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**The marketing—finance interface and national wellbeing:
An operant behavioral economics analysis**

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Abstract

The research ascertains which countries' well-being metrics moderate the effects of marketing investments on corporate financial outcomes. We applied generalized estimating equations to firms in panel data from 131 countries covering 18 years. The results show that marketing investments affect market share regardless of country context, a global pattern. However, their effects are greater when considering economic growth. The impact of marketing on profitability and the companies' value increases when the country improves income distribution. The countries' developments generate higher financial outcomes, regardless of marketing investments. We highlight firsthand the marketing-finance worldwide interface in its macro-environment, using operant behavioral economics.

Keywords: marketing investment, behavioral economics, development economics, firm theory, financial performance, marketing-finance relationship.

Introduction

The impact of marketing activities on corporate financial performance has been one of the most prominent topics in the marketing field. It shows how worthwhile implementing marketing activities is and justifies their importance for companies' growth, profitability, and value (Edeling et al., 2020; Katsikeas et al., 2016; Mantrala et al., 2007; Stewart, 2009). How much marketing investments generate positive effects on some financial metrics have led researchers to elaborate on questions involving the elasticity of the impact of these investments on the financial metric (Edeling & Fischer, 2016; Porto & Foxall, 2019), the amount of the investment (Sridhar et al., 2011), the short or long-term effects (Hanssens & Pauwels, 2016; Joshi & Hanssens, 2010), the control variables and endogeneity of the data (Rossi, 2014), the curvilinear relationships of the effects (Bae et al., 2017), and the effectiveness of these investments compared with other company investments, such as Research and Development (Hughes et al., 2019).

Although many challenges remain regarding this effectiveness, the studies show contradictory results with samples of companies in different countries and different moderating context variables (Dalvand & Tabatabaie, 2018; Hughes et al., 2019; Porto & Foxall, 2020). In general, the effects of marketing investments on financial outcomes are positive, especially on sales outputs (Cheng et al., 2018; Ma & Du, 2018). But most studies compare the marketing-finance relationship with companies from developed countries (Verhoef et al. 2011; Zinkhan & Verbrugge, 2000) without considering data from other countries (Sheth, 2011) mainly because researchers do not have a sufficient sample of accessible companies.

This state of affairs suggests that the relationship of marketing investment to financial outcomes in these other countries is not revealed and may exert different influences on marketing effectiveness. Furthermore, researchers have not considered theoretical explanations of how country events can explain these effects in a structured way (Cano et al., 2004). Generally, the country's role has been contextualized as an idiosyncratic and static geographic region (Ellis, 2006), and the dynamics of this context are rarely considered.

The changes in the socio-economic contexts that a country and all the companies within it undergo throughout the chain of marketing activity and financial outcomes appear to exert this influence. A theoretical perspective that integrally covers the contexts and puts them at the center of a functional explanation is needed to understand the effects of marketing investments. The authors propose resorting to the theories of operant behavioral economics (Foxall, 2016; Hursh & Roma, 2016). In this approach, the contexts work as discriminative (versus aversive) stimuli that promote (or inhibit) the circumstances where an organizational response generates reinforcing or gains-making (versus punishing or loss-making) financial consequences for the firm (Porto, 2016). In this sense, the marketing investments are organizational responses representing resource allocation choices by company managers and are thus contingent on the context (Porto & Foxall, 2019). What occurs around the manager (and the company) can incentivize or discourage investing more in marketing and determine whether this will be effective or not. Thus, the expenses effectiveness depends on the context structure (on the manager's life, the company, the sector, or the country) that the firm found itself when it chose to implement such marketing activities.

The nation's level of socio-economic well-being has played an implicit role in managers' choices, often unconsciously or intuitively in applying more or fewer marketing resources (O'Malley et al., 2011). An improvement (vs. deterioration) in a nation's socio-economic life seems to generate widespread optimism (vs. pessimism) in the market. This socio-economic environment affects (1) how companies implement expansion and competitiveness strategies versus retreat strategies or become more efficient (Fuertes-Callén & Cuellar-Fernández, 2019; Mann & Byun 2017), (2) how much consumers give up their economies and buy more versus less, saving money (Białowolski, 2019; Pardede & Zahro, 2017), and (3) when investors have higher expectations of stock returns, company value and economic performance (Bouteska & Regaieg, 2020; Cheema et al., 2020). Normative marketing practices suggest that marketing activities depend on the macro-environmental context (Hunt, 2018), and the adherence between this context and marketing enhances business gains. In addition, improvements in a nation's well-being can directly correlate with increased shareholder valuations of companies in the stock market (Mertzanis et al., 2019) since variations in ambiance variables have influenced investor decisions. Thus, including the role of society's well-being in the explanations of the marketing-finance relationship is necessary.

The research aims to investigate which countries' well-being metrics (Gross Domestic Product Growth, Inverted Gini Index, and Human Development Index) moderate the effects of marketing investments on corporate financial outcomes. The prevalence of marketing effectiveness may not occur globally due to society's situation that inhibits effective marketing activities. Some companies' practices exemplify this situation when a manager allocates more resources to activities geared toward

consumers. Still, demand does not respond due to some aspect of lack of well-being that the country is experiencing, such as worsening income inequality or stagnation of the country's economy or depression in it. These socio-economic aspects affect all the companies that inject more resources into marketing in a particular region and may systematically frustrate sales, profitability, and company value.

Considering countries' well-being in the effectiveness of marketing investments

The countries' socio-economic well-being has conditioned the behavior of economic agents to obtain generalized utilitarian happiness. The correct functioning of society's goods and services causes this happiness (Gauthier, 1967; Jones & Felps, 2013; Warke, 2000). Thereby, a country that experiences such well-being includes a set of institutions that provide products and enjoy them (Prilleltensky & Prilleltensky, 2007). In a multilevel relationship, this benevolent context influences these institutions and can make it possible to obtain utilities for them, usually in the form of surpluses (Bapuji et al., 2018; Cherchye & Verriest, 2016). Thus, the organizational behavior of a for-profit institution located in a country experiencing times of growing well-being can more easily obtain financial surpluses; conversely, another for-profit institution in another country experiencing a lack of well-being will have difficulties getting financial surpluses. This premise leads to the understanding that the prevalence of desirable consequences of these institutions' actions is relatively high, which leads to their continuity in the market and waves of progress in society.

The measures of well-being or welfare began with utilitarian assumptions that competitive markets produce efficiencies and that these efficiencies generate equilibrium between supply and demand (Brown & Calsamiglia, 2014; Leschke, 2016).

This equilibrium is the benefit of the well-being of producers and consumers in the form of surpluses. Several market positions represent the optimal welfare (Ekelund Jr. & Hébert, 2014; Luenberger, 1992). Empirically, researchers have questioned this, as it raises subjective questions regarding which option a decision-maker could choose within the possible Pareto-optimal ones to represent well-being. These positions are very different along the indifference curve (Beckerman, 2017; Vanberg, 2019).

Alternatively, the measures that consider the capabilities of people in regions (and not of markets) in obtaining well-being have been more widely used (Estes & Sirgy, 2019; Nussbaum, 2011; Sen, 2017). They are more empirically proven, especially those that concern the mechanisms that lead to countries' well-being, such as the Human Development Index (HDI) of the United Nations Development Programme (Herrero et al., 2012). The measures contained in the HDI are of social capacities and represent the capacities of the individuals in a nation to obtain that which they value, also known as opportunities of freedom (Klugman et al., 2011). They cover the interaction between health, education, and income, indicating individuals who can overcome problems or difficulties throughout their lifetimes within a country. The highest-scoring regions (or countries) would be better prepared to enjoy the sensation of well-being.

Researchers initially compared the conception and use of this performance measure of nations with a single measure of the drivers of well-being, such as economic growth (GDP growth), but this would still be not enough to capture the main elements of nations' well-being. They suggest many alternative proposals for measures, and some of the criticisms relate to the absence of distributive measures - income inequality (Klugman et al., 2011). The discussion about the well-being of the country has therefore considered not only the level of development of people within each country, this being

its social dimension, but also, whether economic growth or better income distribution, its economic dimension, those responsible for generating a better level of country's well-being. These social-economic indicators are related to increased and better consumption and supplier surpluses in relative balance (Sirgy, 2021; Storr & Choi, 2019).

The understanding that a country's well-being is a context for the behaviors of economic agents, for instance, companies, requires knowledge of the environment-behavior-environment relationships of influence, which the theory of operant behavioral economics has a tradition of using with functional explanations (Foxall, 2016; Kagel & Winkler, 1972). In a behavioral chain, stimuli discrimination occurs when behavior changes with contexts (Baum, 2017; Foxall, 2020b). Thus, if the context favors increased demand, implementing marketing actions consistent with that demand may be a very effective behavior. Therefore, marketers who pay attention to alterations in the circumstances can better direct their efforts, which means that marketing investments will increase if they look at some property of the context surrounding them or their company. They usually do so to sector-based characteristics (e.g., entering a significant new competitor into the industry) or the increasing or decreasing consumer demand at an industry level. However, more general aspects that the country is experiencing can influence the marketers' attention and direct their behavior (allocating investments).

If the behavior is consistent with what the context stimulates the professionals to do, they are sensitive (Saunders & Williams, 1998). Otherwise, they are insensitive. One can expect greater consumption when the country is experiencing socioeconomic well-being, which encourages marketers to increase their marketing activities, usually leveraging their marketing investments. If they leverage, they are consistent with the

environment, and the professional was sensitive to that contingency. If they do not, they would be insensitive to this context and maintain or reduce marketing investments.

However, a greater understanding regarding how a particular characteristic of the context can improve behavior by making it adequate requires a more in-depth analysis of the relationships between consequences previously acquired by the company and that context, which the theory of operant behavioral economics proposes to clarify.

Explanation of marketing-finance relationship by operant behavioral economics

A modern business needs to respond profitably to consumers' demands (Foxall, 2020a), and this illustrates a good performance for firms. On the one hand, consumers demand utilities derived from company offerings; on the other, companies need to gain something from providing the offerings, such as profit or value. The marketing firm model, derived from the knowledge of operant behavioral economics (Foxall, 2016), understands the firm as an administrative organization (Penrose, 2009) and gives centrality in the relationships between companies and consumers (Foxall, 2020a). This model is an extension of the behavioral theory called "operant conditioning" or the "three-term contingency" from Skinner (1953): discriminative stimulus (DS) or aversive stimulus (AS) that offers a context to an operant response (R) and that generates a reinforcing consequence (reinforcement) or punishing consequence (punishment). The sequence DS:R→reinforcement or AS:R→punishment represents the model.

Despite being an individual learning model, one can use it for organizational learning with few adaptations (Glenn, 2010). A company's response is an aggregate of the interlocking responses of individual workers for the generation of an output (e.g., an organizational response such as the implementation of an advertising campaign or a

price policy for products or services). Some of these organizational responses are geared toward the consumers and generate bifurcated consequences for the organization. That is, the aggregate corporate response generates two simultaneous outcomes: a direct one that involves the cost or expenses of transactions with the market (e.g., paying for salaries and utilized resources) and a second indirect one that involves the benefits of the transactions for the company (Coase, 1937), such as the revenues derived from sales of products and services, which generally exceeds the costs of the former (Brown & Revankar, 1971). Over time, the company learns which responses led to consequences and can intensify or reduce the effort allocated to those responses. As no response exists in a vacuum but instead happens in some context that stimulates or discourages its occurrence, the company learns that specific contexts favor or hinder the functional organizational response in achieving results.

Foxall (1999, 2020a) extended the original operant conditional model in two ways. First, both the firm and the consumer participate in these relationships (D or A) S:R→reinforcement/punishment in an interconnected way. Second, the model puts that the reinforcing and punishing consequences may influence subsequent situations and, thus, become a learning history concerning which actions led to gains or losses (Foxall, 2016). The collaborative activities of a company's employees regarding the products and services address the consumers (such as preparing the store environment or configuring the product itself), and these generate contexts for the consumers that enable purchases (Foxall, 1992). If purchases occur, the commercial exchange relationship is established (Porto, 2016) and, while the consumer enjoys the product or service (these being their reinforcers), the company receives payments from the purchases. The charges are typically a punishment for the consumer, but in aggregate,

these payments compose the company's revenue, which is present in some financial outcome indexes. These revenues are gains derived from consumers and contained in the company income statement. Therefore, they are reinforcers of the company's response geared toward the consumer, aiming to maximize them (Brown & Revankar, 1971).

Reductions in revenues, profits, or company value and losses are punishments for its behavior, inhibiting it from carrying out the same activities on a subsequent occasion. Putting these interlinked relationships (company-consumer-company) in a behavioral chain over time, the company learns which consumer-focused responses increase its reinforcers and/or reduce its losses (Porto & Foxall, 2019) and also the contexts that help or hinder these relationships (Porto & Foxall, 2020). Thus, the responses that generated gains or losses become a history of the company's experiences (Foxall et al., 2021). They can influence subsequent response-issuing situations if the context indicates that similar gains or losses in the past will possibly occur again. For instance, suppose a past context of well-being helped the effectiveness of the organizational response in increasing profit. When a new well-being context occurs, it signals that the corporate response could quickly once again obtain higher profit.

Using this theoretical framework of operant behavioral economics (Foxall, 2016), researchers can better address the studies on the role of marketing activities in company financial results. In this way, we propose that investments in marketing are operant organizational responses to the demand for products and services aiming to maximize commercial exchanges. By carrying them out, a company achieves its primary output – revenue or revenue relative to other companies (market share) – and

secondary ones such as profit, deducting all the company accounting effort from it (Gentry & Shen, 2010).

Moreover, marketing investments can directly influence the price of the company's shares on the stock exchange (Edeling et al., 2020; Srinivasan & Hanssens, 2009). They can provide greater company visibility to its net present value and reduce its cash needs (Rao & Bharadwaj, 2008), overcoming previous financial failures (Porto & Foxall, 2020). Marketing investments can also indirectly influence the company's shares by improving company performance from marketing actions implemented concerning products and services (Foxall, 2020a; Foxall et al., 2021).

Studies in some countries have revealed the effects of marketing investments on sales and market share metrics (Porto & Foxall, 2019; Sydney-Hilton & Vila-Lopez, 2019; Vila et al., 2015). We expect a generalization of the positive effects of marketing investments globally, regardless of the firm's country. Therefore, we established Hypothesis 1.

Hypothesis 1: the increases in marketing investments raise company commercial competitiveness (market share), independent of countries' contexts.

However, the countries' socio-economic contexts indicate whether marketing activities generate a company surplus (Currim et al., 2016; O'Malley et al., 2011). The marketing investments are contingent managerial choices (Porto & Foxall, 2019). That is, they depend on a scenario that signals that this investment must be increased or reduced. The effectiveness of injecting financial resources and their subsequent outcome depends on a contextual structure that enables this effectiveness to be achieved or leveraged (Foxall, 2020a). Porto and Foxall (2020) revealed that an overheated

economy (rising production) in a country is favorable for increasing marketing investments because consumers will buy or spend more; economic crises provide a scenario for reducing these investments where there will be a lower level of purchases. Paradoxically, even during an economic crisis (GDP decline), companies that invest more in marketing obtain higher economic values and profit. The greater profits and values depend on obtaining more consumers (or paying more) with less resource expenditure. Therefore, a growing economy, with more people with an income to purchase, facilitates commercial relationships. Still, a declining economy is an opportunity for those who invest in marketing to demonstrate efficiency by accumulating profit and the power of reaction or the way to rebuild itself, as it increases the values of companies on the stock exchange. The scenario indicates whether conditions favor the repetition or modification of current organizational behavior. Therefore, we propose.

Hypothesis 2: the effect of marketing investments on the financial outcomes will be greater when socio-economically contextualized rather than isolated.

From Hypothesis 2, we derived three sub-hypotheses. In terms of the economic well-being scenario (Currim et al., 2016; Estes & Sirgy, 2019; O'Malley et al., 2011), the country's economic prosperity (vs. impoverishment) indicates that production rates or consumption are higher (vs. lower). Therefore, more commercial exchanges can occur for those ready and prepared for growth (Jackson, 2017). Typically, an increase in marketing investments promotes the frequency and intensity of commercial relationships, reflected in market share (Porto & Foxall, 2020). We propose.

Hypothesis 2a: an increase in a country's economic growth strengthens the effectiveness of marketing investments on market share.

During periods of economic prosperity, consumers who did not buy in the previous period start to do so, making it easier for the company to sell its products (Hilton, 2009). Thus, a better distribution of income increases the incidence of transformation of latent (or potential) consumers into real consumers, and the expenses that would be necessary to find them and encourage them to buy are reduced (Cavusgil et al., 2012; Ciarli et al., 2010; Nakata & Weidner, 2012; Prahalad, 2009). In other words, there are more consumers in the market, and companies spend few resources to persuade them to buy. Thus, we formulated.

Hypothesis 2b: Greater income distribution in a nation increases the effect of marketing investments on profitability.

Furthermore, changes in income equality also have implications for production and the labor market (Ciarli et al., 2010), generating an effect on companies trading on the stock exchange (Megginson et al., 2004). Policies to improve income distribution create conditions for less valued jobs to have higher wages (Castellano et al., 2017; Saboia, 2016). Higher wages for less valued jobs cause more workers to buy more products and services for themselves (Wilmers, 2017). At the same time, the improvement in income equality makes entrepreneurs consider going public with their companies on the stock exchange (Megginson et al., 2004). The more significant number of companies that go public influences the price of shares traded on the stock exchange and generates more competitiveness among them for investors. The more

significant investment in marketing by these publicly traded companies can give greater visibility to their financial performance (Rao & Bharadwaj, 2008), standing out in the eyes of investors. In this way, they will readily attract the attention of shareholders, who may consider them a call option, valuing them more than their current assets. Therefore, we state.

Hypothesis 2c: Greater income distribution in a nation increases the effect of marketing investment on the company's economic value.

In addition, improvements in the social drivers of well-being provide a healthier life for society and businesses within the same country over time (Balcerzak & Pietrzak, 2017; Estes & Sirgy, 2019). According to HDI criteria (Herrero et al., 2012), in more developed countries, their inhabitants are better trained, have greater longevity, and have higher per capita income. The higher level in this index shows a society where workers are better qualified, and consumers consume longer, with higher average income. This situation can directly affect the financial outcomes of companies in a generalized way without having to resort to marketing resources. Therefore, we can state hypothesis 3.

H3: The country's development increases the firm's financial outcomes, regardless of marketing investments.

The studies on marketing investments generally do not verify the effects of well-being contexts, failing to understand whether an improvement in these provides a favorable context for the generation of company surpluses. By adopting a behavioral perspective, socio-economic indicators can become syntheses of functional contexts and

help to explain the financial outcomes of company behaviors. The socio-economic context influences marketing investment and, therefore, incentivizes several financial consequences obtained by companies. We designed the present research to test and demonstrate those effects.

Method

We conducted a longitudinal econometric study covering 2000 to 2017 with data on the firms and the countries' socio-economic context of firms' headquarters. We obtained the firm data from the S&P Capital IQ platform, an S&P Global Market Intelligence financial tool. The Human Development Index data (HDI), representing the country's development, came from the Human Development Report Office. The gross domestic product growth data (GDPG), representing economic growth, and the inverted Gini index (IGI), representing income distribution, came from the World Bank's Development Data Group.

The sample comprises unbalanced panel data containing 19,270 companies from 131 countries and covering an 18-year time horizon. The companies belong to the following sectors: consumer discretionary (19.7%), industrials (17.6%), materials (13.9%), information technology (13.0%), consumer staples (10.0%), financials (8.8%), healthcare (6.9%), real estate (4.2%), energy (2.3%), utilities (2.4%), and telecommunications services (1.1%). In addition, the sample of companies in the countries is subdivided into the continents of the world: Europe (35.2%), Africa (27.6%), Asia and the Middle East (16.2%), North America (10.5%), South America (6.7%), and Oceania (3.8%).

The companies investigated were of various asset sizes in millions of US dollars (mean = 4,798.95 and standard deviation = 303,666.45) and were in reasonably competitive industries regarding the number of companies in the industry (mean = 10.07 and standard deviation = 42.23). These two metrics were control variables. Financial output performance was composed of three metrics: market share (MS), measured by the relative revenue in an industry, net profit margin (NPM), representing profitability, and Total Q, representing the measure of economic value. Researchers have indicated that these metrics measure different and complementary dimensions of company financial output performance (Du & Osmonbekov, 2020; Edeling & Himme, 2018; Edeling et al., 2020).

Marketing investment is the relative measure of a firm's total marketing expenses in a year, whose numerator includes marketing fees, advertising, market development, marketing, business development, promotion, telemarketing, and brand marketing. The denominator covers sales, general, and administrative expenses, such as expenditure on equipment, salaries and other employee benefits, occupancy, insurance, stock-based compensation, sales and marketing expenses, general and administrative expenses, net rent, lease and rent, other general and administrative expenses, and other rental expenses. Therefore, marketing investment is a variable that indicates the chosen company resource allocation. The company manager decides whether they will allocate more resources to marketing or other company activities. By increasing this metric, the manager is prioritizing the execution of more marketing activities than others. We prioritized this metric with this denominator to have a more unambiguous indication of the effects of marketing. An alternative to the denominator, such as relativizing over revenue, could make the result confusing or imprecise, as revenue is a result of

company sales and used in some financial outcome whose effect we intend to determine.

The socio-economic context variables represent the level of well-being of a society within a country. The Gini index was inverted to have the same direction as the indicators of GDPG and HDI. They are indicators that many countries try to stimulate to improve the well-being of the country's inhabitants. If increased concomitantly, the country's well-being is visibly improved.

We carried out a longitudinal analysis within firms. We display the description means and standard deviations of the quantitative measures in Table 1. The Pearson correlations between MS and NPM ($r = 0.01$; $p \leq 0.01$), MS and Total Q ($r = -0.03$; $p \leq 0.01$), and NPM and Total Q ($r = 0.12$; $p \leq 0.01$), despite existing, are very low, which indicates that they represent different dimensions of the financial output.

[Insert Table 1 about here]

The authors built a total of six final models. The sample size varied in each intra-firm level model, the most prominent being for Model 1, 79,235 cases, and the lowest Model 6, 57,780 cases. We took the smallest sample size and calculated the sampling power for a random multiple regression model with an error probability α of 0.05 and 12 predictors (including the control variables and interactions). This sample represented a sample power of 99.99% (critical $R^2 = 0.0003$), which is very good for avoiding the type 2 error.

Model 1, Model 3, and Model 5 have an intra-firm longitudinal design with annual data from 2000 to 2017 and present direct relationships (without interaction

term) of the independent variables. For this, we used Equation 1. These models vary only concerning the dependent variable's financial output (Model 1 for MS, Model 3 for NPM, and Model 5 for Total Q). Model 2, Model 4, and Model 6 also have an intra-firm longitudinal design with annual data from 2000 to 2017 and present interactive relationships of the significant independent variables. For these, we used Equation 2. These models vary only concerning the dependent variable's financial output performance (Model 2 for MS, Model 4 for NPM, and Model 6 for Total Q).

$$FO_{i,t} = \beta_0\alpha_{i,t} + \beta_1MI_{i,t} + \beta_2MI_{i,t-1} + \beta_3FO_{i,t-1} + \beta_4HDI_{i,t} + \beta_5IGI_{i,t} + \beta_6GDPG_{i,t} + \beta_7SIZE_{i,t} + \beta_8COMP_{i,t} + \beta_9SECTOR_{i,t} + \beta_{10}YEAR_{i,t} + \beta_{11}COUNT_{i,t} + \varepsilon_i + \varepsilon_t \quad (1)$$

$$FO_{i,t} = \beta_0\alpha_{i,t} + \beta_1MI_{i,t} + \beta_2MI_{i,t-1} + \beta_3FO_{i,t-1} + \beta_4HDI_{i,t} + \beta_5IGI_{i,t} + \beta_6GDPG_{i,t} + \beta_7SIZE_{i,t} + \beta_8COMP_{i,t} + \beta_9SECTOR_{i,t} + \beta_{10}YEAR_{i,t} + \beta_{11}COUNT_{i,t} + \beta_{12}MI_{i,t}*HDI_{i,t} + \beta_{13}MI_{i,t}*IGI_{i,t} + \beta_{14}MI_{i,t}*GDPG_{i,t} + \varepsilon_i + \varepsilon_t \quad (2)$$

Note: $FO_{i,t}$ indicates the financial output of firm i , in time t . $MI_{i,t,p}$ indicates the marketing investment of firm i in time t . $MI_{i,t-1,p}$ indicates the marketing investment of firm i in time $t-1$ (one year lag). $FO_{i,t-1,p}$ indicates the financial output of firm i , in time $t-1$ (one year lag). $HDI_{i,t,p}$ indicates the human development index for firm i in time t . $IGI_{i,t,p}$ indicates the inverse Gini index for firm i in time t . $GDPG_{i,t,p}$ indicates the gross domestic product growth for firm i in time t . $SIZE_{i,t}$ indicates the log of assets of firm i in time t . $COMP_{i,t}$ indicates the number of firms in the industry that firm i belongs to in time t . $SECTOR_{i,t}$ indicates the sector that firm i belongs to in time t . $YEAR_{i,t}$ indicates the year of the data of firm i in time t . $COUNT_{i,t}$ indicates the country of the headquarters of firm i in time t . $MI_{i,t}*HDI_{i,t}$ indicates the interactive term of the marketing investment of firm i in time t , with the human development index for firm i in time t . $MI_{i,t}*IGI_{i,t}$ indicates the interactive term of the marketing investment of firm i in time t , with the inverse Gini index for firm i in time t . $MI_{i,t}*GDPG_{i,t}$ indicates the interactive term of the marketing investment of firm i in time t , with the gross domestic product growth for firm i in time t . $\beta_0 \dots \beta_{14}$ indicate the estimates. $\alpha_{i,t}$ is the intercept term. ε_i is the firm error term. ε_t is the time error term.

Before the analyses, the authors found measurement errors in the financial databases, and we cleaned up the data. The errors were generally due to the emission of a negative or zero value or one very close to zero in one of the measures (for example, in revenue) that would compose the denominator of some of the financial indicators. We carried out some prior tests to determine which statistical model would be the most adequate for each equation, 1 and 2. We used the pooled ordinary least squares (POLS) model to carry out the initial tests.

For the models with the direct relationship (Models 1, 3, and 5), we had no problem with multicollinearity ($VIF < 2$). However, all the models presented problems with the normality of residuals (Chi-square with $p \leq 0.05$), specification errors (reset test F with $p \leq 0.05$), the Pesaran CD test for cross-sectional dependence (Z with $p \leq 0.05$), the joint test (F with $p \leq 0.05$), the Chow test for the structural break (Chi-square with $p \leq 0.05$), the Hausman test indicating the rejection of the null hypothesis that the stochastic model is more suitable for the unbalanced data structure, and the White test for heteroscedasticity (LM with $p \leq 0.05$). Due to this, we proceeded with a series of changes in the data and statistical procedure choice.

We transformed all the quantitative data into their natural logarithmic form, which represents elasticities. For the variables that presented negative values in their original format (e.g., NPM), we added a lowest-value constant (e.g., the negative extreme of the net income margin + 0.01) and, subsequently, we transformed it into a logarithm so that we could also capture previously negative values (e.g., losses). This was so that the test with NPM determined whether marketing investments would increase profits and enable the company to reduce losses or even go from making losses

to obtaining profit. Similarly, we did the same to capture the negative percentage of GDPG.

In addition, we inserted temporal dummies of the companies' economic sector and the countries in the longitudinal models. In the definitive analyses, we eliminated the interactions that did not significantly affect the dependent variable. We also certified that the lagged dependent variables were also significant and helped to control the effects of the other independent variables.

All final models had an unbalanced panel structure of companies covering 2000 to 2017. The authors were interested in estimating a unique response for the population of companies allocated into countries, and the generalized estimating equation (GEE) seems appropriate. The GEE is a semiparametric technique capable of estimating the average response over a population based on panel data and building marginal models (Ziegler, 2011). The GEE has consistent standard error estimators and heteroscedasticity and was adequate for the data of this research for identifying average estimates for the effects of marketing investments. We used the fixed scale parameter method to obtain the regression estimates through the whole iterative process. We tested the working correlation matrix structure, which indicated that the lowest quasi-likelihood under the independence model criterion (QIC) was the independent one. Thus, the analysis enabled us to verify the effects for each independent variable of the same company (intra-firm) on the financial output metric. The estimates illustrate the effect that would be expected for the population of companies. The estimate is the average of the effects for each company among the total companies when changing the unit (or one percentage point) of each explanatory variable across all the firms observed.

Results

All the models are displayed in Table 2 and presented very good fits for explained variance (R^2). Models with the interactive terms (Model 2, Model 4, and Model 6) had better fits (QICC) than models without the interactive terms (Model 1, Model 3, and Model 5), even when compared to the reference model (only with the intercept).

[Insert Table 2 about here]

Model 1 presents the direct influence of MI, socio-economic scenario variables, and control variables on MS. A one percentage point increase in MI generates a 0.14 percentage point increase in MS. However, a one percentage point increase in MI(lag 1) in the previous year reduces MS by -0.11 percentage point in the following year, demonstrating the instability of the effects of the investments. The socio-economic context variables directly influenced MS. A one percentage point increase in HDI increases the MS of the publicly traded companies by 0.16 percentage point. The IGI did not present a significant effect. A one percentage point increase in GDPG increases MS by 0.67 percentage point. A one percentage point increase in the previous year's MS(lag1) increases the subsequent year's MS by 0.89 percentage point. Over time, a one percentage point increase in the company's size increases its MS by 0.10 percentage point. A one percentage point increase in the industry competition increases MS by 0.01 percentage point. The “consumer discretionary” sector, when compared with the “utilities” sector ($B = 0.07$; $p \leq 0.01$), and 2003, when compared with 2017 ($B = 0.23$; $p \leq 0.01$), presented greater positive influences on MS.

Model 2 presents the influence of MI moderated by the socio-economic scenario variables on MS, including the control variables. The MI interacted with the GDPG, signaling that a one percentage point increase in this interaction helps to increase the MS by 0.19 percentage point. When the MI are at their maximum level of total selling, general, and administrative investments, a one percentage point increase in GDPG generates a 0.93 percentage point increase in MS. On the other hand, a maximum economic reduction (sharp economic decline) causes an increase of one percentage point in MI generates a reduction in MS of around -0.66 percentage points.

Model 3 presents the direct influence of MI, socio-economic scenario variables, and control variables on profitability. MI did not present significant effects over NPM globally, neither in the current year nor the previous year. The socio-economic context variables directly influenced NPM. A one percentage point increase in the HDI increases the publicly traded companies' NPM by 0.02 percentage point. A one percentage point increase in GDPG increases the NPM by 0.34 percentage point. A one percentage point increase in IGI reduces NPM by -0.03 percentage point. In the previous year, the NPM(lag1) increases NPM in the current year by 0.58 percentage point, and a one percentage point increase in asset size increases NPM by 0.01 percentage point. An increase in industry competition did not affect NPM significantly. The "financials" sector, when compared with the "utilities" sector ($B = 0.11$; $p \leq 0.01$), presented a more significant favorable influence on NPM. The year 2005, when compared with 2017 ($B = -0.04$; $p \leq 0.01$), presented a more significant negative influence on NPM.

Model 4 presents the influence of MI moderated by the socio-economic scenario variables on NPM, including the control variables. The MI interacted with the IGI. The

result signals that a one percentage point increase in this interaction helps to increase the NPM by 0.02 percentage point. When income is completely well distributed, a one percentage point increase in MI generates a 0.99 percentage point increase on the NPM.

Model 5 presents the direct influence of MI, socio-economic scenario variables, and control variables on economic value at the firm level. A one percentage point increase in the MI(lag1) increases Total Q in the subsequent year by 0.01 percentage point. The socio-economic context variables directly influenced economic value. A one percentage point increase in HDI increases Total Q by 0.21 percentage point. A one percentage point increase in GDPG increases the Total Q by 0.78 percentage point. A one percentage point increase in IGI negatively influenced Total Q, reducing it by -0.04 percentage point. Regarding the control variables, Total Q(lag 1) in the previous year increases Total Q in the current year by 0.83 of a percentage point. Over time, a one percentage point increase in the company's size reduces its economic value by -0.01 percentage point. A one percentage point increase in industry competition raises Total Q by 0.01. The "financials" sector, when compared with the "utilities" sector ($B = -0.07$; $p \leq 0.01$), and 2008, when compared with 2017 ($B = -0.28$; $p \leq 0.01$), presented greater negative influences on Total Q.

Model 6 presents the influence of MI moderated by the socio-economic scenario variables on Total Q, including the control variables over time. The MI interacted with the IGI, signaling that a one percentage point increase in this interaction helps increase Total Q by 0.04 percentage point. A maximum IGI generates a one percentage point increase in MI and the total Q by 0.14 percentage points.

In Figure 1, Graphs A to F show the intra-firm effects of the predictors with the interactive term on MS, NPM, and Total Q separated for some countries of the world.

The prediction is similar for the companies over the 2000-2017 horizon of the same country (R2 of 96.7% for MS in the USA, 94.4% for MS in China, 87.7% for NPM in Finland, 86.9% for NPM in Brazil, 60.5% for Total Q in New Zealand, and 84.7% for Total Q in Bangladesh).

[Insert Figure 1 about here]

Discussion

On a global scale, the direct effects of marketing investments on the three financial outcomes measures are weak, being better for market share predictions. Marketing investments directly increase market share (without interaction), thus corroborating H1, a global generalization (Porto & Foxall, 2019; Sydney-Hilton & Vila-Lopez, 2019; Vila et al., 2015). Marketing draws more attention to companies' products and services sales, turning them more competitive. Unsurprisingly, companies that invested the most have more outstanding market share.

However, the result is not encouraging when considering the total direct effect in two years (current year t and $t-1$) of marketing investments. On a global scale, when controlling the temporal effects (years), the country's socio-economic contexts, industries, competitiveness, and the company's size, the effect of marketing on market share exists, being minimal ($B = 0.03$). Regarding Total Q, the effect is even smaller ($B = 0.02$), and on profitability negative ($B = -0.02$).

The prevalence of positive elasticities of marketing investment with market share is relatively high, with net profit margin being average and Total Q relatively low. Despite suggesting that marketing investments generate financial outcomes (Katsikeas

et al., 2016; Mantrala et al., 2007; Stewart, 2009), the general result demonstrates that a good portion of its effects depends on the context. Marketing involves how many financial resources are spent on which activities and in what circumstances investments must be increased or reduced, therefore being a contingent choice.

We show different elasticities between marketing investments and the measures of financial outcomes when the dynamics of the well-being of nations are considered, thus corroborating H2. The elasticities are higher when the socio-economic contexts of the country are considered (Bapuji et al., 2018; Cherchye & Verriest, 2016; O'Malley et al., 2011; Prilleltensky & Prilleltensky, 2007). This finding is consistent with the Operant Behavioral Economics theory (Foxall, 2016; Foxall, 2020a), meaning that the well-being of nations (context) stimulates the occurrence of an organizational operant response causing a consequence, in this case, corporate financial surplus.

The authors tested the elasticities regarding changes in the socio-economic contexts, demonstrating that the interactive effects of these contexts with marketing investments increase market share and become favorable for profitability and economic value. As researchers found that the company's market share, profitability, and market value are weakly correlated (Edeling & Himme, 2018; Gentry & Shen, 2010), measuring different dimensions of corporate financial outcomes, some implications of these results can be listed.

In all models, the interactions of investments with changing nations' well-being fit the data better than direct models. Economic growth and better income distribution appear to be contexts that signal that the company can obtain more significant gains if it increases its marketing investments. The discovery that economic growth helps company financial performance (Jackson, 2017) or moderates the influence of

marketing investments on company financial outcomes is not new (Currim et al., 2016; O'Malley et al., 2011; Porto & Foxall, 2020). However, this research reveals that economic growth enhances marketing investments on market share globally, thus corroborating H2a. While this result demonstrates the traditional effects of the country's economy driving marketing to benefit the competitiveness of companies on a global scale, it supports the argument that marketing practice improves the well-being of customers while preserving the company's well-being (Sirgy, 2021).

According to the theory of the marketing firm (Foxall, 2020a), the mutual reinforcers of the company and the consumer only occur through the commercial exchange, with the consumer enjoying the product or service and the company receiving pecuniary benefits from the sales of these products (Foxall et al., 2021). If companies that invested the most in marketing increased their sales more than proportionately than those that did not, consumers would buy more products from these earlier companies than from later ones. If consumers acquired more, they enjoyed more of these products and services (Porto & Oliveira-Castro, 2015). Therefore, it is possible to have a certain balance of reinforcers - the companies that earn more could provide more reinforcers to consumers directly linked to their products and services. Still, economic growth does not exert a moderating influence over profitability and economic value. Thus, economic growth heats commercial relations, and those better prepared for transactions can grab more sales and become more competitive.

Paradoxically, an improvement in income equality enhances the effects of marketing investments on profitability and economic value, thus corroborating H2b and H2c. The income distribution has barely been investigated in marketing studies and appears to provide meaningful results for detecting marketing effects on company

financial output. The improvement in income distribution allows the increase of the consumer base in the country (Nakata & Weidner, 2012; Prahalad, 2009). A nation with a better income distribution makes the sales effortless, reducing sales costs and bringing more profit. These sales effortless is due to many latent consumers (with lower income) having an income growth, raising the consumer base for every firm in the market. Thus, transforming potential consumers into buyers of a company's offerings is more accessible, and it would not need to expend much effort in capturing them (Ciarli et al., 2010; Cavusgil et al., 2012).

Although the effect is small, the company becomes more highly valued when marketing investments increase under the context of the nation obtaining a better income distribution. This effect occurs because a better income distribution provides a generalized sensation of optimism for the economics agents. Marketing can give greater visibility to a publicly-traded company (Rao & Bharadwaj, 2008), standing out to shareholders. An increase in marketing activities is consistent with this optimism of the population and investors, making companies' shares on the stock exchange increase in value.

In summary, the country's economic growth and better income distribution act as discriminative stimuli (Foxall, 2020a), signaling that, with their presence, companies that choose to increase their investments in marketing generate greater financial returns. Over time, the positive correlations between these financial returns and these two socio-economic contexts are responsible for this behavioral operation. The opposite interpretation is also accurate; the country's economic depression and higher income inequality act as aversive stimuli, whose contextual presence signals that if the company

invests more in marketing, it may have financial losses or reduced earnings. So, the company should not do it.

An increase in the country's development was a context that presented a positive and direct relationship with all the company financial outcomes investigated. However, it did not present an interactive relationship with marketing investments, corroborating H3. Increases in average income per capita, life expectancy, and educational levels provide better-trained people who work longer (Estes & Sirgy, 2019). This context may interact with other company activities, such as labor productivity (Elmawazini et al., 2013), and thus directly leverage improvements in financial performance. However, the present research did not test this situation, and future ones could address it.

Conclusion

This research demonstrated a generalization from the effects of marketing investments on company financial outcomes and which well-being contexts help the effectiveness of these investments in samples of companies in 131 countries worldwide. This study provides a more global overview of the role of marketing in the health of companies and puts it into a contextual perspective. Several findings can be listed: (1) on a global scale, the effects of marketing investments generate increased market share; (2) an increase in a country's economic growth enhances the effect of marketing investments on market share; (3) better income distribution in a country enhances the effect of marketing investments on profitability and economic value; and (4) as a country becomes more developed, companies obtain more significant financial surpluses, independent of marketing investments.

Even with a sampling representation of companies in various countries, the research presented some limitations regarding company type. Only those listed on the stock exchanges were considered, thus leaving room to test non-listed firms, which generally also include small enterprises or local firms. Moreover, not all the firms have data on recorded marketing investments, and some countries do not have periodically recorded macroeconomic data, which inhibits monitoring over time. Marketing investments were treated as total investment, not differentiating which marketing activity the company spent the most on. Due to this, we could not compare marketing investments separated by specific activities in the database used. Future research could explicitly compare the effects of marketing investments versus other strategic investments (such as investment in the workforce, innovation, etc.) on the financial outcome. Other complementary metrics could measure this.

Changes in nations' well-being happen and are only occasionally considered in marketing studies; by including them, the explanatory power of the role of marketing increases. When allocating a marketing budget, marketing managers do not assign it in a vacuum. They consider some contexts that surround them and their companies. The authors suggest carrying out a contingent analysis of the company and its full circumstances aspect by revealing the effects of marketing investment. These results enable the guidance to future studies on which contexts marketing is effective for companies.

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Table 1. Descriptive analysis of the core variables.

Variables	Description (formula)	Mean	Std. Deviation
Marketing investment (%)	Total marketing expenses of firm <i>i</i> in time <i>t</i> divided by total selling, general, and administrative expenses of firm <i>i</i> in time <i>t</i> .	.17	.24
Human development index	(Health index multiplied by education index multiplied by income index) ^{1/3} in each year per country.	.83	.12
Gini index	$1 - \sum$ (cumulated proportion of the population for a country minus previous proportion of the population for a country) multiplied by (cumulated proportion of the income for a country plus previous proportion of the income for a country)	37.55	7.16
Gini index (inverted)	One divided by the Gini index.	.03	.01
Gross domestic product growth	Percentage of increase or decrease in gross domestic product of each country in time <i>t</i> .	3.36	3.08
Net profit margin	Net income of firm <i>i</i> in time <i>t</i> divided by total revenue of firm <i>i</i> in time <i>t</i> multiplied by 100.	5.63	7.19
Total Q	Total enterprise value in stock market of firm <i>i</i> in time <i>t</i> divided by total assets (tangible and intangible) of firm <i>i</i> in time <i>t</i> .	2.31	6.80
Market share (%)	Total revenue of firm <i>i</i> in time <i>t</i> divided by total revenue of the industry in time <i>t</i> multiplied by 100.	.62	2.84

Table 2. Effects of marketing investments and socio-economic contexts on market share (MS), net profit margin (NPM), and Total Q.

Independent variables	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Log of MS			Log of MS			Log of NPM			Log of NPM			Log of Total Q			Log of Total Q		
	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.
Intercept	-4.06	.21	***	-5.11	.27	***	.22	.11	**	-.11	.11		-3.22	.20	***	-3.03	.20	***
Log of marketing investments (MI)	.14	.01	***	-.66	.17	***	-.01	.01		.09	.02	***	.01	.01		.14	.04	***
Log of marketing investments (MI lag 1)	-.11	.01	***	-.11	.01	***	-.01	.01		-.01	.01		.01	.01	**	.01	.01	*
Log of human development index (HDI)	.16	.02	***	.15	.02	***	.02	.01	***	.02	.01	**	.21	.02	***	.21	.02	***
Log of inverted Gini index (IGI)	.01	.01		.01	.01		-.03	.01	***	-.01	.01		-.04	.01	***	.00	.01	
Log of gross domestic product gr. (GDPG)	.67	.05	***	.93	.07	***	.34	.03	***	.33	.03	***	.78	.05	***	.77	.05	***
Log of total assets	.10	.01	***	.10	.01	***	.01	.01	**	.01	.01	**	-.01	.01	***	-.01	.01	***
Log of competition in the industry	.01	.01	***	.01	.01	***	-.01	.01		-.01	.01		.01	.01	***	.01	.01	***
Log of market share (MS lag 1)	.89	.01	***	.89	.01	***												
Log of net profit margin (NPM lag 1)							.58	.01	***	.58	.01	***						
Log of Total Q (TQ lag 1)													.83	.01	***	.83	.01	***
Log of MI * Log of IGI										.02	.01	***				.04	.01	***
Log of MI * Log of GDPG				.19	.04	***												
Sector		Yes			Yes			Yes			Yes			Yes			Yes	
Year		Yes			Yes			Yes			Yes			Yes			Yes	
Observations (cases)		79,235			79,235			58,402			58,402			57,780			57,780	
Firms		19,272			19,272			15,758			15,758			15,447			15,447	
QICC		20140.59			20131.32			2300.70			2299.48			11827.86			11825.05	
QICC reference					3673426.55						102966.13						411561.45	
R ² (linear)		95.20%			95.20%			74.40%			74.42%			73.40%			73.40%	

Note. B = estimates. S.E. = standard error. Log of MI * Log of HDI was not significant for the models.

*p ≤ 0.1; ** p ≤ 0.05; *** p ≤ 0.01