ESG factors' effects on brand value of financial firms. In this study, we close this gap and we find that ESG factors are key to stakeholders by enhancing brand value, what increases competitive advantage of the branded firms relative to generic firms.

The paper is organized as follows. In Section 2, we present a literature review under four broad classifications. In Section 3, we explain how we construct brand value, which are the main variables included in the econometric specification and we describe data statistics. In Section 4, we present our results. Finally, in Section 5, we exhibit the main conclusions and discuss the practical implications and limitations to the study.

5.2. Literature Review

5.2.1. Intangible Assets and Brand Value

Intangible assets are a key factor in the long-term success of any company. As such, their value must be carefully considered. The value of tangible assets is estimated based on future events that are numerically quantified to assign a fair value to each asset [3]. Intangible assets are not easily valued because of their different nature. The difference between an intangible and a tangible asset is their assigned virtual perception. For instance, two investors would assign different values to the same intangible asset because a virtual benefit is delivered that is perceived differently. As the benefit obtained is not physical, the valuation process is more difficult [7]. Considering two companies in the same industry with equal service and other factors, the perception of this extra benefit to the final users gives this brand a different value depending on stockholder and consumer perspectives.

Intangible assets have been under the spotlight due to their growing importance within the business world. Finance, accounting, business strategies and economics have always considered the importance of this category of asset as a fundamental component of a company as a whole. Intangible assets represent the intellectual

capital of a firm as well as its potential growth through innovation, which seems to be the keyword in today's business. Marketing and firm value play roles in creating brand equity value, as appropriate marketing skills and other brand equity determinants affect the shareholder value [8]. Even though this topic is receiving significant attention from practitioners, debate about its features is ongoing, starting with its definition [9]. Some consider intangible assets to be goodwill data. For example, intangible assets include elements such as patents, trademarks, copyrights, brand names or logos that constitute the firm's goodwill [10]. In addition to working capital and tangible assets, intangible assets are classified as a core element of a business enterprise [11]. Therefore, these are the elements that allow the business to operate and can be the primary contributors to a firm's success and competitive advantage [11]. The overall trend in the business world is to conceptualize the day-to-day procedures used to improve performance and increase revenue streams through which companies create value [12].

However, there is no consensus in literature on the meaning and the measuring of a brand. In fact, Winter (1991) explains this discrepancy by stating, "if you ask 10 people to define brand equity, you are likely to get 10 (maybe 11) different answers as what it means". References [13–15] use both terms, brand equity and brand value indistinctly. This terminology difficulty arises because brand equity is more than just a name and a logo [16]. This intangible asset represents an organization's engagement with a customer to deliver what the brand represents in terms of emotional, social and economic benefits. In sum, brand equity may be seen from the consumer perspective—perception or behavioral value—or the financial perspective—revenue differential between a branded and a generic product. Brand equity usually refers to the broad term—including both the consumer and financial perspective—while brand value usually refers to the financial perspective. From this last perspective, Bahar Gidwani (2013) [17] found that sustainability performance and brand value are positively related, what sustains our main hypothesis that ESG factors boost brand image, brand reputation and, hence, brand value.

In this paper, we use brand equity and brand value indistinctly, referring to the financial perspective. We adopt brand value estimation proposed by Damodaran [3], who examined this intangible asset as an incremental cash flow of branded relative to unbranded companies. His model assumptions were built on the premise that the brand name company and a similar generic company are both publicly traded. His proposition is based on the market observations of both companies, which allows a value the difference between the two brand values. Bahar Gidwani (2013) finds that sustainability performance and brand value are positively related.

5.2.2. Sustainability Brands and Financial Performance

Many authors have tried to find the effect of sustainability and social responsibility of firms on financial performance. Corporate Social Responsibility includes a company's social activities, demonstrating the inclusion of social and environmental concerns in business operations. The idea of the only responsibility

of a business being to increase its profits dates back to the 1970s [18]. Despite this, companies in the industrial and service sectors were more worried about indirect losses than indirect gains affected by their corporate social responsibility [19]. Since 1978, researchers have noted a correlation between CSR and financial performance [20], which led academics to extend their research in 1985, showing that less-diversified businesses have better corporate social performance [21]. In 2003, the capital market's response relationship to CSR was linked to the amount of information disclosed [22]. As a result of the 2008 financial crisis, considerable research has been conducted on how companies react to external challenges, and large capitalization firms have been reported to have become less responsible [23].

The effects of CSR on corporate financial performance vary across firms and time [24]. Corporate social performance is positively related to a company's reputation [25]. However, in both the banking sector and chemical industry [26], up until 2011, there was no significant relationship between ethical ratings and corporate financial performance. In contrast, CSR has been positively associated with the firm value of European manufacturing firms [27] in the oil and gas industry [28]. In addition, in recent years, The Conference Board has found an increasing connection between sustainability and brand value [17].

Ameer (2012) finds that companies which attend to ecosystems, societies and environments of the future have higher financial performance compared to those that do not engage in such practices and this superior performance is sustained over time [29]. Good environmental performance [30] is significantly associated with good economic performance and this tends to lead to positive future performance [31] and lower risk exposure, as a result of the social responsibility actions taken [32]. Poor company financial results are generally the result of poor community engagement rather than poor social performance in terms of environmental factors [33]. However, Farooq [34] finds that ESG disclosure is negatively related to firm performance in emerging markets and argues this result by stating that stock market participants can consider ESG investments as unnecessary costs.

5.2.3. Sustainability Brands and the Financial Sector

Sustainability can be defined as meeting human necessities while at the same time preserving the nature or our planet. It is a connection between nature and society [35]. Sustainable science is a field that is trying to examine the correlations between society and resources, how these resources have been used and their limitations and boundaries. It is also trying to address the behavior of the organizations and their responsibilities towards society and nature [36]. In today's business world, sustainability is affecting competitiveness [37]. Executives are very aware that failure on sustainable challenge impacts their organizations in a negative manner [38]. Sustainable strategy became very important on the road map for every organization [39]. Consumers are searching for the sustainable environmental friendly products since concerns about climate change have increased [40]. In order for companies to get a sustainability advantage they need

to have green product offerings [41]—sustainable products designed to minimize environmental impacts during its whole life-cycle and waste.

The United Nations (UN) [42] has looked at the reporting of sustainability indicators in the financial sector. Also, private initiatives such as the Asset Owners Disclosure Project can help to promote transparency and, especially if governments promote their use, enable market forces such as reputational impact to take action. The UN is not the only international organization to mention the importance of sustainable investments and indices, as the European Commission [43] recently advised that an increased focus on environmental, social and governance indices during the investment process is necessary. Similarly, Marcel [44] suggested the use of legal and social incentives but also stressed the importance of price incentives to internalize negative externalities on the environment in order to maximise the social welfare.

The financial sector contributes, both positively and negatively, to sustainable development, so there is a need to conduct research in this area to optimize the positive effect [45]. New financial products and social challenges are highly correlated in the banking sector [46]. Despite the important relationship between finance and sustainability and researchers, the need remains to expand the knowledge on the issue of financial management and the concern with sustainable development [47]. This could increase managers' awareness of the relationship between society and the firm when making their decisions [48].

5.2.4. Sustainability Brands and Marketing Strategies

CSR affects the behavior of firms from all sectors and a direct relationship exists between sustainability and marketing strategies. Stakeholders form part of the sustainable scheme by enhancing the added value of a firm [49]. In the industrial sector, there is a positive association between CSR and corporate reputation [50]. For example, there is a conceptual framework in the life insurance industry that shows the impact of CSR on brand equity to be positively related to persuasive advertising effects [51]. In the electronics sector, there is a positive relationship between green characteristics (green satisfaction, green affect, green trust and green brand loyalty) and green brand equity [52]. The incorporation of an ecological method in a brand produces a stronger preference for hedonic attributes.

For this reason, many companies focus on investments in intangible assets and, in particular, in brands and human capital, among others, to ensure the development of a stronger and sustainable image. Thus, they opt for a strategy of converting intangible assets to tangible assets to create the firm's value and place in the market [53]. For the past 30 years, companies have focused on corporate sustainable development and this has become an organizational determinant [54]. This phenomenon has arisen from companies seeking a competitive advantage and trying to become sustainable in parallel with the main business objective, to the point that sustainability can be the profitability tipping point in business. For this reason, sustainability is now a key driver of innovation [55]. The additional benefit of sustainability is that it links social entrepreneurship with economical

profitability to the extent of recognizing the social return on investment and triggering the evolution of business strategies [56]. Firms should develop different strategies to achieve a competitive advantage and should focus on asset specificity in determining the multiple uses and purposes of their assets [57]. Since a link exists between strategy and society, a new method was proposed by Porter to link business to societies [58]. For instance, the supply chain sector dealt with this as a business opportunity in 1996 with the introduction of this new scheme in the re-engineering of the structure and management of the supply chain to manage the environment to more effectively use current resources to balance sustainability and profitability. Those changes were meant to represent an investment by the sector, despite being forced by consumers who push producers into developing sustainable products by their desire to use products with minimized environmental effects. This pushed companies to consider the balance between sustainability and pragmatism, which, in turn, affected the brand equity of the whole sector [59].

Businesses have insufficient knowledge about how to see and value CSR. The development of reputation and brand equity require the use of an effective strategy to achieve a competitive advantage and build a company's identity. Thus, a framework needs to be set to identify the contributions of intangible assets based on case studies and to reveal their importance in a sustainable, competitive advantage strategy [60]. A firm's environmental orientation could influence their corporate brand value [61], suggesting that managers should invest wisely in environmental activities, as these investments have an effect on corporate intangible assets [62]. When implementing procedures, managers should consider that company identity can grant a competitive advantage [63] that translates into better performance while still recognizing the importance of the availability of resources [64].

5.3. Model, Methodology and Data

5.3.1. Model

The method for determining brand value (or brand equity) involves considering how much more a consumer is willing to spend on one branded product versus another as well as the fact that there is a relevant branding shareholder value creation link [65,66]. Damodaran [3] examined this intangible asset as an incremental cash flow of branded to unbranded companies. His model assumptions were built on the premise that the brand name company and a similar generic company are both publicly traded. His proposition is based on the market observations of both companies, which allows a value to the difference between the two brand values.

The Brand Name Value can be determined as follows:

$$Brand\ Name\ Value = \left[\left(\frac{EV}{Variable} \right)_{Brand\ Name} - \left(\frac{EV}{Variable} \right)_{Generic\ Brand} \right] * Variable_{Brand\ Name} \quad (1)$$

where EV is the Equity Value. Under the assumption of using EV/Sales ratios as multiples for comparison, this would be modified as follows

$$Brand\ Name\ Value = \left[\left(\frac{EV}{Sales} \right)_{Brand\ Name} - \left(\frac{EV}{Sales} \right)_{Generic\ Brand} \right] * Sales_{Brand\ Name}. \quad (2)$$

Fernandez [67] underlined a further limitation behind their model (shown in Equation (2)), stating that sales are not identical between the generic brand and the branded company and suggested expressing the following formula to consider the different volumes:

$$Brand\ Name\ Value = \left(\frac{E}{S} \right)_{Brand\ Name} * Sales_{Brand} - \left(\frac{E}{S} \right)_{Generic} * Sales_{Generic},$$

where E is the equity calculated by market capitalization and S is the sales volume. Therefore, Brand Name Value is the market added value for a branded firm relative to a generic firm.

The control variable Intangibility is an approximation of net intangibles that is computed by

$$Intangible\ Assets = Goodwill / Total\ Assets,$$

which represents the goodwill to assets ratio used to determine what portion of a company's assets are classified as intangible assets relative to its tangible assets. Goodwill is the excess purchase price over the acquiree's book and is considered to be carried on in the new books after the sale of a business as an asset and is eventually written off. The concern here is to determine whether there is any significant relationship between the intangibility and the brand value assigned. In addition, the Return on Assets (ROA) is included as an indicator of how profitable a company is relative to its total assets and the Price-to-Earnings ratio (PER) is a measure of the company's value based on its current share price relative to its per-share earnings.

5.3.2. Method

The dependent variable Brand Value is composed of the ratio of market capitalization to sales, standardized by the sector's generic firm. Despite the limitations on the sales volume [67], we propose the use of various independent variables and test their significance and effect on the brand value. We aim to develop a better brand equity model that considers other significant factors; in particular, sustainability. The first possible weakness considered in this model is the choice of the generic company, as there is difficulty involved in estimating the parameters of the generic product. The choice of the generic company can vary within the same sector, as the ratio of branded to generic companies can vary among sectors, therefore increasing the chance of a hidden arbitrariness in the dependent variable [68]. To reduce this hidden arbitrariness, we propose using the average industry as a proxy for the generic company as the dependent variable of brand equity based on The Bloomberg Industry Classification Systems (BICS) first level of detail [69]. For the independent variables, data were collected and collated using publicly available annual reports from Bloomberg to find

approximations of the levels of competitiveness, market share, net intangibility assets, sustainability and transparency and governance factors.

We run a Panel data OLS model regression controlling by region and time effects, which allows us to infer a linear relationship among brand value and ESG factors but not causal effects. We assume that a regression analysis is a statistical procedure to obtain estimates. Causal analysis is not a specific statistical procedure, it can be regression analysis, path analysis or variance analysis. In our paper, the data analysis for research design allows causal conclusions, thus the regression analysis on our data is considered to be a causal analysis [70]. We thought of doing Granger causality to study the econometric relationship that tests whether additional information from the behavioral variables (ESG scores) help explain the brand value. But the independent variables and the brand value variable should be stochastic variables which is not the case. Nevertheless, in the regression analysis this assumption is not necessary (in this case the OLS panel data with dummy variables such as region controlled by years, there is no need to have stochastic variables). Therefore, the variables could be deterministic, which is the case of the independent variables included in this paper.

Our results suggest that environmental, financial and governance factors are drivers for boosting brand value. That is, the more important are ESG factors for a company, the higher the brand value.

5.3.3. Data

Due to the usage of several variables across 5 years, a panel data/longitudinal dataset was constructed. Tests for multicollinearity among some variables as well as heteroskedasticity, were conducted. Five years of data (2013–2017) were collected from a published annual report of 1100 companies from S&P 500 and EURO 600–Bloomberg. Overall, 1816 observations were collected from a variety of international companies. Our sample thus includes the biggest companies in the the US and European markets. Although, to a varying degree, these markets consist of many small and medium enterprises (SMEs), as publicly traded companies are intensely valued by the market and they more clearly disclose their ESG investments.

Our hypothesis is that the dependent variable, Brand Value, is positively affected by investments in environmental and social governance factors, in addition to other social aspects like the share of women on the board of directors and the proportion of female employees. ESG factors may boost the image and reputation of a firm, with the potential positive effect on customers willing to pay a premium for the branded sustainable product [17]. More female workers and women on the board of directors increases diversity and inclusion, what is clearly correlated with ESG factors—in concrete, with Social factors—so it needs to be included as a control. Also, studies as Shrader (1997) found that firms employing greater percentages of women managers at the general management level experienced a better financial performance in terms of ROS, ROA, ROI and ROE [71]. Since we are working with panel data, we control for yearly and regional effects in order to

capture the influence of aggregate trends (time-series) and regional effects that may be correlated with other explanatory variables such as ESG. We include dummy variables for these factors to increase the robustness of the specifications.

Many CSR investment funds have been developed, despite the need for new value creation sources [72] and the recommended enforcement [73,74] of the widely used sustainable reporting instruments and indices. For this reason, the independent variables in this paper is ESG factors, which provides a single company’s ESG performance score as well as being based on third-party ESG scores; the quality score of the Institutional Shareholder Services (ISS), which is the world’s leading provider of corporate governance and responsible investment solutions and the collective voice of shareholders; and the SR (Sustainalytics Rank), provided by a global investment firm that specializes in sustainability research and analysis, to show the sustainability of a company. To tackle the company behavior, the Company Disclosure Performance score (CDP) was added as an index to measure the transparency of companies, followed by two variables: the number of women on the board and the number of female employees. Finally, we also include a categorical variable for whether the firm is from the US or the EUR market and include time in the main regression as control. A summary of the main variables used is provided in Table 5.1 and the main statistics related to the financial and social factors are displayed in Table 5.2.

ESG has been positively linked to corporate financial performance across a wide range of more than 2000 research articles [75]. It is important to use several of these variables, as there are important differences among ESG rankings, so the use of just one might lead to biased results.

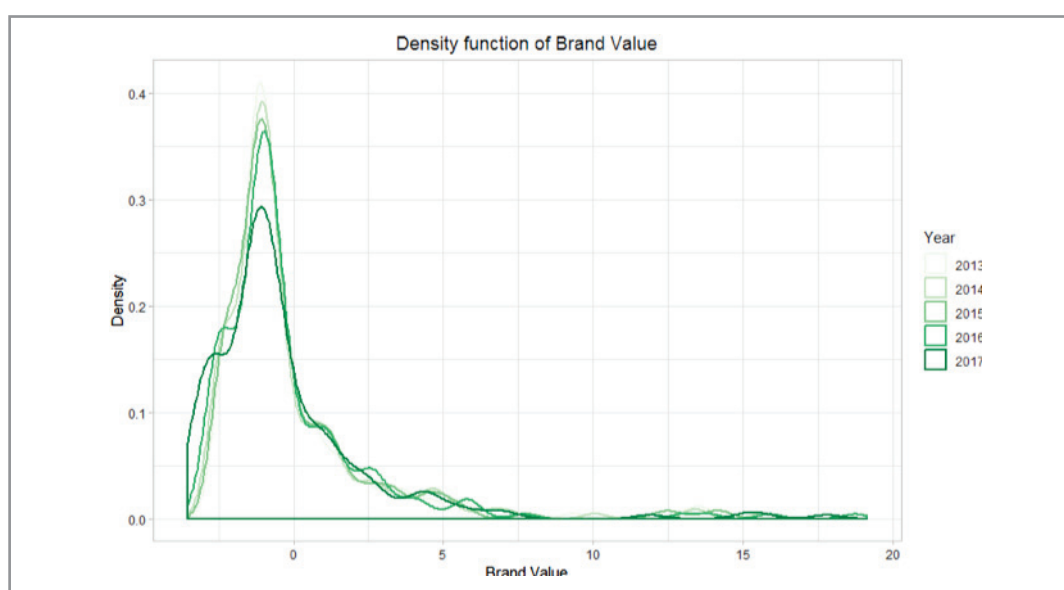
In Figure 5.1, we display the density of the estimated Brand Value in our data set for every year. Interestingly, this shows a trend of increasing dispersion, with more firms having even more negative brand value and large, positive outliers.

Table 5.1. Main Variables

Latent Variables	Observable Variables	
Financial situation	Intangibility	Measured intangible assets
	ROA	Return on assets
	PER	Price–earnings ratio
	Index Growth	Average growth of relevant index
Social factors	ESG score	Environmental and Social Governance index
	W omen Directors	Share of female directors
	Women Employed	Share of women employed
Unobserved factors	Region	US/EUR
	Time	Year variable

Table 5.2. Summary of the Statistics

	Mean	Median	Std. Dev	Max	Min
Brand Value	157.5	-8989.6	47,775.99	733,090.4	-97,977.6
Intangibility	0.077	0.037	0.001	0.799	-0.009
ROA	5.930	4.881	0.09	235.4	-70.4
PER	1631	535	46.8	141,828	-35,206
ESG	36.861	37.191	0.151	78.512	3.509
Women Directors	74.81	80.00	0.179	100.00	0.00
Women Employed	36.94	35.00	0.160	84.7	6.0

**Figure 5.1. Annual density of Brand Value**

In Figure 5.2, we display each firm's average brand value, sector and either the average Sustainability index or the average Environmental and Social Governance score, in both cases with a generalized additive model with integrated smoothness displaying the trend. As can be seen, across different indices and levels, higher values of sustainability tend to be correlated with higher average brand values.

However, as can be seen in this figure, there is wide variability in brand values when considering companies from all sectors based on the Bloomberg BICS classification. Subsequently, we conducted a more detailed analysis of brand value, particularly in the financial sector.

In Figure 5.3, we display the same study for only the financial sector. The results are consistent within this sector, as both indices had a similarly positive, albeit not linear, relationship with brand value.



Figure 5.2. Brand value and Sustainability Indices

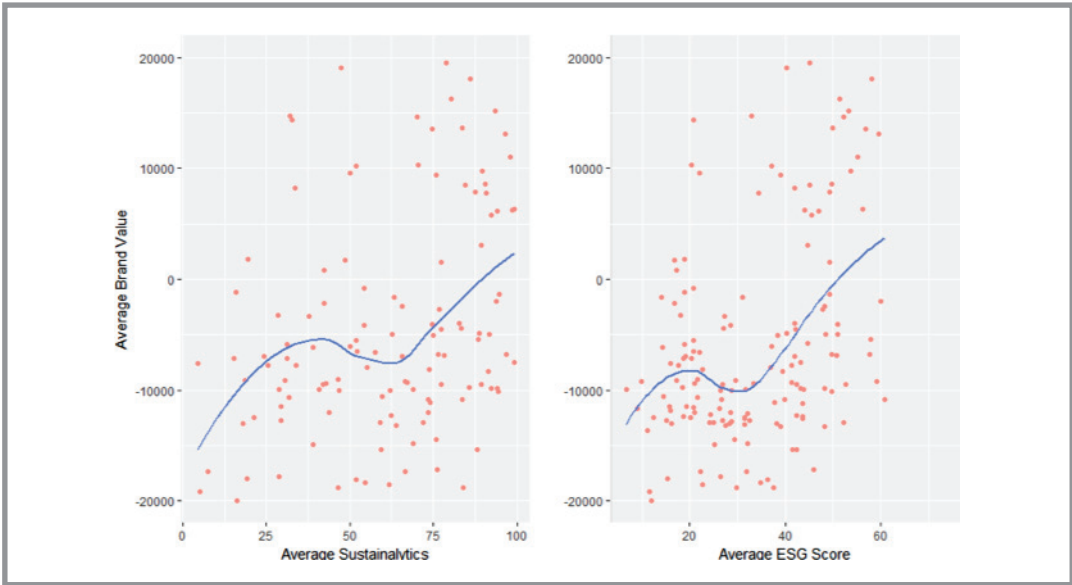


Figure 5.3. Brand value and Sustainability Indices for the Financial Sector

To study the evolution of this relationship between Brand Value and the Environmental and Social Governance score, Figure 5.4 shows a smooth trend linking both variables for every year of our sample. The trend was constantly positive over time and even displayed higher steepness in the last two years. This could imply that in more recent years, higher ESG scores were being more positively received by the market.

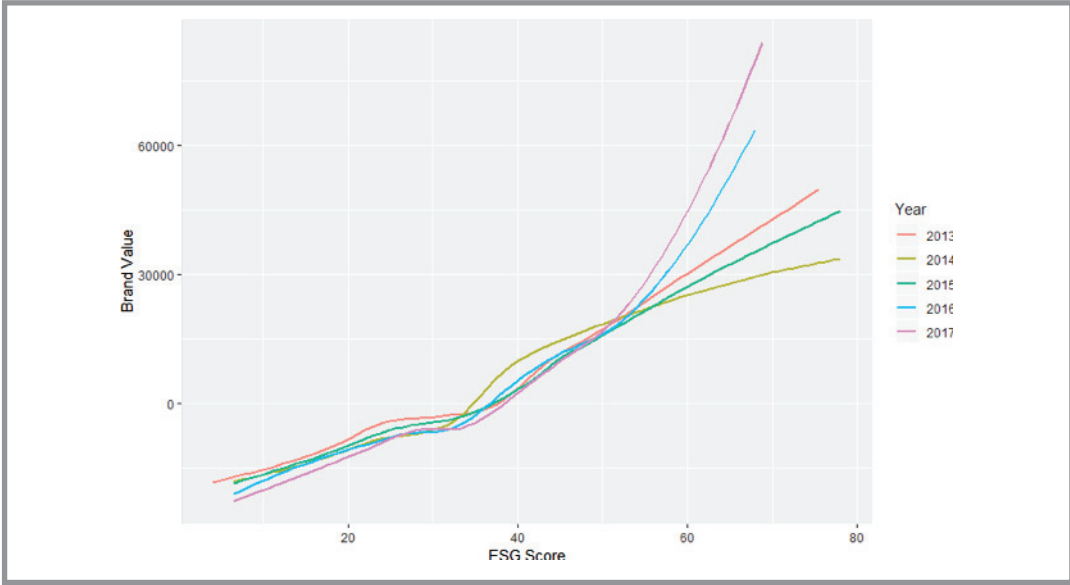


Figure 5.4. Evolution of the Relationship Between the Environmental Social and Governance (ESG) score and Brand Value

5.4. Empirical Results

Our findings shed some initial light on how brand equity is affected by environmental and social governance reporting of the underlying company in the financial sector. Results from the regression and paired-sample t-test methods show with a very highly significant p-value that a higher ESG score for a given company corresponds to a higher brand equity value (Table 5.3).

Table 5.3. Regression Results

	Dependent Variable:
	Brand Value
Intangibility	16,732.2 * (8978.9)
ROA	-205.64 * (81.6)
PER	4.2 *** (0.1)
ESG score	648.2*** (81.0)
Women Directors	103.1 * (52.8)
Women Employed	8.1 (56.9)
Index growth	38,296.8 (3085.9)
Region (US)	11,290.0 *** (3085.9)
Constant	-44,198.7 *** (7497.0)
Observations	2467
R ²	0.281
Adjusted R ²	0.278
F-Statistic	80.101 *** (df = 12; 512)
Note: * p < 0.1; ** p < 0.05; *** p < 0.01.	

To test for multicollinearity, we used the variance inflation factor test (VIF), which compares the variance of the model with several factors with the model with one term alone. The results, in Table 5.4 show that the variances of the estimated coefficient of all variables were moderately inflated, while the VIF values of all the other variables were below 10, indicating low correlarity among the independent variables and that the multicollinearity does not pose a problem for our explicative model used (Appendix A).

Table 5.4. Variance Inflation Factor (VIF) Test

Variable	Test Statistic
Intangibility	1.012
ROA	1.069
PER	1.073
ESG score	1.086
Women	
Directors	1.349
Women Employed	1.047
Index Growth	3.732
Region	2.419
Year	3.396

To validate the appropriateness of the model we are using, we perform residual analysis (difference between the predicted response and the actual response) and examine residual plots to evaluate how well the model fits the data and that the data meet the assumptions of the model [76]. Residuals are plotted to understand whether the assumptions which have gone in building a linear model hold true or not.

The residual plot for the Brand Value dependent value with each of the independent variables shows that most of the model validation centers around the residuals (essentially the distance of the data points from the fitted regression line) validating homoscedasticity that means that the residuals are equally distributed across the regression line, that is, above and below the regression line and the variance of the residuals should be the same for all predicted scores along the regression line. This accepts the assumption of validating the appropriateness of the model we are using.

To test for heteroskedasticity in the linear regression model to check whether the variance of the errors from the regression was dependent on the values of the independent variables, we used the Breusch–Pagan (BP) test, which indicates whether the variance of the errors depends on the values of the independent variables. The results, displayed in Table 5.5 showed a very low p-value; thus, the null hypothesis of homoskedasticity was rejected and heteroskedasticity was assumed.

Table 5.5. Breusch–Pagan (BP) Test

Variable	Model
Statistic	689.72
Degrees of freedom	12
p-value	0

As seen in the main Table, Table 5.3, the dependent variable, Brand Value, was positively affected by the ESG score. Consistent with the higher average Brand Value, the dummy variable for the United States (US) region was also significantly positive. Although tangible and intangible attributes and both are found to be important contributors to brand equity and brand choice [77], Intangibility variable was as well positively significant. The share of Women Directors, being a business imperative [78] were also positively correlated with the Brand equity Value, albeit less significantly. Even though the share of female directors did positively affect the brand value, the share of female employees had no direct implication on brand value and was not significant. Although statistically it makes sense to eliminate effects that are not serving a purpose, but this insignificant effect has a purpose in highlighting that, even though diversity affects positively on business performance [79], we found out that in the financial sector, gender diversity does not affect brand value. A similar result was found when including other sustainability indices, such as Sustainalytics, in the financial sector. Since sustainability ratings are a challenge to financial firms [80], the importance of this result advises firms of the importance of Sustainalytics and the possible future positive effect on brand value. The ESG score did not lose significance but the new addition simply generated noise and was not significant.

Finding the impact of sustainable investments on financial firms' Brand Value is considered difficult due to nature of the valuation methods of intangible assets, as mentioned by Salinas [81]. Since low multicollinearity exists for the independent variables in our model, already discussed in the previous paragraph, then we can interpret the effect of the independent variable on the dependent variable by considering the coefficients [82]. The positive significant coefficients are ESG score index, Intangibility, Price to Earnings ratio, share of female directors. So an increase of any of these variables would increase the Brand Value. More precisely, our results suggest that an ESG score index increase of one unit would boost Brand Value in 648.2 million dollars, on average. This result indicates that financial firms will end up improving their Brand Value by further investments in sustainable investments, thus enabling those investments to be the preferred investment focus in the financial sector [83]. Also, for each additional unit intangibility, we can expect an average increment of Brand Value of 16,732.2 million dollars, that prove the contribution of human capital as an intangible asset to Brand Value [84]. In line with standard accounting assumptions, the price to earnings ratio (PER) has a positive effect on our dependent variable, which is in line with increasing number of investors using PER ratios to make decisions [85] and furthermore, we can observe that for each additional unit of Price to Earnings ratio, the Brand Value is expected to increase by an average of 4 million dollars, a motive to guide the organization focus on increasing shareholder value [86] in the financial sector. An additional unit of participation of female director would increase the brand value on 103 million dollars, on average, that provides implications for future research regarding the effectiveness of female board of directors towards firm performance and Brand Value in the firm sector. However, the Return on Assets (ROA) ratio has a negative, albeit less-significant, effect. Robbin [87] referred to the negative relationship between brand value and return of asset in big capitalization firms that coincides with the firms in our data set in the financial sector, what could explain the negative effect. Despite the limitations of valuing brands [88] and our proposed scheme for identifying brand value drivers, that is, the parameters influencing the brand's value, our main challenge in this paper is raising awareness of this positive impact between social drivers and Brand Value.

Knowing that social sector is attracting companies in order to identify opportunities for business innovation [89], there is still a need to implement those models both supported by academics and applicable by practitioners in the financial sector to ensure a greener and more sustainable sector.

We also included the average annual growth rate of exchange-traded funds (ETFs) to track the S&P500 and the Eurostoxx 600. In this way, we controlled for possible effects in brand value unaccounted for by the model, such as a slow-moving global trends in stock prices and brand values. However, this indicator did not appear to be significantly related to our measure of Brand Value. The model explained 28% of the variability, as seen through the adjusted R^2 and the F-statistic allowed us to strongly reject the possibility of the independent variables' coefficients being zero.

5.5. Conclusions, Managerial Implications, limitations and Further Research

Brands bring awareness to users and allow them to remember a particular product or service [90]. Due to the need to develop awareness of the sustainability concept that is already in place [91], a responsible business guide could contribute to obtaining a better brand equity value. Our suggestions include not only investing more and trying to obtain a higher ESG score but also disclosing those investments and promoting what the company does. The results show, with a reasonable significance level, that the more sustainable a company is, the higher their brand equity value is. In addition, a more gender-diverse board of directors could positively influence the brand value of a company in the financial sector. As already mentioned, cooperation through reporting to the UN and to private entities that publish such indices should be enhanced. Drawing the line from all of this statistical information, one idea can clearly be underlined: environmental, financial and governance factors are drivers for boosting brand value. That is, the more important are ESG factors for a company, the higher the brand value. This helps raise awareness to management and investors, together to a single goal to draw a distinct image in the consumer's mind with a more sustainable Brand. Differentiation is an inevitable part of brand management, which can be done by positioning and integrated marketing communication [92]. Brand was initially used to differentiate a group of products from that of others [93]; but nowadays, brands are used by consumers to differentiate them within society [94]. It has become a very much integrated in the business models; and consumers have a voice in distinguishing service quality in all sectors [95] and in the financial sector particularly [96] playing a key role for managers to be aware of the reasons and consequences of why customers stay [97] and thus plan for a service quality in an integrative approach [98].

These results also affect the perspectives of the end users, investors or fund managers, as higher ESG scores might signal future long-term gains in brand value that have only recently been captured by the market and included in the price. This relationship could foster a virtuous circle in which companies with green investments attract [99] more capital and are able to grow and invest more. Investors that are able to show metrics on the sustainability of their portfolios can use those metrics as added value that distinguishes them from other fund managers [100]. In addition, due to the interlinkages between the financial sector and the rest of the sectors of the economy, the effects on brand value can spread to other firms and new ways of reporting information [101] and new channels of social investments can be achieved through the classical banking activities of financial intermediaries integrating the

behavioral factors we raised awareness in this paper and whose implementation is crucial to achieve a green brand [102].

Our research adds extra questions regarding firms' reporting of environmental and social aspects [103]. This study was limited by the availability of these data and by the complexity of the estimation of brand value [104]. We studied the main trends through the main indexes of sustainability and an estimation method while attempting to reduce analyst bias [105]. However, further research is needed to increase the robustness of the results and contrast them with new data-sets and estimates [106]. In addition, due to data availability, we focused on big firms in the US and EU markets; however, SMEs might be driving their brand value through their social investments even more so than big corporations. Further research should focus on possible nonlinear effects. For example, as seen in Figures 1–3, the relationship between ESG score and brand value, although positive, was not constant and varied over time. Tools such as SPSS softwares solution adopted for SMEs using digital marketing tools to managing brand equity [107] could be a further research for all firms in the financial sector that seek a continuous sustainable trend. Thus further managerial implications on a practical level with an integrated model that takes into account the social, environmental and economic performance for the creation of sustainability-oriented brand value in the financial sector is needed. Doing that is not an easy task; however, the results obtained constitute a small but significant first step by raising awareness of its importance. This first step can provide a guidance starting point for those the financial firms that want to improve their business models and follow the path of growth and sustainability by managing their brand equity for a long run approach.

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Appendix 5. Model Validation Graphs

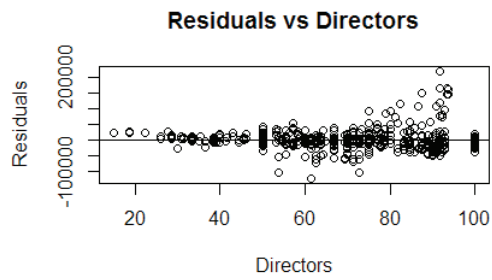


Figure 5.5. Residuals vs Directors

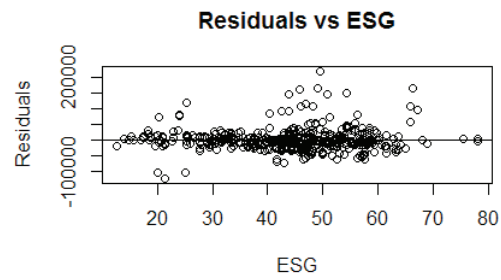


Figure 5.6. Residuals vs ESG

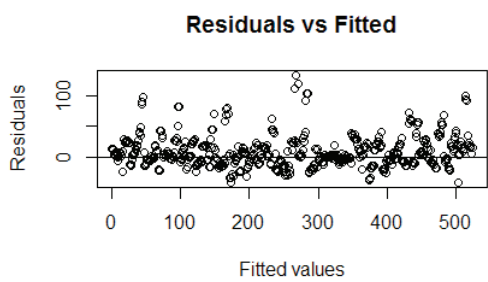


Figure 5.7. Residuals vs Fitted.

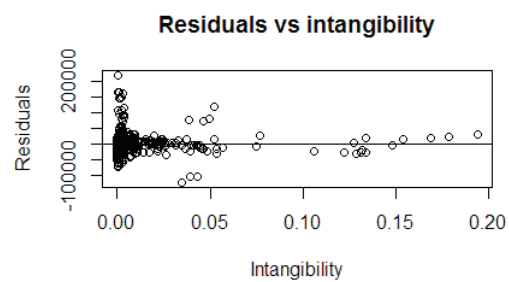


Figure 5.8. Residuals vs Intangibility

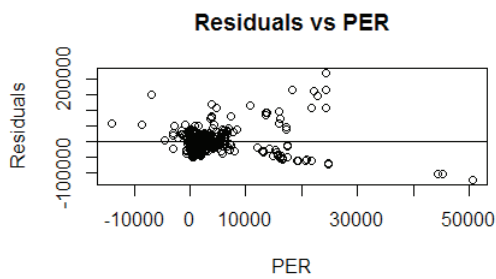


Figure 5.9. Residuals vs PER

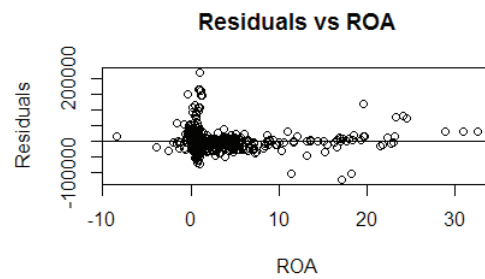


Figure 5.10. Residuals vs ROA

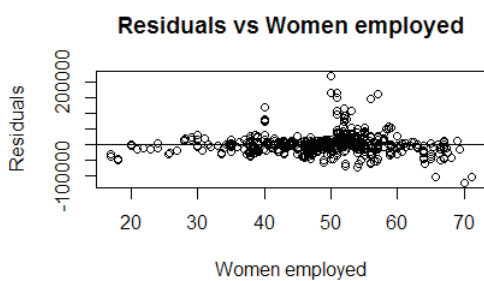


Figure 5.11. Residuals vs Women Employed

P
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T



Conclusions And Future Directions

Conclusions and Future Directions

In this chapter, we set out what has been accomplished in the thesis (Section 6.1) and the future lines of research it opens (Section 6.2).

6.1. Conclusions and Contributions

In what follows, the main contributions of this thesis are set out. They include both theoretical and methodological aspects created, as well as, considerations on intangible assets, the valuation model and behavioral factors.

The list below summarizes the significant contributions to *Understanding the Complexity of Intangible Assets* are:

- Presents the contribution of intangible asset valuation.
- Provides empirical evidence on the influence of intangible assets in the investment decision and firm valuation.

The main conclusions of *Understanding the Complexity of Intangible Assets*:

- Intangible assets are becoming essential for the business environment in many ways (Sousa, Rodrigues, Martins, Negas, & Jamil, 2019). But before defining the political or financial impact of intangible assets, it would be interesting to find a common ground first in which to validate their importance. It has been found that the flow of capital can play both a positive and negative association with the value of intangible assets. This data can facilitate to carry out a further technical and financial analysis (Manikas, Patel, & Oghazi, 2019). This would be a key point for the development of the field because, as discussed above, there is still no ontological agreement on how to interpret and classify intangible assets (Shen, Au, & Li, 2019). Several steps should be taken to reach

a consensual response: First, identify and determine the importance of assets that contribute to the formation of intangibles, using current findings in various streams of research regarding strategic assets such as goodwill and book market effect (Park, 2019). Second, try to find a consensus among scholars from different areas to develop and analyze the exploitation of these intangible assets (Ferdaous, & Rahman, 2019). Based on this last step, the first article of this thesis is a contribution to the literature on intangible assets. The main challenges and possibilities behind a new stream of research that tries to understand the ontological nature of intangible assets were reported. Particularly, this chapter emphasizes the need for a common and standardized way to value intangible assets so that all economic agents may make choices based on fairly accurate firm information (Jeny & Moldovan, 2018). Finally, this paper finds evidence through a Fixed Effects econometric model that, in the US, intangible assets value has a positive impact on both market capitalization and sales which highlights the need for a common framework of intangible asset valuation. Therefore, intangible assets valuation might affect a firm's valuation and future research will be needed to find a common framework in which investors might operate in financial markets with better information and fundamentals.

Following the same structure as before, the main contributions of the *Financial Firm Risk: A Responsible Business Guide Control to Build Better Brand Equity and Company Value* are:

- Provides practitioners with a simple method that can be used to determine a fair value for a branded company.
- Studying the factors related to a firm's financial risk, including the effect of market share along with the intangible value of brand equity.

The main conclusions from *Financial Firm Risk: A Responsible Business Guide Control to Build Better Brand Equity and Company Value* are:

- According to the general accounting rule, an intangible asset is any entity-controlled resource for which the results from past events are estimated to flow to future economic benefits (Kirk, 2008). Characterizing an asset as “*intangible*” requires it to be identifiable, able to generate future economic benefits, controllable, and classifiable. The proposed improvement to Damodaran's relative model involves using the average value of the sector as generic or base and, thus, being able to determine the value of an intangible asset by comparison. This provides practitioners with an easy method to find a fair value for a branded Company.
- Regarding the behavioral factors that affect the valuation of intangible assets, we can conclude that the strong negative relationship between a firm's financial risk and brand equity should motivate practitioners to

minimize this risk, achieving higher brand equity. Such activities will be stable investments which will minimize the business risk (Louro, & Cunha, 2001).

- Knowing that in brand valuation models, findings suggest that its components have a positive impact on financial market performance, it is vital that managers understand clearly what brand value is and how they can create it (Raggio & Leone, 2009). Some authors point to maintaining a good reputation, that is, corporate reputation creates brand value (Simon & Sullivan, 1993).
- The research confirms the increasing recognition, both by managers and academics, of the importance of managing organizations' brand strategies (Medina & Duffy, 1998) as it is an underlying source of sustainable competitive advantage, (Louro & Cunha, 2001). As a result, we raised awareness with our research, integrating such factors on the brand value and its implementation which is crucial to building a brand portfolio value (Petromilli, Morrison, & Million, 2002).

Following the same structure as before, the main contributions of *Firm Behavior, an Engineering Business Tool for a Better Brand Value in all Sectors* are:

- Analyzes brand equity determinants and compares them in each one of the 10 economic sectors.
- Raises awareness of the positive impacts of the firm behavior on brand equity in a sectoral analysis.
- A win-win scenario is described to enhance business models, in which the improvement of corporate social responsibilities should also drive innovation (Nidumolu, Prahalad, & Rangaswami, 2009). All these actions are explained in better brand value, which helps managers take the initiative to engage the organization to implement better practices (Doppelt, 2017).

The main conclusions from *Firm Behavior, an Engineering Business Tool for a Better Brand Value in all Sectors* are

- After analyzing ten sectors, it is concluded that, in reference to the Materials sector - the more sustainable it is the better the brand value is. However, in the technological sector, the results point to the contrary - the less sustainable the sector is the better the brand value is. In fact, a significant challenge for technology firms is to offset sustainable attention with traditional for profit-driven schemes (Du, Pan, & Zuo, 2013). In all sectors, further the companies head towards sustainability, the higher brand value they would have. Thus, sustainability is a key driver for brands, which is considered as an engineering tool for companies to implement growth strategies in their core businesses (Higgins & Coffey, 2016). Driving sustainable innovation is a win-

win scenario in enhancing business models and corporate social responsibilities (Nidumolu, Prahalad, & Rangaswami, 2009). That is, if the commitment to sustainable management translates into better brand value, it helps managers initiate the change in the organization towards sustainable practices (Doppelt, 2017).

- Regarding gender characteristics, the analysis of the ten sectors highlights that the more women employed in the Discretionary Consumption sector, the higher is the brand value. Conversely, the fewer women in Communications and the Industrial sector, the higher is the brand value. We do not find the percentage of women on the management board to be a significant variable for brand value in any sectors. These findings are in alignment with the study of the US corporations' gender on board and firm performance (Carter, D'Souza, Simkins, & Simpson, 2010). Regarding environmental policy, the more environmental the Social and the Industrial governance, Public service, Basic consumption and Energy sectors are, the higher the brand value is. These Results coincide with the findings of Lai (Lai, Chiu, Yang, & Pai, 2010). Although the classical approach of doing national studies and comparing their results have generated insightful studies, critics have increasingly questioned them because they can hide patterns of political variation among industrial sectors (Kitschelt, 1991). This sectoral vision is the one applied in our study, where the majority of those sectors (Kang & Hur, 2012) require more in-depth analysis, to determine how each of those scores and their reporting affect their core business and the Brand value (Maas, Schaltegger, & Crutzen, 2016). The Environmental and Social Government's ESG estimates have been measured using a score made by the ISS Quality Score. Partial values in the Communications, Discretionary consumption as well as the Financial sectors show a significant negative relationship. That is, an inverse relationship between the ESG index and the brand value. This shows the need for developing a greater environmental, social and governance consciousness that could be used as an engineering tool that allows to achieve better brand value. Through the implementation of environmentally friendly and sustainable policies, more business sectors would improve their business practices, implement more governance tools and get a better brand value. This enforces the idea of the governance structure, (Grandori, 1997) that was already stated as an essential variable in the organizational analysis for management, and also considered a vital business driver in businesses, (De Villiers, Rouse, & Kerr, 2016).

Following the same structure as before, the main contributions of *The Role of Sustainability in Brand Equity Value in the Financial Sector* are:

- Analyzes brand equity determinants in the financial sector (e.g., ethical investments, sustainability, and firm behavior).

- Raises awareness of the positive impacts of sustainable investments in the financial sector.

The main conclusions from *The Role of Sustainability in Brand Equity Value in the Financial Sector* are:

- Brands strive for recollection, recognition, bringing awareness to users and allow them to remember or recognize when they see or hear a particular product or service, (Nedungadi & Hutchinson, 1985). Due to the need to develop an awareness of sustainability that is already in place (Herremans & Reid, 2002), a responsible business management could contribute to obtaining a better brand equity value. The results show, with a reasonable significance level, that the more sustainable a company in the financial sector is, the higher their brand equity value is.
- Other drivers such as a more gender-diverse board of directors, could positively influence the brand value of a company in the financial sector. Or like ESG management, the more important are ESG factors for a company, the higher the brand value is. This helps raise awareness in the management and investors with a single goal to draw a distinct image in the consumer's mind of a more sustainable Brand.
- Although the brand was initially used to differentiate some products from others, (Dolich, 1969); nowadays, brands are used by consumers to differentiate themselves from other consumers within society (Maison, Greenwald, & Bruin, 2004). It has become a key factor integrated in the business models and, also, in the service sector, consumers use the brand to distinguish service quality, (Iacobucci, Ostrom, & Grayson, 1995) as well as in the financial sector. On the other hand, the brand also plays a key role for managers to be aware of the reasons and consequences of why customers stay in the market (White & Yanamandram 2004). In a normative way, brand management contributes to strategic planning aimed at achieving a service quality with an integrative approach, (Stuart & Tax, 1996).
- Regarding sustainable policy, higher ESG scores might signal future long-term gains in brand value, which have only recently been captured by the market and included in the price. This relationship could foster a virtuous circle in which companies with green policy attract more capital and can grow in sales and investments (Randjelovic, O'Rourke, & Orsato, 2003). Investors that are able to show high valuations on the sustainability indices can use those metrics as a differentiation value that distinguishes them from other fund managers (Corfee-Morlot, Marchal, Kauffmann, Kennedy, Stewart, Kaminker, & Ang, 2012).

6.2. Future Directions

This thesis is very challenging in its concepts and application. Still, it becomes even more difficult to reach the results due to the nature of the object of study, the brand value as an intangible asset (Toro & Pavia, 2019). Given the ontological difficulty of defining the nature of intangible assets, there is not yet a unique method of intangible valuation (Nichita, 2019). Intangible asset's value identification is a hard task for many accountants, both in quantification and classification (Calder, 2019). Intangible assets are acquired in a company in different ways to obtain present and future outcomes whose quantification does not seem to be a usual process (Smith & Fingar, 2003). Another stream of research could be managing those intangible assets and analyzing their effect on the market and the company's systematic level of risk (Koonce, Toyne, & White, 2019). This involves testing how those intangible assets are being managed in more than one company, at the same time and in the same market (Raney, 2019). This is a challenging research task as it involves both macro-economic and socio-economic factors (Marcin, 2013). Derived from this suggested topic, there is a variety of proposals in the same field of research on intangible assets that could encourage further research, for example, in addition to brand image and value, the relational capital could be considered. However, the need to seek consensus definitions of what an intangible asset is and what factors can be used to estimate it is a large enough task to elicit suggestions of new ideas and guidelines for researchers (Kaplan, Kaplan, Norton, Davenport, & Norton, 2004). The natural progression of this research stream would be to address the importance of intangible assets from different research fields to understand where these disciplines are when it comes to strategic assets (Gu & Lev, 2011). And, on the other hand, emphasizes the need to construct a standardized way to value intangible assets so that all economic agents may make decisions based on highly accurate firm information (Nwogugu, 2019).

From the database available, we focused our study on large firms in the US and the EU markets. However, we can expect that investments in SMEs might have a different brand orientation, since in many cases they are in the process of building their brand image (Huertas-Garcia, Lengler & Consolacion-Segura, 2017; Wong & Merrilees, 2005). Further research is needed to improve the consistency of results and contrast the findings of the database used in this thesis with a new database from SMEs (Singh, Murty, Gupta, & Dikshit, 2009). Another highlight of this thesis is that asset management criteria may vary by sector. In addition, apart from the size of the company, the contingency of the sector evaluated should also be considered. Although several factors correlated with brand value have been considered, other important drivers from external factors such as government and regulatory influence (Westjohn, Arnold, Magnusson, & Reynolds, 2016), customer loyalty (Hu, 2011), psychological factors (motivation, perception, and attitude) (Farzana, 2012), as well as cognitive, experiential, and marketing factors (Liao, Wu, Rivas, & Ju, 2017) have not been considered. Such factors, which have been studied in some specific industries, could have been added to the model tested in this thesis and helped improve its explanatory capacity (Fox, 2015). The difficulty in data collection is a limitation and worthy of future research. In addition to that, other variables could help explain and predict the Brand Value dependent value, which we are not aware of.

Furthermore, in chapter 3 the application of comparative models using the publicly- traded company database gave almost the same results compared to the *average* sector and the use of median. In this study, the database is fairly distributed in the majority of the sectors without major outliers. Thus, it can be considered reasonable to use the average. Nevertheless, if it is proposed as an extension of this work, using a data set that includes publicly traded firms (existing database of this thesis) together with SME companies (suggested for future research), the median would be a better measurement since it is not sensitive to outliers and, thus, should be taken into account, (Leys, Ley, Klein, Bernard, & Licata, 2013). These factors can be explored in future research for practitioners to optimize their brand value.

Due to the increasing importance that sustainability indexes are acquiring, firms will be forced to report their environmental and social aspects more openly, (Gray, Bebbington, Collison, Kouhy, Lyon, Reid, & Stevenson, 1998), which were considered a limitation in this study. The ISS and Sustainalytics were not available in 2013 for all sectors due to which the sectoral analysis for the external factors in Chapter 4 has a limitation in data to adjust the sustainability variables. This is also applied to sustainability reports from the banking sector (Bonifacio Neto & Branco, 2019). Furthermore, the corporate sustainability ESG score rating database is under review questioning the influence of the firm size, (Drempetic, Klein, & Zwergel, 2019). Therefore, the use of these scores in this thesis may represent a limitation and would question the validity of the accepted or rejected hypotheses. Further research with new scores could give different results and this should be taken into consideration for future research by comparing the results. The lack of governance indicators in the United States in some sectors could be proposed for future research to test its effectiveness with more in-depth indicators on Brand value and Company practices. We suggest that our analysis provides a useful starting point for in-depth future research in each sector, to see how it can improve their practices, and how those practices can become drivers reflected in better brand value, not only in the US market but as well as in Europe and global markets with new, improved reports. Due to the absence of data and lack of uniformity among data reporting sets (Hardt-Schultz, 2015), the approximation of the variables can be improved in future analysis.

Intangible assets valuation might affect a firm's valuation and future research will be needed to find a common framework in which investors might operate with better information and fundamentals to arrive at the exact and fair value (Handa, Pagani, & Bedford, 2019). Thus, further managerial implications are needed on a practical level with an integrated model that takes into account the social, environmental and economic performance (Li & Zhou, 2019) for the creation of sustainability-oriented intangible assets (Shen, Au, & Li, 2019). Doing that is not an easy task (Battagello, Cricelli, & Grimaldi, 2019). However, the results obtained in this thesis constitute a small but significant first step by raising awareness of the importance of intangible assets, their valuation models and the internal and external factors that affect them.

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Appendix 6

The regression results from table 5.3 in chapter 5 that shows the yearly control to replace fixed effects:

Table 5.3. Regression Results

	Dependent Variable: Brand Value
Intangibility	16,732.2 * (8978.9)
ROA	-205.64 * (81.6)
PER	4.2 *** (0.1)
ESG score	648.2 *** (81.1)
Women Directors	103.1 * (52.8)
Women Employed	8.1 (56.9)
Index growth	38,296.8 (398,5.9)
Region (US)	11,290.0 *** (398,5.9)
Year 2014	-\$1,205.724 (3,267.667)
Year 2015	10.443 (3,219.714)
Year 2016	350.509 (3,212.651)
Year 2017	-\$835.417
Constant	-44,198.7 *** (7497.0)
Observations	2467
R2	0.281
Adjusted R2	0.278
F-Statistic	80.101 *** (df = 12; 512)

Notes: * p < 0.1; ** p < 0.05; *** p < 0.01.
P-VALUE: Probability Value.
T-TEST: T Student Statistical Test.
F-TEST: Fisher Variance Ratio Test.
R2: Coefficient of determination R squared.
DF: Degrees of Freedom.

Understanding the Complexity of Intangible Assets

Samer Ajour El Zein, Carolina Consolacion-Segura and Ruben Huertas-Garcia

School of Business Administration, Technical University of Catalonia, Barcelona C. Jordi Girona 1-3,
08034 Spain

School of Telecommunications Engineering, Technical University of Catalonia, Barcelona C. Jordi Girona
1-3, 08034 Spain

Economics and Business Administration Department, University of Barcelona, Avenida diagonal 690,
Barcelona, 08034 Spain

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Abstract:

The growing importance of strategic innovation in connection to the development of leading companies heavily investing in intangible assets makes intangible asset valuation a delicate issue for academics, practitioners, and policy makers. Yet, there is still no common and standardized method to value intangible assets. This paper presents the main developments in intangible assets valuation and provides empirical evidence on the influence of intangible assets on investor decisions and firm valuation. In particular, this paper analyses the relationship between intangible assets, market capitalization, sales and price-earnings ratio. It uses an OLS and Fixed Effects approach and finds evidence that an increase in intangible assets increases market capitalization and sales, but has no significant impact on price-per-earnings ratio. The results suggest that intangible assets valuation might affect firm's valuation and, therefore, there is a need of a framework to assign a value for the intangible assets.

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I. INTRODUCTION

Companies invest in Machinery, a tangible asset that can be physically touched and valued through the classical accounting rules (Cohen, 2001). At the same time, they also invest in license contracts, an intangible asset that can't be physically touched but still has a value which is much more difficult to find and establish (Joia, 2000). Tangible assets' values are assigned based on the future benefits these assets yields (Laughton, Guerrero, & Lessard, 2008). Intangible assets instead are not that easy to value because of the volatility assigned to their future relevance (Choi, Kwon, & Lobo, 2000). This is because the nature of this asset is different. It is key to understand that the main difference between an intangible asset and a tangible asset is the virtual perception assigned to it (Allee, 2008). For instance,

two investors would assign different values to the same intangible asset because there exists a virtual benefit delivered that is perceived differently (Axtle-Ortiz, 2013). Therefore, the subjective nature of intangible assets makes the valuation process more difficult and harder to standardize (Penman, 2009). An illustrative example of the differences in intangible asset valuation is the case of McDonalds. It is more expensive to acquire the license of McDonalds in Kuwait compared to France (Hall, Jaffe, & Trajtenberg, 2005). The parent company is the same, the service provided is the same but there exists an extra benefit to the final users that pushes this brand to be valued differently. (Churchill, 1978) describes this idea stating that the critical element in the evaluation the lack of better measures of the variables assigned to intangible assets. Although

such assets receive a value, the way this value is determined is not yet standardized due to several reasons. The purpose of the paper is to provide an evidence of the need of a framework to assign a value for the intangible assets. Previous literature provides empirical evidence on how tangible book value is diverging from the market value (Egginton, 1990). This paper shows that there exists a positive relationship between intangible assets and market capitalization, giving some insights that intangible assets might have been a factor in causing the gap between tangible book value and market value (Barth & Clinch, 1998).

The paper is organized as follows. Section 2 exposes the main issues that intangible assets valuation face throughout literature review. Section 3 describes the panel of US firms analysed in this work and presents an econometric analysis and finds evidence that intangible assets affects firm value. Section 4 concludes.

II. LITERATURE REVIEW

Intangible assets have been under the spotlight because of their growing importance within the business world (Kaplan & Norton, 2004). In fact, innovation, which seems to be the key word in today's business, cannot be separated from the concept of intangible assets because they represent the intellectual capital of a firm as well as its potential growth through innovation (Jarboe & Ellis, 2010). Even if this topic is catching significantly the attention of several experts, there is still an ongoing debate referring to its features starting from its definition (Wyatt, 2005). For example, (Anson, 2007) refers to intangible assets as those assets including patents, trademarks, copyrights, brand names, logos, and other elements that constitute the firm's goodwill. (Smith & Parr, 1994) define intangible assets as those elements of a business enterprise that exist in addition to working capital and tangible assets. Therefore, intangible assets according to Smith and Parr are those elements

along with working capital and tangible assets that allow businesses to operate and can be the primary contributors to a firm's success factors and competitive advantage. This view is supported by the growing importance of innovative firms in the global market, not only from a global perspective, but also from a financial perspective (Cañibano, Garcia-Ayuso, & Sanchez, 2000). Simply looking at giants, such as Apple, Microsoft and Google among others, explains how important intangible assets are for a company's profitability, future growth and sustainability. However, due to the very recent discovery of intangible assets from an accounting perspective (Austin, 2007), and their nature, they are still very difficult to deal with. In particular, their treatment is a major concern for firms as well as the academic and policy world (Brennan & Connell, 2000). In some cases, intangible assets are considered as an expense while in other situations they can be capitalized. Thus, it is still not yet clear how they should be treated. (Bodie, Kane, & Marcus, 2003) try to address this issue by summarizing some of the most important accounting rules related to valuation and how they apply to intangible assets according to the U.S. GAAP. Other outstanding scholars such as (Lev, 2003) mention the inability of these methods to convey the actual value of intangible assets.

Following data from The Conference Board (Erumban & De Vries, 2016), investment in intangible assets, measured as % of GDP, has been steadily growing since the Second World War and it has even surpassed investment on tangible assets on recent years. However, these investments remain largely invisible in financial statements (they are reported in the income statements) and firms carry some intangible assets in their balance sheet (Barth & Beaver, 1996), but not all of them (Adams & Oleksak, 2010). At the same time, as we can observe in Figure 1, the book value of tangible assets and market value of firms have been diverging (Hirschey, 1985), especially since 1985, with intangible assets being a key factor in explaining the

gap. The methodology followed by Ocean Tomo LLC (Barney, McHardy, Hartstein, & Ramer, 2007) is to decompose the market value of a firm in tangible and intangible assets. The procedure is as follows: First, they calculate the tangible book value; then, if market capitalization is above the tangible book value, they assign this difference to intangible assets and call it Intangible Asset Market Value (Elsten& Hill, 2017). It is as if the market agents

were valuing the intangible assets by themselves, but this approach remains quite problematic (Ballester, Garcia-Ayuso, Livnat, 2003). Both the increasing investment in intangible assets and the divergence between tangible assets and market capitalization gives a good view of the growing importance of intangible assets and highlights the need for a standardized method to value them (Hagelin, 2002).

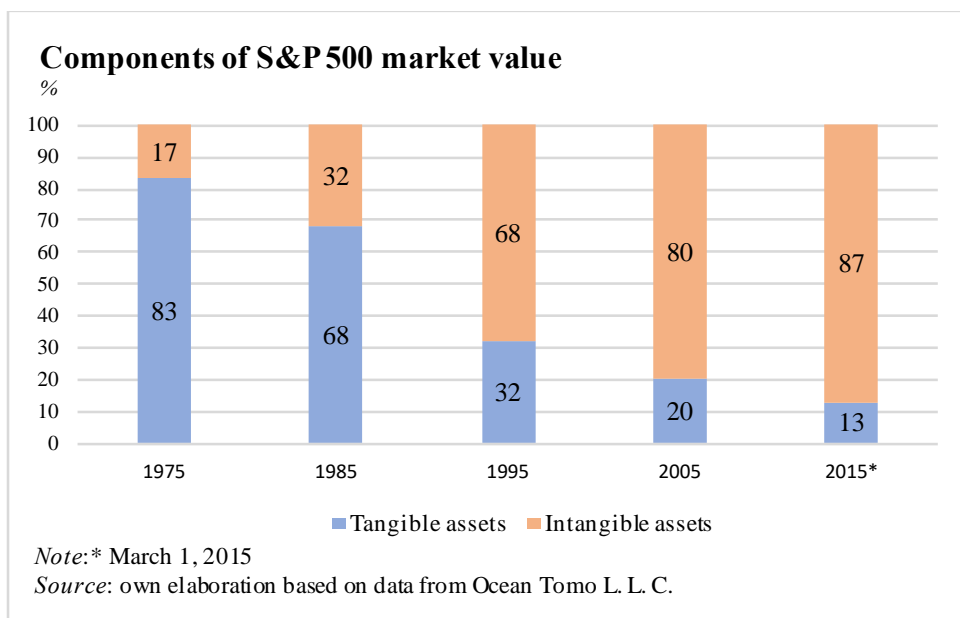


Figure 1: Components of S&P500 market value
However, it is always difficult to derive what is the part of the cash flow attributable to intangible assets. Even when applying the most known valuation techniques in the private industry, there is still no exact technical way to evaluate intangibles (Leitner, 2005). In a way, fair value accounting provided some extra tools to deal with this issue, but still most of the intangible assets do not have market value (Chalmers, Clinch, & Godfrey, 2008), hence the same challenge keeps playing its role. There is a notable exception to this in the case of companies acquiring other firms: according to the US legislation, the purchaser has to record on its balance sheet the full value of the acquired company (Rodov&Leliaert, 2002). In this way, even if the firm that is bought did not record any intangible assets, these will then show up in the new

consolidated accounts, albeit not with a detailed breakdown and not fully differentiated from goodwill (Johnson & Petron, 1998).

Another major concern surrounding the intangible capital or intangible assets literature is the complexity of splitting them from their physical side (Bontis, Bart, Wakefield, & Kristandl, 2007). There are several studies addressing this issue. For example, (Basu&Waymire, 2008) do not believe that tangible and intangible assets can be split. One reason for their argument is that a firm gets value out of an intangible only if this asset is produced and commercialized. Moreover, another stream of thought represented, for instance, (Marr, 2007) considers that some kind of intangible assets are too complex to evaluate simply because they can be seen

as public goods belonging to the society, such as education and human skills in general.

Another of the key aspects in reference to the valuation of intangible assets is the impact they have on the macroeconomy. (Corrado, Hulten, & Sichel, 2005) discuss the impact of R&D expenses not only for the firm implementing them but also for the macroeconomic system as a whole. In summary, their point of view is that the treatment of R&D investments might affect differently the economy depending on how they are valued. If they are simply treated as expenses, then their contribution to the economic growth in terms of GDP is underestimated; however, if they are capitalized, their impact on the economy is taken into account. In addition, they believe that it is possible to see their value not only from a firm point of view, but also from a macroeconomic perspective.

After briefly seeing and understanding how the valuation of intangible assets can be relevant from different perspectives, let us take a step back to understand more thoroughly what intangible assets actually are and how can we classify them. (Walker, 2009) states that it is difficult to find any stated purpose for classification in many papers dealing with intangible assets. At the same time, for internal purposes management needs to evaluate its assets including intangibles and, to do so, they require a formal classification of them. (Lev, 2004) classifies intangible assets and intellectual capital in four main categories:

1. Discovery/learning; ex: R&D
 2. Customer-related; ex: brands, trademarks, distribution channels
 3. Human-resource; ex: education, training and compensation systems
 4. Organization capital; structural organization design, business processes, unique corporate culture.
- Other authors prefer to divide intangible assets into different categories. For instance, (Kaufmann & Schneider, 2004) divide intangible assets into three

categories based on the object these assets are related to: Human Capital when related to employees; Organizational Capital when related to internal structure and processes; Customer Capital when related to customers.

By simply looking at the two different classifications above, it is relatively easy to understand the complexity of the issue that arises when dealing with intangible assets, their nature and contribution. Luckily, if one is interested in the pure regulatory classification of them, it is possible to rely on the Financial Accounting Standards Board (FASB), (Powell, 2003) which classified these categories of assets as follows:

- Technology-based Assets
- Customer-based Assets
- Market-based Assets
- Workforce-based Assets
- Contract-based Assets
- Organization-based Assets
- Statutory-based Assets

Even if there is a formal classification of intellectual capital, this classification does not always hold true when dealing with managerial decisions (Trigeorgis, 2005) simply because the valuation and employment of assets depend heavily on their nature and purpose. The problem arises because the purpose of the asset might be assessed or reassessed after its acquisition depending on the performance (St-Pierre & Audet, 2011). This is a perfect introduction for another major problem companies and their managers face when dealing with intellectual capital and the way it can be regulated, as market participants can face increased trouble if definitions and standards are not harmonised and well-understood (Zambon, Lev, Abernethy, Wyatt, Bianchi, Labory, & Del Bello, 2003). The complexity of the issue for standards setters is demonstrated through the investigation conducted by (Stolowy & Jeny-Cazavan, 2001) that showed a considerable lack of consistency among 21 national and 2 international standard setters. The study of intangible assets' definition and recognition criteria

in 23 national and international standards demonstrated the absence of any common framework of classification. According to them, this inconsistency is the result of each country treating the same intangible asset in several different ways depending on the business situation. Consequently, intellectual capital might have a significant influence on policy decisions (Brüggen, Vergauwen, & Dao, 2009). In fact, whether intangible assets should be capitalized or not, their importance relative to investor's decisions, and all other issues discussed above, clearly pose more than one question to policymakers. For this reason, policymakers should make sure that investors perceive the best information both in terms of quality and in terms of quantity so that they can make the best investment decisions. At the same time, we discussed how relevant and delicate this information could be for internal managerial decisions (Sacui & Szatmary, 2015). Some studies try to help policy decisions identifying how information about intangible assets might affect stocks' returns. For instance, Wyatt (2008) addresses the issue of how some of the most relevant intangible assets of a firm affect financial performance. He investigates items such as R&D, human capital and organizational capital. Furthermore, his analysis assumes that investors use accounting information in order to make investment decisions, and this cannot be totally proved for all cases. As many other assumptions, the latter is very difficult to prove even if it logically makes sense. (Basu & Waymire, 2008) express another very interesting point of view related to the relevance of intangible capital information from a financial perspective. In particular, they state that abnormal returns can be explained by other relevant factors such as changes in regulations or other kind of government interventions (Jansen, & Tsai, 2010). Therefore, a simple correlation between investment in intangible assets and returns cannot be used as a strong proxy for their value relevance, as it might be biased by different policies.

The last section of this section is related with the financial and accounting approach towards intangibles. However, as discussed at the beginning of this paper, the importance of intellectual capital is spread over all divisions of a business. For example, marketing and branding (Bayon, Gutsche, & Bauer, 2002). are very much interrelated when we think of branding as an intangible asset. From a strategic perspective, to value the competitive advantage of a firm, especially when dealing with high tech innovation focused firms, the strategic valuation of intangibles becomes a key point (Clemons & Weber, 1990). Even from an economic/industrial organization perspective, when talking about competition and economies of scale, intangible assets might play a key role (Teece, 1998). In consequence, many researchers have been focusing on this topic to reveal a stronger relation between value drivers, concept and henceforth value. (Montaña & Nomen, 2007) ran many studies focusing on the value of companies' intellectual capital. From a financial perspective, the valuation of intangible assets is complex as well due to the various ways they can be classified (Corcoles, 2010). (Roos & Roos, 1997) studied the systematic visualization and measurement of the different forms of intellectual capital and described it as the difference between a company's market value and its book value. From one side, the book value of an intangible asset is a valuation approach done internally reflected in the accounting books of a company and from another side, the market value is based on so many factors and participants summarized as supply and demand. They assume that they should base the valuation on certain cash flows that this asset can provide in the future. The estimation of the future cash flows depends on factors such as the kind of asset, its usage or its lifetime, among others. This means that these cash flows can vary between one investor (Khurana, Martin, & Pereira, 2006) and another since the factors affecting their estimation are not standardized (Richardson, 2006). This is the main weakness of this model. Thus, on one hand, a

standard critique of this particular valuation model is that it fails to account for the factors affecting those cash flows that are subsequently discounted to the present, and on the other hand, they are highly descriptive and inconsistent.

Academics realized there was a recognition of the need of further studies on the asset valuation models (Matsuura, 2004) to apply on the intangible assets due to the improper classification addressed above that in turns led to an unfair value. Consequently, (Damodaran, 2007) examined the four asset valuation models focusing on one or several factors to add on to the previous researchers' findings with the intention of addressing various approaches. The four approaches are:

1. Discounted cash flow valuation, *based on future cash flows*
2. Liquidation and accounting valuation, *based on book value of existing assets*
3. Relative Valuation, based on pricing of asset comparisons such as earnings, cash flows, book value or sales
4. Contingent claim valuation, *based on real option*

As previously stated regarding the first two approaches addressed before, the third one, with a "relative valuation", is based on a comparative methodology. A major factor addressed by Damodaran is that prices have to be standardized, usually by converting them into multiples of earnings, book values or sales. However, a major element neglected in his research is to keep in mind the need of finding similar firms, which is difficult to do since no two firms are identical and firms in the same business can still differ on factors such as risk profile, growth potential, cash flows and strategies, resulting in an inconsistent estimation of this asset value.

From another perspective, the future cash flow approach reflects the market reaction. Thus, basing the intangible asset valuation on this method could

result in values that are too high when the market is overvaluing comparable firms, or too low when it is undervaluing them. Both results can be justified depending on investors' perspectives, which is considered a source for a bias in this method. In other words, the question that arises here of how to control for these differences having several firms in the industry, becomes a key one in this model.

While there is scope for bias in any type of valuation model addressed by all the studies above, the lack of transparency and consistency regarding the underlying assumptions in these valuations for intangible assets makes them particularly vulnerable to manipulation and thus might lead to an unfair value (Barth & Schipper, 2008).

In order to perform an appropriate investigation within the field of intangible assets, there is the need to understand what the purpose of such research is. For instance, if the interest lies in tackling the valuation literature and extending it to the intangible assets dimension, then the first step to go through would be to understand if the above-mentioned evaluation model as well as other selected ones could be applied to the so-called strategic assets. If this is not the case, then it is necessary to develop brand new valuation approaches to tackle the problem. The valuation literature spans from Finance, Economics and Accounting, so testing each one of the most recent existing valuation models to the intangible assets dimension would be challenging and time consuming (Wang & Halal, 2010). Perhaps the solution is to simply agree on some assumptions and try developing new approaches using the existing literature as a baseline. However, this task becomes even more challenging because as aforementioned there is not yet a common market valuation of intangible assets in particular because they tend to yield benefits in the long run and this future benefit is very difficult to forecast due to its outcomes' volatility (Jiang, 2019). Another big stream of research could be trying to identify the "macro" benefits that investments in

intangible assets could yield. In fact, this would be another challenging task, which would involve understanding and testing many economic theories of welfare, industrial organization and innovation. Moreover, there would be room to introduce behavioural factors and experimental approaches. This would open a new door for collaboration between economics, anthropology, sociology and psychology. Even strategy could be considered part of this research because each one of the above-mentioned disciplines deals in some way with social welfare and utility maximization. Hence, such a stream of research would bring together many questions. At the same time, such line of research faces its challenges starting from the costs of implementation. It would be an extremely ambitious plan, which would require heavy research investments. Hence, the most plausible approach would be to try finding first some coordination among the academic disciplines, which could give some guidelines to the new possible research streams. Maybe even starting from an analysis of the current regulation to then get to suggestions on how to improve the latter.

After presenting several issues arising from not having standardized methods of valuation for intangible assets, in the next sections, this paper highlights the relevance of intangible assets from the investor's perspective through an econometric analysis.

III. ECONOMETRIC ANALYSIS

Data description

The data is obtained at the firm-level from a Bloomberg dataset. It includes a representative sample of leading firm's population in United States (which are included in S&P 500 Index) from 2013 to 2017 (both years included). Before cleaning it, the sample contains 506 firms per year. To conduct the analysis, I proceed as follows to clean the data: First, I drop all firms with missing data in any year (from 2013 to 2017) for any variable (intangible assets, sales or market capitalization). This step reduces the

sample to 432. Second, I validate internal consistency so that no zero and no negative values remain in the sample (the sample stays the same in this step).

Correlation and regressions

As stated before, tech giants as Apple, Microsoft and Google among others highlights how important intangible assets are in order to differentiate their products, their brand and their future growth. I test the hypothesis that more intangible assets have a positive effect on market capitalization and on sales. To illustrate this point, I run a correlation analysis:

Table 1. Correlation analysis

Intangible assets against	2013	2014	2015	2016	2017
Market Capitalization	0.60	0.59	0.50	0.50	0.45
Sales	0.44	0.43	0.40	0.40	0.40

The table reports correlation between intangible assets against market capitalization and sales for years from 2013 to 2017.

Source: Based on data from Bloomberg that includes 432 firms from S&P 500.

The results in Table 1 show a positive correlation between intangible assets and sales as well as a positive correlation between intangible asset and market capitalization. As a matter of illustration, in Figure 2 and 3, I plot an OLS regression for 2013. Although we find evidence that show a positive correlation between intangible assets and market capitalization, and sales, we cannot conclude that having greater intangible assets causes higher market capitalization and sales because there might be the typical issues when an OLS is involved (as omitted variable bias and simultaneous causality). For example, it might be that some variables that are not included in our regression is actually affecting both intangible assets (explanatory variable) and market capitalization or sales (dependent variable).

Figure 2. OLS 2013: market capitalization on intangibles

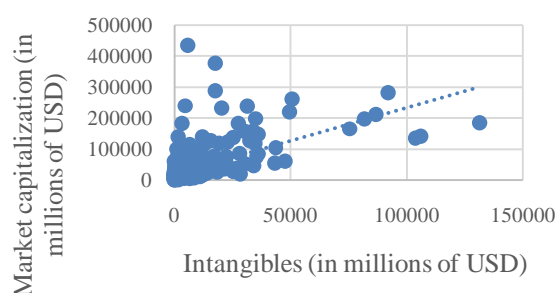
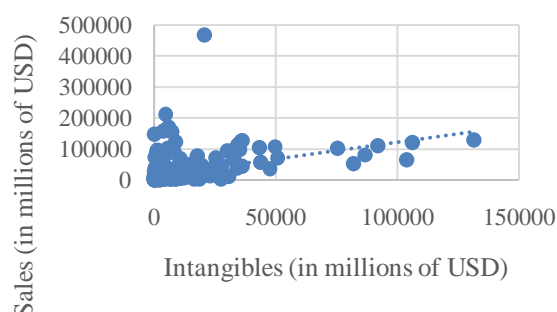


Figure 3. OLS 2013: sales on intangibles



Therefore, firms with higher intangible assets have, on average, a higher market capitalization and a higher amount of sales. However, the direction of the effect is not clear and we can not talk about causality due to the potential omitted variable bias, and especially, potential simultaneous causality.

However, due to the fact that data is structured in a panel, it is better to exploit this extra information through panel data models. First, I run a pooled OLS. The results, obviously, can not be interpreted as causal due to the same problems of endogeneity that I have mentioned above. Furthermore, there

might be unobserved fixed effects correlated with the explanatory variable and, therefore, the estimates would be both biased and inconsistent. In order to solve this problem, I apply a fixed effects model.

Table 2. Panel data estimates for market capitalization and sales

	Market capitalization		Sales	
	(1) OLS	(2) Fixed Effects	(3) OLS	(4) Fixed Effects
Intangibles	1.895*** (0.043)	0.847*** (0.043)	0.98*** (0.030)	0.267*** (0.019)
Constant	15514 (645.40)		1134 (447.29)	
R-squared	0.28	0.09	0.17	0.04
Time FE	NO	YES	No	YES

(***), (**),(*) indicate statistical inference at 0.01, 0.05 and 0.1 level, respectively.

For the specification in which fixed effects are included, (2) and (4), an increase of 1 million of intangible assets would lead, in average, to an increase of 0.847 million in market capitalization and of 0.267 million in sales, respectively (see Table 2).

Furthermore, it would also be interesting to assess the question whether firms with higher intangible assets are overvalued (in terms of having a higher price-earning ratio). I find no empirical evidence of firms with higher intangible assets to have a higher price-earning ratio (see Table 3).

Table 3. Panel data estimates for price-earning ratio

	Price-earning ratio	
	(1) OLS	(2) Fixed Effects
Intangibles	0	0
Constant	42.9 (3.29)	0
R-squared	0	0
Time FE	NO	YES

(***), (**),(*) indicate statistical inference at 0.01, 0.05 and 0.1 level, respectively.

IV. CONCLUSION

In conclusion, although the current literature tends to address the financial valuation of intangible assets, even when dealing with policy implication, there should be more effort in trying to coordinate the various business disciplines to give at least a common characterization to these items. Therefore, intangible assets are definitely becoming important for the business environment within many dimensions, but before trying to define their political or financial impact, it would be interesting to figure out a common ground to test their importance and then proceed with a technical financial analysis. This would be a key point for the development of the field simply because, as previously analyzed, there is still no agreement on how to interpret and classify such important strategic items. The natural progression would be to addressing the importance of these assets using current findings in the various streams of research to understand where these disciplines do actually stand when dealing with strategic assets. Then, it would be interesting to merge the goals of scholars among different areas to finally reach a common ground to develop and exploit the intangible assets developments and applications. Based on this last statement, this paper is a contribution to the literature dealing with intangible assets as a report underlying the main challenges and possibilities behind this new stream of research to understand the nature of intangible assets. Particularly, this paper emphasizes the need for a common and standardized way to value intangible assets so that all economic agents may take choices based on as accurate as possible firm information. Finally, this paper finds evidence through a Fixed Effects model that, in the U. S., intangible assets value has a positive impact on both market capitalization and sales, what highlights the need for a common framework of intangible asset valuation. Therefore, intangible assets valuation might affect firm's valuation and future research will be needed to find a common framework in which investors might operate in financial markets with better information and fundamentals.

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Firm Risk: A Responsible Business Guide Control to a better Brand Value and Company Value

Samer Ajour El Zein ^{1*}, Carolina Consolacion-Segura ², Ruben Huertas-Garcia ³
¹. School of Business Administration, Technical University of Catalonia, Spain
². School of Telecommunications Engineering, Technical University of Catalonia, Spain
³. Economics and Business Administration Department, University of Barcelona, Spain

Abstract: Brand equity constitutes an ample intangible asset for most entities, and previous research has developed various brand equity models that aim to optimize this asset. Most approaches rely on only a single factor, focusing on brand revenue or future cash flow. There is a need for extensive research on factors related to a firm's financial risk including the effect of market share along with the intangible value of brand equity. This study identifies that the firm's financial risk directly impacts brand equity value. This study aims to expand the literature by determining the important factors that affect brand value. To do so, financial information was collected from a list of publicly traded companies with evident major annual brand value and generic companies in the US and Europe. Using financial data, a statistical analysis was performed using correlation and regression to facilitate the identification of important variables that affect brand value. This paper aims to improve Damodaran's model, which assigns values to intangible assets, by using the average sector as a proxy of a generic company. This approach helps to reduce the potential arbitrariness that can arise from the fact that the choice of a generic company might vary between sectors. This offers practitioners a simple method that can be used to determine a fair value for a branded company. The results suggest that a significant correlation exists between a firm's brand equity and firm risk.

Keywords: Brand Equity Value, Firm Risk, Intangibility, Business Guide Control.

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*Corresponding Author: Samer Ajour El Zein ,Email: samer.ajour@upc.edu

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Firm Behavior, an Engineering Business Tool for a Better Brand Value in all Sectors

Samer Ajour El Zein, Carolina Consolacion-Segura and Ruben Huertas-Garcia

School of Business Administration, Technical University of Catalonia, Barcelona C. Jordi Girona 1-3, 08034 Spain
School of Telecommunications Engineering, Technical University of Catalonia, Barcelona C. Jordi Girona 1-3, 08034 Spain

Economics and Business Administration Department, University of Barcelona, Avenida diagonal 690, Barcelona, 08034 Spain

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Abstract:

In the last decade after the financial crisis, firms have been changing their behavior. Companies nowadays seek a better brand with the new perception of businesses. A major source of the companies' value is composed of their brand that reflect their practices and their business model. The methodology is performed by collecting information from publicly listed companies in the United States from all the sectors for 8 years after the financial crisis, to compare and analyze the firm practices among each sector and its impact on the brand value. The following paper contributes by highlighting the importance to developing a new engineering tool for a behavior change reflected by better brand value with sectoral analysis. This research helps managers to implement models affecting positively their firm behavior and their brand value. We can realize that among the majority of business sectors in the US, the more companies head towards corporate socially responsible practices the higher brand value they would have and thus implies a tool is needed to improve.

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I. INTRODUCTION

Investing in brand value was pointed out as a tactic to increase Competitiveness (Vilanova & Arenas, 2008). Sustainability and competitiveness are positively correlated (Lee et al. 2003). However, competitive advantage to enhance a business performance has shifted from the classic approach to a more sustainable green way. Building a competitive strategy with a sustainable approach (Buono & Kerber, 2010) is meant to enhance a business performance, among which this approach should have sustainable business drivers (Bharadwaj, et al., 1993) to build a green brand value which in turns build a strategic position in the market for corporations (Amini, et al., 2012). The recognition of this fact is not enough but a long-term position requires a lot of attention as suggested by current conceptual models for building and sustaining brand value (Perez-Batres, et al., 2010). Proper management of brand value through a change

management strategy is needed to achieve competitiveness whose determinates are to be fully explored in this paper.

Business and sectors vary a lot and the drivers are different among the sector but sustainability factors have an effect on each sector to the degree that it has been classified as a new and growing financial risk factor pointing out the effect of its mismanagement that might have a drawback overall business causing a negative reputation and thus a worse brand value (Ogrizek, 2002). Sustainable investing is the art of long-term performance (Krosinsky & Robins, 2008) and has an impact on investors' financial returns as far as social and environmental challenges are taken into account (Bugg-Levine & Emerson, 2011). We can recognize that there is an importance of a full empirical study over the effect of governance drivers on brand value. There is a significant impact of Corporate Social Responsibility efforts on customer-based brand value perspective (Staudt, et al., 2014), as well as a conceptual model in the business-to-

business market to highlight the importance of the topic from a stakeholder perspective (Sheth & Sinha, 2015). However, there is not yet full attention to the deep research on the role of those firm behavior drivers on brand value due to the inconsistent theoretical ground reviewed (Malik, 2014).

II. LITERATURE REVIEW

2.1 Business Models and Intangible Assets

Innovation seems to be the key word in today's business and is considered a major element of the concept of intangible assets because it represents the intellectual capital of a firm as well as its potential growth (Corrado et al., 2013). Innovation plays the role of engineering management tools on our daily activities (Vinc et al., 2003). From the other side, innovation has been found to enhance firm value and in particular before the 2008 financial crisis, corporate socially responsible innovative firms have been found to benefit a significantly higher value after adopting those tools. (Mishra, 2017)

A good brand management preserves brand value (M'zungu et al., 2010). Even if this topic is catching significantly the attention of several experts, there is still an ongoing debate referring to its features starting from its definition. Intangible assets stem from goodwill data, but the debate on the definition goes back in time (McInnis & Monsen, 2018). For example, intangible assets as those assets that include brand value and there exists the brand intangible asset (Costa et al., 2008). Considering two firms that belong to the industry with different business behavior models and other factors being the same, there exists an extra benefit to the final users that make this intangible asset to be evaluated differently.

Intangible asset is part of the new approach for business models in the new economies (Walter, 2004). Firms affect the value of their brand by the internal practices such as labor service (King et al., 2008) as well as by their external practices such as customer service (Brodie et al., 2009). Therefore, many factors affect the process, and, in this study, we would like to see the effect of environmental, social and governance drivers on the brand value among each of the 10 business sectors.

2.2 Environment, Social and Governance effect

Corporate government codes are part of the company resources and part of management of firms (Wieland, 2009). For instance, a company's practice to the climate

change could have an impact on a corporate brand value (First & Khatriwal, 2010) advising business leaders the importance of investing in environmental activities that does have an effect on the core business model (Konar & Cohen, 2001). Internal auditing is considered an effective tool for corporate governance (Karagiorgos et al., 2010) driving companies to seek new engineering tools with new action plans to accomplish a favorable position (Dyer & Singh, 1998), and focusing on social entrepreneurship connecting business to societies (Porter & Kramer, 2006) whose awareness help their business grow on the long run (Kerr & Rev, 2007). Corporate socially responsible is part of the corporate governance tool that shapes a business practice (Harmon et al., 2009) and thus driving businesses to adopt it as a core tool (Germanova, 2008). Thus, business leaders are advised to adopt such procedures in place being aware of the importance of creating a better brand value with a competitive strategy (Balmer & Gray, 1999) using those governance resources in practice that are classified as businesses core identification (Kaplan & Norton, 2008) as well as a strategy for differentiation (Sengupta, 2005).

Being a global environmental political issue, there is a need to a shift towards the emergence and implications of transnational climate-change in companies. A study on global affairs has been initiated (Andonova et al., 2009) and a set of core corporate social responsibility theories have been set after the economic impact of the financial crisis in the US (Kemper et al., 2010), but there is still a need to factor implementation and responsibilities from companies to adopt this governance behavior in their core business. Since brand value is a driver for businesses to adopt new tools, the transnational business governance acts a framework and raise awareness for a change (Eberlein et al., 2014). Despite the fact that there has been a study on firm practices in particular sectors between the US and UK (Aguilera et al., 2006), the need of the sectoral study is driven from the new shift in the American markets among all the sectors putting the United States dream at risk shift with the economic downfall (Hacker, 2019).

There has been a lot of research on building a brand value from a descriptive approach and the quantitative approach is yet to be explored. Brand Value among the US market sectors has been explored from scanner data related to the product caliber (Kamakura & Russell, 1993), from geographic production quality (Johansson & Nebenzahl, 1986), from cultural and consumption value (Park et al., 2009), from a stockholder's value (De Mortanges, 2003), and from societal marketing (Hoeffler et al., 2002) where the

majority of those studies rely their approach on the conduct of the market participants of the brand and their related perception constituting a major limitation in interpreting exactly what the brand principle is and explain the importance on identifying each brand's value drivers (Fernandez, 2017). Thus, this paper will check the impact of environmental, social and governance drivers on the brand value among each of the 10 business sectors.

III. METHODOLOGY

3.1. Model

The aim of this paper is not to correct Damodaran's model (Damodaran, 2006) who examined this intangible asset as an incremental cash flow of branded to unbranded companies. We adopt his model to check on the impact of the governance and socially responsible factors on the brand value being the dependent variable.

The brand value has been assessed as follows:

$$\text{Value of the brand} = \left(\frac{E}{S}\right)_{\text{Brand name}} \text{Sales}_{\text{Brand}} - \left(\frac{E}{S}\right)_{\text{generic}} \text{Sales}_{\text{Generic}}$$

where E: Equity calculated by Market Cap

S: Sales Volume

3.2. Variables and Data

The dependent variable *Brand Value* is composed of the Market Capitalization to Sales (Fernandez, 2017).

The authors of this paper calculate the generic item by the average of the first level of the industry (Bloomberg, 2018) with the intention of reducing this hidden arbitrariness.

Investing in Brand value was pointed out as a tactic to increase Competitiveness (Pitta & Katsanis, 1995). For this reason, *Competitiveness* independent variable was introduced in the panel data to approximate the market share of each company in its sector calculated by the average net profit margin (compared with others in the same industry) to control for market participants' decisions associating brands with net profit margin. (Smith et al., 2007).

The variable *Company Intangibility* to estimate the net intangibility of the firms has been calculated by

subtracting *Good Will* from *Net Total Intangible Assets* then divided by *Total Assets* that represents the book value. This is because *Good Will* which is deemed to be taken into account on the new accounting ledger of the company after the sale of business is wiped out. (Lynch, 2014).

Whilst some companies haven't been providing information at all (CSR reporting, along with environment and workers' practice), procedures have been improving and transforming to provide better reports (Tschopp et al., 2014). A lot of firms are considering new CSR reporting methods as there is necessity for establishing its credibility (Crifo & Forget, 2013) pointing out the reason for implementation (Christofi, et al., 2012) compared to the current existing reports (Fowler & Hope, 2007). The authors of this paper relied on third party CSR data extracted from the Bloomberg Data Service (Bloomberg, 2018). The variable *ESG* measures the Environmental, Social and Governance Analysis estimated with one value; followed by the *ISS Quality Score* (Institutional Shareholder Services) the world's leading provider of corporate governance and responsible investment solutions and the collective voice of the shareholders of board policies and decision making regarding sustainable investments (Hubert et al., 2017). The model includes another variable, *Sustainalytics rank*, a good measurement indicator in each industry that covers at least 70 indicators in each industry, provided by a global investment firm that specializes in sustainability research and analysis, and checks if company reporting meets international best practice standards. The *Sustainalytics* variable has been added to reveal how transparent companies are in reporting their ESG scores (Hubert et al., 2017). Lastly two governance variables on how much women have influence on board and employed (Bloomberg, 2018).

Despite the lack of so much data from companies not wanting to produce sustainability reports in some sectors (Stubbs, et al., 2013), 8 years of data was extracted, a panel data was constructed due to the usage of several variables. Categorical variables were introduced among 10 sectors with their first grade of detail (Bloomberg, 2018). An OLS panel data regression with fixed effects to control for the year was performed introducing the *Company Intangibility* and *competitiveness* per sector control variables. BICS1, the sector allocation used here,

contains 10 unique macro sectors, which are then disaggregated in further BICS (Bloomberg industry classification sector) classifications, up to a total of 2294 sectors. Problems that might be faced are Multicollinearity among some variables, followed by homoscedasticity which were be tested as well.

Eight years of data (2010 – 2018) have been collected from published annual report of US publicly traded companies to check on the governance factors in the American Market. Overall, 1,835 observations have been collected despite the lack of so much data. The sectors included in this study are listed below:

Financial, Materials, Industrial, Energy, Health, Communications, Basic consumption, Public service, Discretionary consumption, and Technology(Bloomberg, 2018).

IV. EMPIRICAL RESULTS

The main intention of this study is to check the relationship between company behavioral factors and brand value checked among all sectors in United States after the financial crisis of 2008. The results show that among the majority of the sectors, the implication of environment, social and governance of underlying company, the higher is the brand value. This study also checks on the effect of Competitiveness on brand value of the underlying company for all sectors in US market. Results (see table 3) from the Panel data regression and paired-sample t-test methods show with a very high significance P – Value that the higher the competitiveness of a certain firm among all the sectors, the higher is the brand value regardless of the intangibility of a company. This is justified by the company behavior that would increase their competitiveness. Thus, business leaders are advised to adopt such procedures in place being aware of the importance of creating a better brand value with a competitive strategy (Balmer & Gray, 1999) using those governance resources in practice that are classified as businesses core identification(Kaplan & Norton, 2008). To take a deeper look at drivers affecting their behavior, the ISS Governance QuickScore a rate that provides each company with a risk score, from 1 to 10, in each of four governance-related categories: Board Structure; Compensation/Remuneration; Shareholder Rights & Takeover Defenses; and Audit & Risk Oversight (Hubert et al., 2017) , as well as an overall governance risk scoreThe scoring is such that “1” refers to a higher quality and lower governance risk, and “10” means lower

quality and higher governance risk that were publicly introduced in Bloomberg(Sullivan & Cromwell, 2016).

To test multicollinearity, we relied on the variance inflation factorVIF. The results show that the variance of the estimated coefficient of all variables are moderately inflated (below 10). The VIF of all the other variables is low which indicated the low correlation among the independent variables, thus multicollinearity does not cause a problem for our explicative model used.

This tests statistically allows to use the model as predictive and explicative which is the main intention of the usage of this model in the sectoral analysis.

Table 1. VIF tests

Variable	VIF
Intangibility	1.009
Competitiveness	1.075
ISS quality	1.096
Sustainalytics	1.345
ESG score	1.429
Women Directors	1.110
Women on Board	1.080
Women employed	1.078

To verify heteroscedasticity in the linear regression modeland validate the appropriateness of the model we are using in this study, checking whether the variance of the errors from the regression is dependent on the values of the independent variables, werey on Breusch–Pagan. The results (see table 2) show a very low p-value thus the null hypothesis of homoskedasticity is rejected and heteroskedasticity is assumed here.

Table 2. BP test

Variable	BP
Statistic	208.46
Degrees of freedom	8
P-value	0.000

The results of regression are presented below (see table 3) followed by the regression per sector (see table 4). Some variables are significant, and others are not significant. Despite that fact that insignificant variables have to be removed (Xu & Zhang, 2001), the insignificant variables

were not removed to highlight their importance in the sectoral analysis.

Table 3. Regression results

Variable	Coefficient (standard error)
Intangibility	18,201.180* (10,950.110)
Competitiveness	919,643.700*** (28,617.860)
ISS quality	-561.387 (379.504)
Sustainalytics	108.063* (55.657)
ESG score	86.127 (114.842)
Women Directors	110.132* (56.910)
Women on Board	-4.344 (98.881)
Women employed	294.202*** (65.901)
Constant	-41,497.950*** (8 321.112)
Observations	1 835
R ²	0.387
Adjusted R ²	0.384
F Statistic	144.224*** (df = 8)
Note:	*p<0,1; **p<0,05; ***p<0,01

In Figure 1 we show a Generalized Additive Model with integrated smoothness displaying the average Brand Value trend along with the average Sustainalytics index and the average ESG Score. We can realize that for both indexes and among the majority of the sectors, there is a positive correlation between sustainable firm behavior and their brand value in the US market.

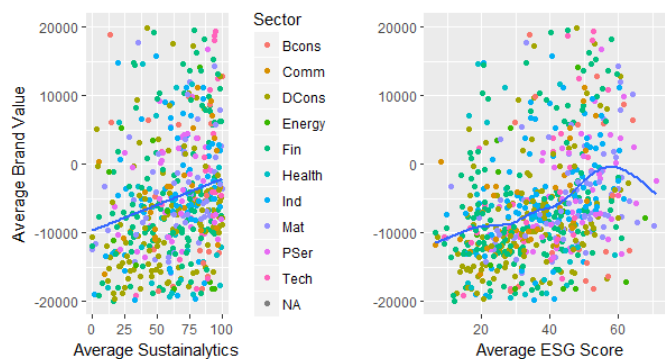


Figure 1 Average Brand Value vs Average Sustainalytics and ESG Score

V. CONCLUSIONS AND MANAGERIAL IMPLICATIONS AND LIMITATIONS

The results show with a low significance P – Value that a lower ISS score, leads to a higher brand value. Thus, the better sustainable company behavior practice, impacts positively with a higher brand value. Finally, in all sectors, the more women employed in the business, the higher is the brand value.

With a high Significance, the better the ISS score among the sectors: Basis consumption, industrial, Health, and Technology, the better the brand value.

Table 4. Regression per sector

Variable	Communications	Basic Cons	Discr Cons	Energy	Financial
Intangibility	-258,035.5*** (60,811.1)	62,865.8** (26,367.0)	23,335.2 (27,388.4)	916.5 (79,836.7)	-71,715.4 (75,936.0)
Competitiveness	1,348,994.0*** (142,137.1)	831,189.5** *	1,391,795.0* **	936,395.2** *	2,174,9*** (95,993.9)
ISS quality	4,758.7** (1,949.1)	-3,605.1*** (997.649)	-29.5 (910.6)	-973.863 (1,672.9)	1,870.0*** (571.3)
Sustainalytics	572.9* (294.7)	-24.8 (136.7)	-20.0 (132.6)	-390.9 (241.2)	-121.3 (90.1)
ESG score	-2,386.9*** (735.3)	1,166.9*** (328.1)	-581.0** (278.2)	882.5** (404.9)	73.6 (172.7)

Women Directors	434.7 (288.1)	-300.3* (159.8)	-103.0 (155.6)	110.5 (241.2)	-19.8 (82.9)
Women on Board	433.1 (437.7)	278.5 (295.8)	-114.6 (228.2)	-164.4 (337.1)	133.2 (152.5)
Women employed	-1,357.3** (582.8)	-436.4 (217.4)	325.3** (135.1)	-531.0 (460.9)	-160.9 (179.6)
Constant	45,701.280 (42,728.270)	-34,001.6 (27,072.7)	6,539.2 (21,935.7)	-35,957.9 (32,400.0)	-10,339.8 (14,018.4)
Observations	111	163	256	92	385
R ²	0.560	0.561	0.359	0.845	0.626
Adjusted R ²	0.526	0.539	0.339	0.830	0.619
F Statistic	16.238*** (df = 8)	24.644*** (df=8)	17.313*** (df=8)	56.662*** (df=8)	78.830*** (df=8)
Note:	*p<0,1; **p<0.05; ***p<0,01				

Table 4. Regression per sector (continued)

Variable	Industrial	Materials	Health	Public Serv	Technology
Intangibility	12,173.5 (8,889.4)	-45,511.6 (30,462.4)	143,567.8*** (35,980.1)	-7,846.3 (17,426.2)	-80,330.3 (105,926.2)
Competitiveness	796,228.8*** (56,763.7)	454,530.7** * (46,578.5)	596,779.0*** (140,065.9)	254,163.6** *	1,844,756.0* ** (159,788.6)
ISS quality	-532.9* (309.2)	-865.9 (557.0)	-4,173.2** (1,621.0)	-331.8 (314.1)	-8,532.8*** (2,694.6)
Sustainability	-44.2 (51.7)	248.6*** (73.139)	484.8* (260.9)	-87.5** (41.6)	-1,501.3*** (475.2)
ESG score	319.6*** (105.4)	-195.1 (165.2)	640.0 (552.8)	393.2*** (80.0)	1,151.1 (1,009.9)
Women Directors	-108.2*** (48.2)	55.1 (74.7)	141.7 (279.1)	0.7 (45.7)	919.7 (562.3)
Women on Board	33.7 (81.7)	-13.5 (154.1)	-557.8 (512.2)	87.5 (57.0)	-1,885.6** (760.9)
Women employed	-375.8*** (102.1)	330.8 (206.8)	-242.7 (428.9)	-111.7 (149.4)	263.3 (808.5)
Constant	-4,135.7 (6,385.2)	-19,817.4* (11,432.1)	-44,046.7 (43,561.2)	-21,320.2*** (7,742.7)	36,024.3 (74,,515.2)
Observations	237	164	142	150	135
R ²	0.550	0.488	0.376	0.583	0.604
Adjusted R ²	0.535	0.462	0.338	0.560	0.578
F Statistic	34.900*** (df = 8)	18.468*** (df=8)	10.010*** (df=8)	24.691*** (df=8)	23.976*** (df=8)
Note:	*p<0,1; **p<0.05; ***p<0,01				

The sustainability score only shows 2 sectors with a significant p – value (see table 4). The more sustainable

the Materials sector is the better is their brand value and the less sustainable the technological sector is, the better is the brand value. In fact, a major challenge for technology firms is to offset sustainable attention with the traditional, profit-driven schemes (Du, et al., 2013). We can realize that among all sectors, the more companies head towards sustainability the higher brand value they would have; and thus, sustainability is a key driver for brands that is considered an engineering tool for companies to implement strategies in their core businesses (Higgins et al., 2016). It is a win-win scenario in enhancing business models and corporate social responsibilities driving innovation (Nidumolu et al., 2009). All this being explained in a better brand value that helps managers take the initiate of changing organization towards practices (Droppelt, 2017).

The more women employed in the Discretionary Consumption sector, the higher is the brand value, and the less women in Communications and in the Industrial sector, the higher the brand value. The percentage of women on the management board was not found a significant variable for brand value in any of the sectors in this study which is in alignment of the study of the US corporations' gender on board and firm performance (Carter et al., 2010).

As for the ESG score, the more environmental the Social and Governing the Industrial, public service, Basic consumption and Energy sectors, the higher the brand value is, which coincides with the findings of Lai (Lai et al., 2010). In comparative research on industrial policy strategies, the interest has shifted from a broad vision to sectoral analysis (Kitschelt, 1991) which are enforced in our study where the majority of those sectors (Kang, 2012) require more depth analysis for each of those scores and their reporting that effect on their core business and on the Brand value (Maas et al., 2016).

Nevertheless, Communications and Discretionary consumption as well as the financial show a significant negative relationship. The latter could be because of the nature of the first two sector and can be considered a limitation to this study in the financial sector whose governance factor analysis measurement has been facing major changes since the financial crisis (Kirkpatrick, 2009). There corporate governance lessons from the financial crisis could help companies quantifying the corporate socially responsible variable in this sector

improve the estimation to further test it on their brand value and customer perception. In the communications sector, a better-governed firm are relatively more profitable (Yasser, 2011) but the lack of governance indicators in the United States in this sector could be proposed for future research to test its effect with more in depth indicators on Brand value and Company practices.

Due to the absence data and lack of uniformity among data reporting sets (Hardt-Schultz, 2015), the approximation of the firm behavior factors is considered a limitation to this study, and there is a need for further research for a better reporting to make sustainability function (Epstein, 2018). The pharmaceuticals industry is in process of a new paradigm shift (Blum-Kusterer et al., 2001); being a challenge to the event industry (Pelham, 2011), there is more interest for deep sectoral research for CO₂ emissions report (Bernard et al, 2015) along with the acknowledgment of climate change that does impact sustainability practices positively (Elijido-Ten, 2017). Furthermore, we relied on publicly traded companies, so the need to check on the small and medium sized enterprises (O'Gorman, 2001) and the strategies for implementing sustainability is still a challenge (Crews, 2010) and in deed new tools in businesses can enhance those practices (Schaltegger, 2016).

Brands call the attention to consumers and enable them to recall the product or service (Nedungadi & Hutchinson, 1985) and due to the need of developing consciousness of the environment, social and governmental concept that is already in place (Herremans & Reid, 2010), it could be an engineering tools to be achieve a better brand value. Through this, more business sectors would improve their business practices, implement more governance tools and get a better brand value. This enforces the idea of the governance structure (Grandori, 1997) that was already stated an essential variable in the organizational analysis for management to consider a vital business driver in nowadays business (De Villiers et al, 2016). We suggest that our analysis and review in this paper provide a helpful basis for further exploration with detailed sectors to experiment how can sustainability improve business models (Bocken et al., 2016) and how can those drivers improve their business practices (Papagiannakis et al., 2014) to be part of every one's tasks (Esty et al., 2010) reflected in a better brand value and better practices (Doppelt, 2017).

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Article

The Role of Sustainability in Brand Equity Value in the Financial Sector

Samer Ajour El Zein ^{1,*}, Carolina Consolacion-Segura ² and Ruben Huertas-Garcia ³

¹ School of Business Administration, Technical University of Catalonia, Barcelona C. Jordi Girona 1-3, 08034 Barcelona, Spain

² School of Telecommunications Engineering, Technical University of Catalonia, Barcelona C. Jordi Girona 1-3, 08034 Barcelona, Spain; Carolina.consolacion@upc.edu

³ Economics and Business Administration Department, University of Barcelona, Avenida diagonal 690, 08034 Barcelona, Spain; rhuertas@ub.edu

* Correspondence: samer.ajour@upc.edu

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Abstract: The behavior of firms is changing as new kinds of businesses evolve. In particular, companies are now seeking to optimize their value, especially their intangible value—referred to as brand equity value—which has many behavioral drivers. The analysis of brand equity determinants in the financial sector (e.g., ethical investments, sustainability and firm behavior) has received little attention. The methodology used in this study included the collection of information from publicly listed companies, followed by the execution of a statistical analysis to study the correlations between brand equity values and their determinants. We aimed to close this gap by raising the awareness of the positive impacts of sustainable investments in the financial sector and the need for a managerial implementation model to build a sustainability-oriented brand value. The objective of this research was to examine the relationships between elements such as sustainability scores or diversity measures and firms' brand value. Considering sectoral and regional effects, we observed a positive relationship between environmental and social governance scores and brand equity value.

Keywords: sustainability; ethics; brand equity; governance

1. Introduction

In recent years we have seen a growing interest for responsible investment, an approach that considers environmental, social and governance (ESG) factors in portfolio selection and management. In 2015, 218 US funds had integrated ESG factors into the investment process. In 2018, this number has increased up to 351, reflecting the growing importance of responsible investment, reaching \$161 billion of total assets under management [1]. However, not only United States investors are integrating ESG factors on investment decision but this is a worldwide trend. In fact, global sustainable investment has increased a 67% in the last four years from \$18,276 billion in 2014 to \$30,683 billion in 2018 in the five major markets [2]. This popularity of sustainable investment may be viewed as investors becoming aware of environmental sustainability, the treatment of companies to their employees and society as a whole, as well as in business policies such as the diversity of the board of directors and ethics business. Nevertheless, investors may not be as altruistic and base their investing choices on sustainable firms because they expect to get better financial returns. In fact, ESG factors may improve a business' image for its stakeholders and engage its clients, boosting brand value.

On the other hand, brands are one of the most strategic assets of a firm, able to get sustainable competitive advantage over competitors. However, companies' financial statements do not include them, so that estimating their values is a hard task. In fact, brand equity may be seen from the consumer

perspective -perception or behavioral value- or the financial perspective -revenue differential between a branded and a generic product. Here, we use brand equity and brand value indistinctly, referring to the financial perspective. The brand value estimation is as proposed by Damodaran [3], where a well-known brand—with customer engagement—can charge a price premium relative to generic brands—without customer engagement. The intuition is the following—firms can charge higher prices for the same products, driving up profit margins and price-sales ratios, as well as firm value. The larger the price premium a firm can charge, the greater the brand value.

The need for this study has arisen from the availability of more modern sustainability data due to increased reporting [4] by public firms and the wide variety of firm valuation methods. We are not the first to describe the relevance of sustainability measures within the business framework. Corporate social responsibility (CSR) efforts have previously had significant impacts on the customer-based brand equity perspective [5] as well as the conceptual model in the business-to-business market, highlighting the importance of the topic from a stakeholder perspective [6]. The analysis of brand equity determinants in the financial sector such as ethical investments, sustainability and firm behavior—being important internal and external sources of brand equity determinants—has so far received little attention. We aimed to close this gap by increasing the awareness of the positive impact of sustainable investments in the financial sector.

In this paper, we go further ethical considerations and we seek to throw additional light on the ESG literature by estimating the impact of ESG investments on brand value. In particular we carry out this analysis on financial sector, which may have found an opportunity to recover its image, reputation and brand value by increasing its concern on social and environmental aspects after its image had sharply been reduced since 2008 financial crisis.

We use an OLS model controlling by region and time effects, what allows us to infer a linear relationship among brand value and ESG factors but not causal effects. Our results suggest that environmental, financial and governance factors are drivers for boosting brand value. That is, the more important are ESG factors for a company, the higher the brand value.

In spite of vast literature on ESG and financial performance, there is a lack of literature on ESG factors' effects on brand value of financial firms. In this study, we close this gap and we find that ESG factors are key to stakeholders by enhancing brand value, what increases competitive advantage of the branded firms relative to generic firms.

The paper is organized as follows. In Section 2, we present a literature review under four broad classifications. In Section 3, we explain how we construct brand value, which are the main variables included in the econometric specification and we describe data statistics. In Section 4, we present our results. Finally, in Section 5, we exhibit the main conclusions and discuss the practical implications and limitations to the study.

2. Literature Review

2.1. Intangible Assets and Brand Value

Intangible assets are a key factor in the long-term success of any company. As such, their value must be carefully considered. The value of tangible assets is estimated based on future events that are numerically quantified to assign a fair value to each asset [3]. Intangible assets are not easily valued because of their different nature. The difference between an intangible and a tangible asset is their assigned virtual perception. For instance, two investors would assign different values to the same intangible asset because a virtual benefit is delivered that is perceived differently. As the benefit obtained is not physical, the valuation process is more difficult [7]. Considering two companies in the same industry with equal service and other factors, the perception of this extra benefit to the final users gives this brand a different value depending on stockholder and consumer perspectives.

Intangible assets have been under the spotlight due to their growing importance within the business world. Finance, accounting, business strategies and economics have always considered the importance of this category of asset as a fundamental component of a company as a whole. Intangible

assets represent the intellectual capital of a firm as well as its potential growth through innovation, which seems to be the keyword in today's business. Marketing and firm value play roles in creating brand equity value, as appropriate marketing skills and other brand equity determinants affect the shareholder value [8]. Even though this topic is receiving significant attention from practitioners, debate about its features is ongoing, starting with its definition [9]. Some consider intangible assets to be goodwill data. For example, intangible assets include elements such as patents, trademarks, copyrights, brand names or logos that constitute the firm's goodwill [10]. In addition to working capital and tangible assets, intangible assets are classified as a core element of a business enterprise [11]. Therefore, these are the elements that allow the business to operate and can be the primary contributors to a firm's success and competitive advantage [11]. The overall trend in the business world is to conceptualize the day-to-day procedures used to improve performance and increase revenue streams through which companies create value [12].

However, there is no consensus in literature on the meaning and the measuring of a brand. In fact, Winter (1991) explains this discrepancy by stating, "if you ask 10 people to define brand equity, you are likely to get 10 (maybe 11) different answers as what it means". References [13–15] use both terms, brand equity and brand value indistinctly. This terminology difficulty arises because brand equity is more than just a name and a logo [16]. This intangible asset represents an organization's engagement with a customer to deliver what the brand represents in terms of emotional, social and economic benefits. In sum, brand equity may be seen from the consumer perspective—perception or behavioral value—or the financial perspective—revenue differential between a branded and a generic product. Brand equity usually refers to the broad term—including both the consumer and financial perspective—while brand value usually refers to the financial perspective. From this last perspective, Bahar Gidwani (2013) [17] found that sustainability performance and brand value are positively related, what sustains our main hypothesis that ESG factors boost brand image, brand reputation and, hence, brand value.

In this paper, we use brand equity and brand value indistinctly, referring to the financial perspective. We adopt brand value estimation proposed by Damodaran [3], who examined this intangible asset as an incremental cash flow of branded relative to unbranded companies. His model assumptions were built on the premise that the brand name company and a similar generic company are both publicly traded. His proposition is based on the market observations of both companies, which allows a value the difference between the two brand values. Bahar Gidwani (2013) finds that sustainability performance and brand value are positively related.

2.2. Sustainability Brands and Financial Performance

Many authors have tried to find the effect of sustainability and social responsibility of firms on financial performance. Corporate Social Responsibility includes a company's social activities, demonstrating the inclusion of social and environmental concerns in business operations. The idea of the only responsibility of a business being to increase its profits dates back to the 1970s [18]. Despite this, companies in the industrial and service sectors were more worried about indirect losses than indirect gains affected by their corporate social responsibility [19]. Since 1978, researchers have noted a correlation between CSR and financial performance [20], which led academics to extend their research in 1985, showing that less-diversified businesses have better corporate social performance [21]. In 2003, the capital market's response relationship to CSR was linked to the amount of information disclosed [22]. As a result of the 2008 financial crisis, considerable research has been conducted on how companies react to external challenges, and large capitalization firms have been reported to have become less responsible [23].

The effects of CSR on corporate financial performance vary across firms and time [24]. Corporate social performance is positively related to a company's reputation [25]. However, in both the banking sector and chemical industry [26], up until 2011, there was no significant relationship between ethical ratings and corporate financial performance. In contrast, CSR has been positively associated with the

firm value of European manufacturing firms [27] in the oil and gas industry [28]. In addition, in recent years, The Conference Board has found an increasing connection between sustainability and brand value [17].

Ameer (2012) finds that companies which attend to ecosystems, societies and environments of the future have higher financial performance compared to those that do not engage in such practices and this superior performance is sustained over time [29]. Good environmental performance [30] is significantly associated with good economic performance and this tends to lead to positive future performance [31] and lower risk exposure, as a result of the social responsibility actions taken [32]. Poor company financial results are generally the result of poor community engagement rather than poor social performance in terms of environmental factors [33]. However, Farooq [34] finds that ESG disclosure is negatively related to firm performance in emerging markets and argues this result by stating that stock market participants can consider ESG investments as unnecessary costs.

2.3. Sustainability Brands and the Financial Sector

Sustainability can be defined as meeting human necessities while at the same time preserving the nature or our planet. It is a connection between nature and society [35]. Sustainable science is a field that is trying to examine the correlations between society and resources, how these resources have been used and their limitations and boundaries. It is also trying to address the behavior of the organizations and their responsibilities towards society and nature [36]. In today's business world, sustainability is affecting competitiveness [37]. Executives are very aware that failure on sustainable challenge impacts their organizations in a negative manner [38]. Sustainable strategy became very important on the road map for every organization [39]. Consumers are searching for the sustainable environmental friendly products since concerns about climate change have increased [40]. In order for companies to get a sustainability advantage they need to have green product offerings [41]—sustainable products designed to minimize environmental impacts during its whole life-cycle and waste.

The United Nations (UN) [42] has looked at the reporting of sustainability indicators in the financial sector. Also, private initiatives such as the Asset Owners Disclosure Project can help to promote transparency and, especially if governments promote their use, enable market forces such as reputational impact to take action. The UN is not the only international organization to mention the importance of sustainable investments and indices, as the European Commission [43] recently advised that an increased focus on environmental, social and governance indices during the investment process is necessary. Similarly, Marcel [44] suggested the use of legal and social incentives but also stressed the importance of price incentives to internalize negative externalities on the environment in order to maximise the social welfare.

The financial sector contributes, both positively and negatively, to sustainable development, so there is a need to conduct research in this area to optimize the positive effect [45]. New financial products and social challenges are highly correlated in the banking sector [46]. Despite the important relationship between finance and sustainability and researchers, the need remains to expand the knowledge on the issue of financial management and the concern with sustainable development [47]. This could increase managers' awareness of the relationship between society and the firm when making their decisions [48].

2.4. Sustainability Brands and Marketing Strategies

CSR affects the behavior of firms from all sectors and a direct relationship exists between sustainability and marketing strategies. Stakeholders form part of the sustainable scheme by enhancing the added value of a firm [49]. In the industrial sector, there is a positive association between CSR and corporate reputation [50]. For example, there is a conceptual framework in the life insurance industry that shows the impact of CSR on brand equity to be positively related to persuasive advertising effects [51]. In the electronics sector, there is a positive relationship between green characteristics (green satisfaction, green affect, green trust and green brand loyalty) and green brand equity [52].

The incorporation of an ecological method in a brand produces a stronger preference for hedonic attributes.

For this reason, many companies focus on investments in intangible assets and, in particular, in brands and human capital, among others, to ensure the development of a stronger and sustainable image. Thus, they opt for a strategy of converting intangible assets to tangible assets to create the firm's value and place in the market [53]. For the past 30 years, companies have focused on corporate sustainable development and this has become an organizational determinant [54]. This phenomenon has arisen from companies seeking a competitive advantage and trying to become sustainable in parallel with the main business objective, to the point that sustainability can be the profitability tipping point in business. For this reason, sustainability is now a key driver of innovation [55]. The additional benefit of sustainability is that it links social entrepreneurship with economical profitability to the extent of recognizing the social return on investment and triggering the evolution of business strategies [56]. Firms should develop different strategies to achieve a competitive advantage and should focus on asset specificity in determining the multiple uses and purposes of their assets [57]. Since a link exists between strategy and society, a new method was proposed by Porter to link business to societies [58]. For instance, the supply chain sector dealt with this as a business opportunity in 1996 with the introduction of this new scheme in the re-engineering of the structure and management of the supply chain to manage the environment to more effectively use current resources to balance sustainability and profitability. Those changes were meant to represent an investment by the sector, despite being forced by consumers who push producers into developing sustainable products by their desire to use products with minimized environmental effects. This pushed companies to consider the balance between sustainability and pragmatism, which, in turn, affected the brand equity of the whole sector [59].

Businesses have insufficient knowledge about how to see and value CSR. The development of reputation and brand equity require the use of an effective strategy to achieve a competitive advantage and build a company's identity. Thus, a framework needs to be set to identify the contributions of intangible assets based on case studies and to reveal their importance in a sustainable, competitive advantage strategy [60]. A firm's environmental orientation could influence their corporate brand value [61], suggesting that managers should invest wisely in environmental activities, as these investments have an effect on corporate intangible assets [62]. When implementing procedures, managers should consider that company identity can grant a competitive advantage [63] that translates into better performance while still recognizing the importance of the availability of resources [64].

3. Model, Methodology and Data

3.1. Model

The method for determining brand value (or brand equity) involves considering how much more a consumer is willing to spend on one branded product versus another as well as the fact that there is a relevant branding shareholder value creation link [65,66]. Damodaran [3] examined this intangible asset as an incremental cash flow of branded to unbranded companies. His model assumptions were built on the premise that the brand name company and a similar generic company are both publicly traded. His proposition is based on the market observations of both companies, which allows a value to the difference between the two brand values.

The *Brand Name Value* can be determined as follows:

$$\text{Brand Name Value} = \left[\left(\frac{EV}{\text{Variable}} \right)_{\text{Brand Name}} - \left(\frac{EV}{\text{Variable}} \right)_{\text{Generic Brand}} \right] * \text{Variable}_{\text{Brand Name}}, \quad (1)$$

where *EV* is the Equity Value. Under the assumption of using *EV/Sales* ratios as multiples for comparison, this would be modified as follows:

$$\text{Brand Name Value} = \left[\left(\frac{EV}{Sales} \right)_{\text{Brand Name}} - \left(\frac{EV}{Sales} \right)_{\text{Generic Brand}} \right] * Sales_{\text{Brand Name}} \quad (2)$$

Fernandez [67] underlined a further limitation behind their model (shown in Equation (2)), stating that sales are not identical between the generic brand and the branded company and suggested expressing the following formula to consider the different volumes:

$$\text{Brand Name Value} = \left(\frac{E}{S} \right)_{\text{Brand Name}} * Sales_{\text{Brand}} - \left(\frac{E}{S} \right)_{\text{Generic}} * Sales_{\text{Generic}}$$

where E is the equity calculated by market capitalization and S is the sales volume. Therefore, Brand Name Value is the market added value for a branded firm relative to a generic firm.

The control variable Intangibility is an approximation of net intangibles that is computed by

$$\text{Intangible Assets} = \text{Goodwill} / \text{Total Assets},$$

which represents the goodwill to assets ratio used to determine what portion of a company's assets are classified as intangible assets relative to its tangible assets. Goodwill is the excess purchase price over the acquiree's book and is considered to be carried on in the new books after the sale of a business as an asset and is eventually written off. The concern here is to determine whether there is any significant relationship between the intangibility and the brand value assigned. In addition, the Return on Assets (ROA) is included as an indicator of how profitable a company is relative to its total assets and the Price-to-Earnings ratio (PER) is a measure of the company's value based on its current share price relative to its per-share earnings.

3.2. Method

The dependent variable Brand Value is composed of the ratio of market capitalization to sales, standardized by the sector's generic firm. Despite the limitations on the sales volume [67], we propose the use of various independent variables and test their significance and effect on the brand value. We aim to develop a better brand equity model that considers other significant factors; in particular, sustainability. The first possible weakness considered in this model is the choice of the generic company, as there is difficulty involved in estimating the parameters of the generic product. The choice of the generic company can vary within the same sector, as the ratio of branded to generic companies can vary among sectors, therefore increasing the chance of a hidden arbitrariness in the dependent variable [68]. To reduce this hidden arbitrariness, we propose using the average industry as a proxy for the generic company as the dependent variable of brand equity based on The Bloomberg Industry Classification Systems (BICS) first level of detail [69]. For the independent variables, data were collected and collated using publicly available annual reports from Bloomberg to find approximations of the levels of competitiveness, market share, net intangibility assets, sustainability and transparency and governance factors.

We run a Panel data OLS model regression controlling by region and time effects, which allows us to infer a linear relationship among brand value and ESG factors but not causal effects. We assume that a regression analysis is a statistical procedure to obtain estimates. Causal analysis is not a specific statistical procedure, it can be regression analysis, path analysis or variance analysis. In our paper, the data analysis for research design allows causal conclusions, thus the regression analysis on our data is considered to be a causal analysis [70]. We thought of doing Granger causality to study the econometric relationship that tests whether additional information from the behavioral variables (ESG scores) help explain the brand value. But the independent variables and the brand value variable should be stochastic variables which is not the case. Nevertheless, in the regression analysis this assumption is not necessary (in this case the OLS panel data with dummy variables such as region

controlled by years, there is no need to have stochastic variables). Therefore, the variables could be deterministic, which is the case of the independent variables included in this paper.

Our results suggest that environmental, financial and governance factors are drivers for boosting brand value. That is, the more important are ESG factors for a company, the higher the brand value.

3.3. Data

Due to the usage of several variables across 5 years, a panel data/longitudinal dataset was constructed. Tests for multicollinearity among some variables as well as heteroskedasticity, were conducted. Five years of data (2013–2017) were collected from a published annual report of 1100 companies from S&P 500 and EURO 600–Bloomberg. Overall, 1816 observations were collected from a variety of international companies. Our sample thus includes the biggest companies in the the US and European markets. Although, to a varying degree, these markets consist of many small and medium enterprises (SMEs), as publicly traded companies are intensely valued by the market and they more clearly disclose their ESG investments.

Our hypothesis is that the dependent variable, Brand Value, is positively affected by investments in environmental and social governance factors, in addition to other social aspects like the share of women on the board of directors and the proportion of female employees. ESG factors may boost the image and reputation of a firm, with the potential positive effect on customers willing to pay a premium for the branded sustainable product [17]. More female workers and women on the board of directors increases diversity and inclusion, what is clearly correlated with ESG factors—in concrete, with Social factors—so it needs to be included as a control. Also, studies as Shrader (1997) found that firms employing greater percentages of women managers at the general management level experienced a better financial performance in terms of ROS, ROA, ROI and ROE [71]. Since we are working with panel data, we control for yearly and regional effects in order to capture the influence of aggregate trends (time-series) and regional effects that may be correlated with other explanatory variables such as ESG. We include dummy variables for these factors to increase the robustness of the specifications.

Many CSR investment funds have been developed, despite the need for new value creation sources [72] and the recommended enforcement [73,74] of the widely used sustainable reporting instruments and indices. For this reason, the independent variables in this paper is ESG factors, which provides a single company's ESG performance score as well as being based on third-party ESG scores; the quality score of the Institutional Shareholder Services (ISS), which is the world's leading provider of corporate governance and responsible investment solutions and the collective voice of shareholders; and the SR (Sustainalytics Rank), provided by a global investment firm that specializes in sustainability research and analysis, to show the sustainability of a company. To tackle the company behavior, the Company Disclosure Performance score (CDP) was added as an index to measure the transparency of companies, followed by two variables: the number of women on the board and the number of female employees. Finally, we also include a categorical variable for whether the firm is from the US or the EUR market and include time in the main regression as control. A summary of the main variables used is provided in Table 1 and the main statistics related to the financial and social factors are displayed in Table 2.

ESG has been positively linked to corporate financial performance across a wide range of more than 2000 research articles [75]. It is important to use several of these variables, as there are important differences among ESG rankings, so the use of just one might lead to biased results.

In Figure 1, we display the density of the estimated Brand Value in our data set for every year. Interestingly, this shows a trend of increasing dispersion, with more firms having even more negative brand value and large, positive outliers.

Table 1. Main variables.

Latent Variables	Observable Variables	
Financial situation	Intangibility	Measured intangible assets
	ROA	Return on assets
	PER	Price–earnings ratio
	Index Growth	Average growth of relevant index
Social factors	ESG score	Environmental and Social Governance index
	Women Directors	Share of female directors
	Women Employed	Share of women employed
Unobserved factors	Region	US/EUR
	Time	Year variable

Table 2. Summary of the statistics.

	Mean	Median	Std. Dev	Max	Min
Brand Value	157.5	−8989.6	47,775.99	733,090.4	−97,977.6
Intangibility	0.077	0.037	0.001	0.799	−0.009
ROA	5.930	4.881	0.09	235.4	−70.4
PER	1631	535	46.8	141,828	−35,206
ESG	36.861	37.191	0.151	78.512	3.509
Women Directors	74.81	80.00	0.179	100.00	0.00
Women Employed	36.94	35.00	0.160	84.7	6.0

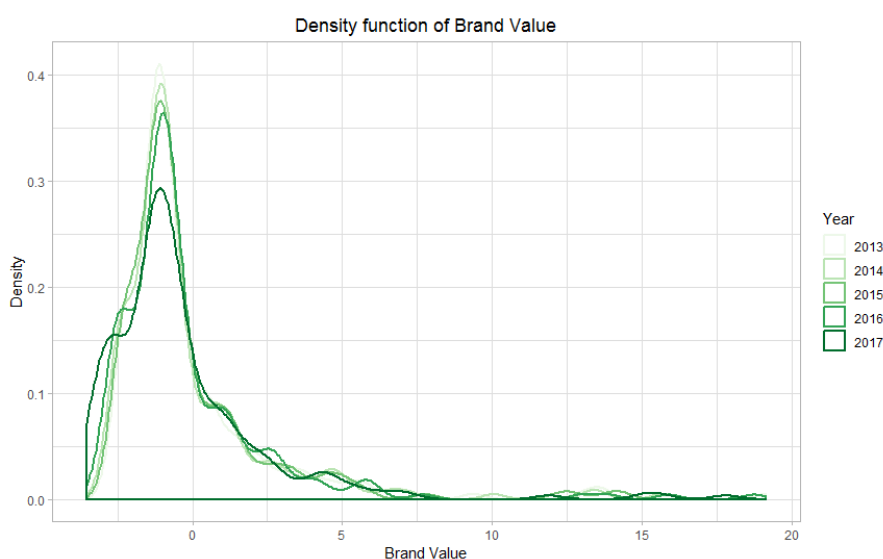


Figure 1. Annual density of Brand Value.

In Figure 2, we display each firm’s average brand value, sector and either the average Sustainability index or the average Environmental and Social Governance score, in both cases with a generalized additive model with integrated smoothness displaying the trend. As can be seen, across different indices and levels, higher values of sustainability tend to be correlated with higher average brand values.

However, as can be seen in this figure, there is wide variability in brand values when considering companies from all sectors based on the Bloomberg BICS classification. Subsequently, we conducted a more detailed analysis of brand value, particularly in the financial sector.

In Figure 3, we display the same study for only the financial sector. The results are consistent within this sector, as both indices had a similarly positive, albeit not linear, relationship with brand value.



Figure 2. Brand value and Sustainability Indices.

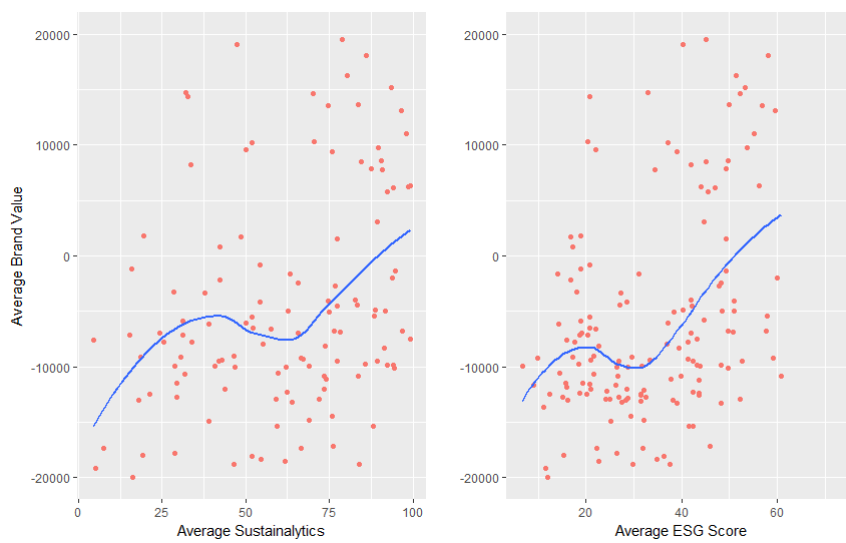


Figure 3. Brand value and Sustainability Indices for the Financial Sector.

To study the evolution of this relationship between Brand Value and the Environmental and Social Governance score, Figure 4 shows a smooth trend linking both variables for every year of our sample. The trend was constantly positive over time and even displayed higher steepness in the last two years. This could imply that in more recent years, higher ESG scores were being more positively received by the market.

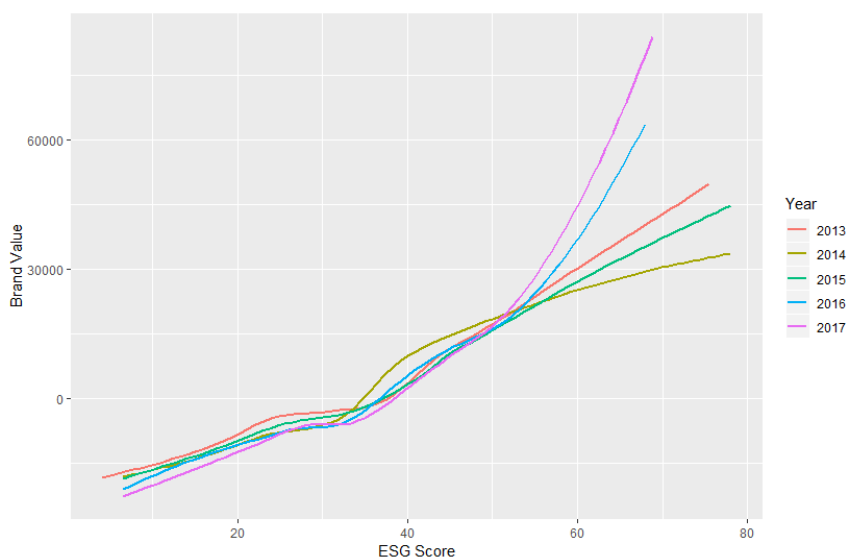


Figure 4. Evolution of the relationship between the environmental social and governance (ESG) score and Brand Value.

4. Empirical Results

Our findings shed some initial light on how brand equity is affected by environmental and social governance reporting of the underlying company in the financial sector. Results from the regression and paired-sample *t*-test methods show with a very highly significant *p*-value that a higher ESG score for a given company corresponds to a higher brand equity value (Table 3).

Table 3. Regression Results

	<i>Dependent Variable:</i>
	Brand Value
Intangibility	16,732.2 * (8978.9)
ROA	−205.64 * (81.6)
PER	4.2 *** (0.1)
ESG score	648.2 *** (81.0)
Women Directors	103.1 * (52.8)
Women Employed	8.1 (56.9)
Index growth	38,296.8 (3085.9)
Region (U.S.)	11,290.0 *** (3085.9)
Constant	−44,198.7 *** (7497.0)
Observations	2467
R^2	0.281
Adjusted R^2	0.278
F-Statistic	80.101 *** (df = 12; 512)

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

To test for multicollinearity, we used the variance inflation factor test (VIF), which compares the variance of the model with several factors with the model with one term alone. The results, in Table 4 show that the variances of the estimated coefficient of all variables were moderately inflated, while the VIF values of all the other variables were below 10, indicating low correlarity among the independent variables and that the multicollinearity does not pose a problem for our explicative model used (Appendix A).

Table 4. Variance inflation factor (VIF) test.

Variable	Test Statistic
Intangibility	1.012
ROA	1.069
PER	1.073
ESG score	1.086
Women	1.349
Directors	1.047
Women Employed	3.732
Index Growth	2.419
Region	3.396
Year	

To validate the appropriateness of the model we are using, we perform residual analysis (difference between the predicted response and the actual response) and examine residual plots to evaluate how well the model fits the data and that the data meet the assumptions of the model [76]. Residuals are plotted to understand whether the assumptions which have gone in building a linear model hold true or not.

The residual plot for the Brand Value dependent value with each of the independent variables shows that most of the model validation centers around the residuals (essentially the distance of the data points from the fitted regression line) validating homoscedasticity that means that the residuals are equally distributed across the regression line, that is, above and below the regression line and the variance of the residuals should be the same for all predicted scores along the regression line. This accepts the assumption of validating the appropriateness of the model we are using.

To test for heteroskedasticity in the linear regression model to check whether the variance of the errors from the regression was dependent on the values of the independent variables, we used the Breusch–Pagan (BP) test, which indicates whether the variance of the errors depends on the values of the independent variables. The results, displayed in Table 5 showed a very low p -value; thus, the null hypothesis of homoskedasticity was rejected and heteroskedasticity was assumed.

Table 5. Breusch–Pagan (BP) test.

Variable	Model
Statistic	689.72
Degrees of freedom	12
p -value	0

As seen in the main Table, Table 3, the dependent variable, Brand Value, was positively affected by the ESG score. Consistent with the higher average Brand Value, the dummy variable for the United States (US) region was also significantly positive. Although tangible and intangible attributes and both are found to be important contributors to brand equity and brand choice [77], Intangibility variable was as well positively significant. The share of Women Directors, being a business imperative [78] were also positively correlated with the Brand equity Value, albeit less significantly. Even though the share of female directors did positively affect the brand value, the share of female employees had no direct implication on brand value and was not significant. Although statistically it makes

sense to eliminate effects that are not serving a purpose, but this insignificant effect has a purpose in highlighting that, even though diversity affects positively on business performance [79], we found out that in the financial sector, gender diversity does not affect brand value. A similar result was found when including other sustainability indices, such as Sustainalytics, in the financial sector. Since sustainability ratings are a challenge to financial firms [80], the importance of this result advises firms of the importance of Sustainalytics and the possible future positive effect on brand value. The ESG score did not lose significance but the new addition simply generated noise and was not significant.

Finding the impact of sustainable investments on financial firms' Brand Value is considered difficult due to nature of the valuation methods of intangible assets, as mentioned by Salinas [81]. Since low multicollinearity exists for the independent variables in our model, already discussed in the previous paragraph, then we can interpret the effect of the independent variable on the dependent variable by considering the coefficients [82]. The positive significant coefficients are ESG score index, Intangibility, Price to Earnings ratio, share of female directors. So an increase of any of these variables would increase the Brand Value. More precisely, our results suggest that an ESG score index increase of one unit would boost Brand Value in 648.2 million dollars, on average. This result indicates that financial firms will end up improving their Brand Value by further investments in sustainable investments, thus enabling those investments to be the preferred investment focus in the financial sector [83]. Also, for each additional unit intangibility, we can expect an average increment of Brand Value of 16,732.2 million dollars, that prove the contribution of human capital as an intangible asset to Brand Value [84]. In line with standard accounting assumptions, the price to earnings ratio (PER) has a positive effect on our dependent variable, which is in line with increasing number of investors using PER ratios to make decisions [85] and furthermore, we can observe that for each additional unit of Price to Earnings ratio, the Brand Value is expected to increase by an average of 4 million dollars, a motive to guide the organization focus on increasing shareholder value [86] in the financial sector. An additional unit of participation of female director would increase the brand value on 103 million dollars, on average, that provides implications for future research regarding the effectiveness of female board of directors towards firm performance and Brand Value in the firm sector. However, the Return on Assets (ROA) ratio has a negative, albeit less-significant, effect. Robbin [87] referred to the negative relationship between brand value and return of asset in big capitalization firms that coincides with the firms in our data set in the financial sector, what could explain the negative effect. Despite the limitations of valuing brands [88] and our proposed scheme for identifying brand value drivers, that is, the parameters influencing the brand's value, our main challenge in this paper is raising awareness of this positive impact between social drivers and Brand Value. Knowing that social sector is attracting companies in order to identify opportunities for business innovation [89], there is still a need to implement those models both supported by academics and applicable by practitioners in the financial sector to ensure a greener and more sustainable sector.

We also included the average annual growth rate of exchange-traded funds (ETFs) to track the S&P500 and the Eurostoxx 600. In this way, we controlled for possible effects in brand value unaccounted for by the model, such as a slow-moving global trends in stock prices and brand values. However, this indicator did not appear to be significantly related to our measure of Brand Value. The model explained 28% of the variability, as seen through the adjusted R^2 and the F-statistic allowed us to strongly reject the possibility of the independent variables' coefficients being zero.

5. Conclusions, Managerial Implications, limitations and Further Research

Brands bring awareness to users and allow them to remember a particular product or service [90]. Due to the need to develop awareness of the sustainability concept that is already in place [91], a responsible business guide could contribute to obtaining a better brand equity value. Our suggestions include not only investing more and trying to obtain a higher ESG score but also disclosing those investments and promoting what the company does. The results show, with a reasonable significance level, that the more sustainable a company is, the higher their brand equity value is. In addition,

a more gender-diverse board of directors could positively influence the brand value of a company in the financial sector. As already mentioned, cooperation through reporting to the UN and to private entities that publish such indices should be enhanced. Drawing the line from all of this statistical information, one idea can clearly be underlined: environmental, financial and governance factors are drivers for boosting brand value. That is, the more important are ESG factors for a company, the higher the brand value. This helps raise awareness to management and investors, together to a single goal to draw a distinct image in the consumer's mind with a more sustainable Brand. Differentiation is an inevitable part of brand management, which can be done by positioning and integrated marketing communication [92]. Brand was initially used to differentiate a group of products from that of others [93]; but nowadays, brands are used by consumers to differentiate them within society [94]. It has become a very much integrated in the business models; and consumers have a voice in distinguishing service quality in all sectors [95] and in the financial sector particularly [96] playing a key role for managers to be aware of the reasons and consequences of why customers stay [97] and thus plan for a service quality in an integrative approach [98].

These results also affect the perspectives of the end users, investors or fund managers, as higher ESG scores might signal future long-term gains in brand value that have only recently been captured by the market and included in the price. This relationship could foster a virtuous circle in which companies with green investments attract [99] more capital and are able to grow and invest more. Investors that are able to show metrics on the sustainability of their portfolios can use those metrics as added value that distinguishes them from other fund managers [100]. In addition, due to the interlinkages between the financial sector and the rest of the sectors of the economy, the effects on brand value can spread to other firms and new ways of reporting information [101] and new channels of social investments can be achieved through the classical banking activities of financial intermediaries integrating the behavioral factors we raised awareness in this paper and whose implementation is crucial to achieve a green brand [102].

Our research adds extra questions regarding firms' reporting of environmental and social aspects [103]. This study was limited by the availability of these data and by the complexity of the estimation of brand value [104]. We studied the main trends through the main indexes of sustainability and an estimation method while attempting to reduce analyst bias [105]. However, further research is needed to increase the robustness of the results and contrast them with new data-sets and estimates [106]. In addition, due to data availability, we focused on big firms in the US and EU markets; however, SMEs might be driving their brand value through their social investments even more so than big corporations. Further research should focus on possible nonlinear effects. For example, as seen in Figures 1–3, the relationship between ESG score and brand value, although positive, was not constant and varied over time. Tools such as SPSS softwares solution adopted for SMEs using digital marketing tools to managing brand equity [107] could be a further research for all firms in the financial sector that seek a continuous sustainable trend. Thus further managerial implications on a practical level with an integrated model that takes into account the social, environmental and economic performance for the creation of sustainability-oriented brand value in the financial sector is needed. Doing that is not an easy task; however, the results obtained constitute a small but significant first step by raising awareness of its importance. This first step can provide a guidance starting point for those the financial firms that want to improve their business models and follow the path of growth and sustainability by managing their brand equity for a long run approach.

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Appendix A. Model Validation Graphs

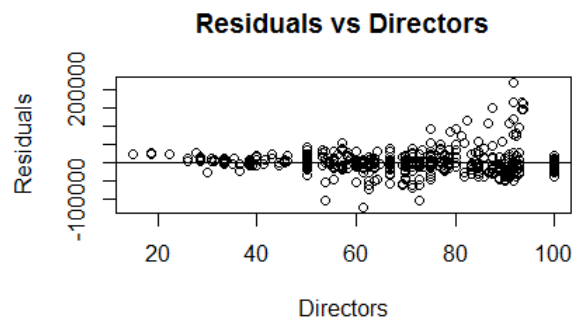


Figure A1. Residuals vs Directors.

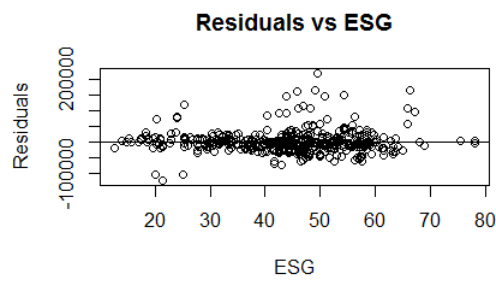


Figure A2. Residuals vs ESG.

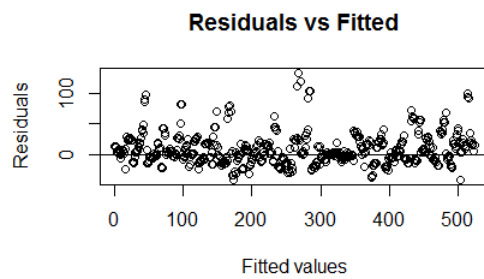


Figure A3. Residuals vs Fitted.

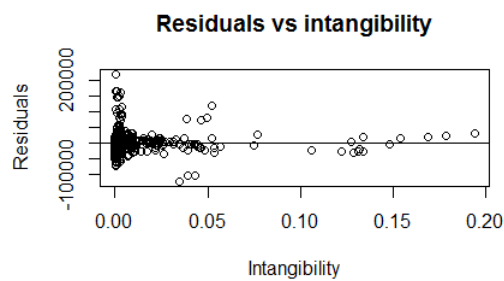


Figure A4. Residuals vs Intangibility.

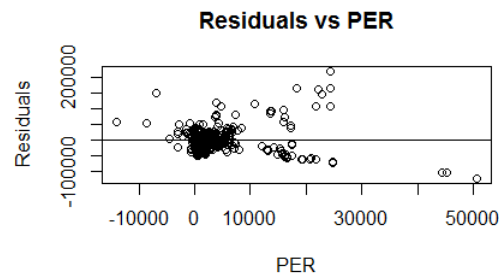


Figure A5. Residuals vs PER.

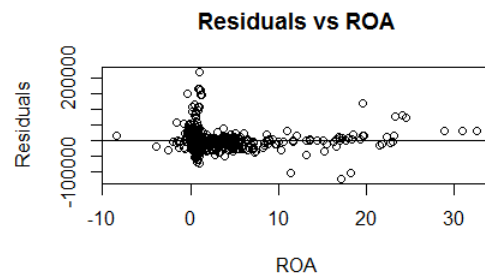


Figure A6. Residuals vs ROA.

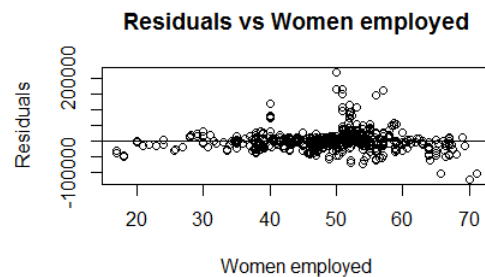


Figure A7. Residuals vs Women Employed.

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Dr. Francisco Javier Arroyo Cañada

Presidente del Comité Organizador



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4th On/Off International Conference in

Marketing Decision Making

Certificado de Asistencia

Este certificado acredita que D./D.^a **Ajour, Samer** ha asistido a la 4th On/Off International Conference in Marketing Decision Making, celebrada en Barcelona el 4-5 de diciembre de 2019, y organizada por la Universitat de Barcelona, EAE Business School y Ostelea School of Tourism & Hospitality.

Barcelona, 4-5 de diciembre de 2019

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