Is Environmental Certification Associated with Price Premiums? The Case of Costa Rica Hotel and Community Certification Programs

By Juan Roeschmann

B.A. in Economics and Management Sciences, December 2002, Pontificia Universidad Católica de Chile.

M.A. in Economics, December 2002, Pontificia Universidad Católica de Chile.

A Dissertation submitted to

The Faculty of
the School of Business
of The George Washington University
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy

August 31, 2015

Dissertation directed by

Jorge Rivera
Professor of Strategic Management and Public Policy
The School of Business of The George Washington University certifies that Juan Roeschmann has passed the Final Examination for the degree of Doctor of Philosophy as of April 28, 2015. This is the final and approved form of the dissertation.

Is Environmental Certification Associated with Price Premiums? The Case of Costa Rica Hotel and Community Certification Programs

Juan Roeschmann

Dissertation Research Committee:

Jorge Rivera, Professor of Strategic Management and Public Policy, Dissertation Director

Eun-Hee Kim, Assistant Professor of Strategic Management and Public Policy, Committee Member

Donald Hawkins, Eisenhower Professor of Tourism Policy, Committee Member

Jorge Walter, Associate Professor of Strategic Management and Public Policy, Committee Member

Robert Savickas, Associate Professor of Finance, Committee Member
Dedication

To my parents,
Juan Enrique Roeschmann
and
María Cristina Gillmore,
with all my love.
Acknowledgements

While the dissertation journey is a solitary one, the support, help and guidance of several people have been invaluable for me during these years. I would like to heartily thank my dissertation advisor and mentor, Jorge Rivera, for all his support, guidance, patience, and help during my time at the university. He has always been there for me, pushing me when needed, providing academic advice and personal support in times of hardship.

I also would like to thank other members of my Dissertation Committee – professors Eun-Hee Kim, Jorge Walter, Robert Savickas and Donald Hawkins. These brilliant scholars and educators offered their critiques in the most constructive way possible, and indeed became role models and inspirations for me.

I would like to thank my mentors, who helped to pave my way into this Ph.D. program - my professors in Chile: Ernesto Fontaine, Arístides Torche, Rolf Lüders, Claudio Sapelli, Gert Wagner, and Raimundo Soto; as well as my colleagues and mentors in the field of Public Policy: Jaime Crispi and Jorge Rodríguez. I am also grateful to Fernando Parro, Francisco Parro, Patricia Kanashiro, Kuo-Liang Chen, Smita Trivedi, and the rest of the SMPP department for their help and valuable suggestions. I would also like to extend my thanks to Mary Schonmaker and Francisco Calderón, who supported me in crucial moments.

During all these years, I have enjoyed working alongside Rochelle Rediang and Elizabeth Huff, who have made my experience of adapting to a new country and a new university much easier.
This dissertation was motivated by the example of Sonia Alvarado M., whose leadership, compassion, and hard work showed me how one person can make a difference in the lives of entire communities.

This journey would not be possible without my friends and family and their continuous support. I am especially grateful to my parents Juan Enrique Roeschmann and María Cristina Gillmore, and my sisters María Dolores and María Soledad, as well as the Salinas Fernández family.

Finally, I am thankful for the opportunity to be a part of the George Washington University and Washington, DC communities, having met a lot of new friends and my wife, Olga Stradysheva.
Abstract

**Is Environmental Certification Associated with Price Premiums? The Case of Costa Rica Hotel and Community Certification Programs**

This research aims to estimate the effects of the environmental performance of a firm and the environmental performance of a community in the empirical context of a hotel industry in a developing country. Using voluntary environmental certification programs as a proxy for environmental performance, the study evaluates whether better environmental performance is associated with economic gains for firms in the form of a price premium. In addition, the research examines the relationship between the environmental performance of a firm and the environmental performance of a community to test whether there is either a complementary or a substitutive relationship between these two types of environmental performance.

The research aggregates and analyzes panel data for two major voluntary environmental certification programs in Costa Rica: the Blue Flag Program, which provides certification for coastal communities, and the Certification for Sustainable Tourism (CST) program, promoting beyond-compliance environmental performance among local hotels.

Although there is salient research directed at explaining and testing whether the environmental performance of a firm is associated with a competitive advantage, there have been relatively few theoretical or empirical studies focusing on voluntary environmental certification programs as a way to measure environmental performance. Furthermore, the majority of studies of certification programs analyze only one stand-alone program and the performance of a firm in this context, leaving aside the environmental performance of the community where the firm operates.
This research is in a unique position to quantify the economic effects of two voluntary environmental certification programs: one focused on firms and another focused on communities. The study also assesses the interaction between the two environmental certifications and the effects on price associated with this interaction.

The key findings of the study suggest that a basic level of environmental certification of a firm does not have a significant effect on the price premium. At the same time, superior environmental performance by a firm, signaled through the certification, results in a complementary relationship with the environmental performance of a host community and generates a price premium.

More specifically, the empirical evidence indicates that, when the environmental performance of a firm is satisfactory but not outstanding (determined by its certification), its relationship with the environmental performance of a host community can be characterized as substitutive. In this case, community certification does not seem to add value to the firm’s environmental performance in the eyes of consumers.

On the other hand, when a firm demonstrates outstanding environmental performance, it proves to have a complementary effect on the above-average community environmental performance where a firm is located. The evidence shows that the presence of both certifications, signaling good environmental performance of both a hotel and a coastal community, is valued by customers more than the sum of their parts. This complementary effect produces a reputational price premium and represents a competitive advantage in a highly competitive environment, as the two certifications are signaling customers that an offer is truly exceptional.
# Table of Contents

Dedication iii
Acknowledgment iv
Abstract vi
List of Figures xii
List of Tables xiii
1. Introduction 1
  1.1 Overview 1
  1.2 Theoretical Background 2
  1.3 Research Questions 4
  1.4 Research Methodology 5
  1.5 Contribution to the Management Discipline and Public Policy Implications 7
  1.6 Research Context: Costa Rica Hotel Industry and Voluntary Environmental Certification Programs 11

2. Empirical Context 14
  2.1 Characteristics of the Data Set 14
  2.2 Costa Rica’s Geography and Tourism Industry 16
  2.3 Rise of Voluntary Environmental Programs in Developing Countries 20
  2.4 Certification for Sustainable Tourism (CST) Program 23
  2.5 The Blue Flag Program 27

3. Voluntary Environmental Programs: Research and Concepts 31
  3.1 Are Voluntary Environmental Programs Really Effective? 31
  3.2 Voluntary Environmental Programs: Beyond Quantitative Evidence 34
  3.3 Why Do Firms Participate in Voluntary Environmental Programs? 35
  3.4 Voluntary Environmental Programs in Developing Countries 37
  3.5 What Are Success Factors for Voluntary Environmental Programs? 39
4. Conceptual Model and Hypotheses 43
   4.1 Conceptual Model 43
   4.2 Resource-based View (RBV): Why Do Firms Strategically Engage in Achieving Superior Environmental Performance? 43
   4.3 Hedonic Prices: How Environmental Performance Translates into a Price Premium 45
   4.4 Community Environmental Performance 48
   4.5 Interaction Effects between Firm Environmental Performance and Community Environmental Performance: Complements or Substitutes? 50
   4.6 Building on Differentiation Value: Substitution Effect 50
      4.6.1 Ethical Purchase Behavior 50
      4.6.2 Luxury Goods vs. Commodities 51
      4.6.3 Attitude-Behavior Gap 52
      4.6.4 Recent Shifts 53
      4.6.5 The Fluctuating Role of Uniqueness Value 54
   4.7 The Interaction between Hotel Environmental Performance and Community Environmental Performance: Complementary Effect Building on Reputation Theory 56

5. Data and Methodology 60
   5.1 Data Sources 60
      5.1.1 Dependent Variable 61
      5.1.2 Independent Variables 62
         Variable: Hotel Environmental Performance 62
         Variable: Community Environmental Performance 63
      5.1.3 Interaction Effect 63
      5.1.4 Control Variables 64
   5.2 Methodology 66
      5.2.1 Implementation of the Propensity Score Matching Methodology 68
      5.2.2 Qualitative Methodology 70
6. Quantitative Results

6.1 Descriptive Statistics
   6.1.1 Hotels and the CST Program
6.2 Hotels and the Blue Flag Program
6.3 CST and Blue Flag Program
6.4 Panel Estimation
6.5 Propensity Score Matching for Mixed Generalized Panel Regression
6.6 Results for Hypothesis 1
6.7 Results for Hypothesis 2: Environmental Performance of Location
6.8 Interaction Effects between Environmental Performance of Firm and Community: Complements or Substitutes?
   6.8.1 Substitution Effect
   6.8.2 Interaction between Hotel and Community Environmental Performance: Complementary Effect, Building on Reputation Theory
6.9 Results Summary

7. Qualitative Analysis

7.1 Findings for the Blue Flag Program
   7.1.1 Importance of Leadership
   7.1.2 Community Size
   7.1.3 Community Organization
   7.1.4 Blue Flag Area Clusters
   7.1.5 Importance of Complementary Activities and Resources
   7.1.6 Business Political Strategies and Policy Demands
   7.1.7 Children's Role in Changing Adult Behavior
7.2 CST Findings
   7.2.1 Implicit Price Premium
   7.2.2 Environmental Performance Costs
7.3 Findings for Both Programs
   7.3.1 CST and Blue Flag Programs Reduce Demand Fluctuations
7.3.2 Synergistic Effects of Incremental Certifications 106
7.3.3 Blue Flag More Powerful in Symbols and Marketing 106

8. Discussion and Conclusions 107
   8.1 Strategy Field and Public Policy Implications: The Big Picture 107
   8.2 From a Firm-Centric View to a Firm-Community Perspective 110
   8.3 What Kind of Environmental Performance is Associated with a Price
       Premium? 111
   8.4 Qualitative Research: Motivation for Obtaining Environmental
       Certifications 115
   8.5 Qualitative Research: Findings and Reflections beyond Key Model and
       Hypotheses 117
   8.6 Limitations of the Study and Avenues for Future Research 119

9. References 126

10. Appendix: The Hedonic Prices Model 136
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Figure 1</strong></td>
<td>Conceptual Model for Hypothesis 1</td>
<td>48</td>
</tr>
<tr>
<td><strong>Figure 2</strong></td>
<td>Conceptual Model for Hypothesis 2</td>
<td>49</td>
</tr>
<tr>
<td><strong>Figure 3</strong></td>
<td>Conceptual Model for Hypothesis 3</td>
<td>56</td>
</tr>
<tr>
<td><strong>Figure 4</strong></td>
<td>Conceptual Model for Hypothesis 4</td>
<td>59</td>
</tr>
<tr>
<td><strong>Figure 5</strong></td>
<td>Map of the Provinces of Costa Rica</td>
<td>65</td>
</tr>
<tr>
<td><strong>Chart 1</strong></td>
<td>Proportion of Hotels CST-Certified/ Located Near Certified Blue Flag Areas</td>
<td>77</td>
</tr>
<tr>
<td><strong>Chart 2</strong></td>
<td>Dispersion of Hotel Prices (in 2008 US dollars)</td>
<td>80</td>
</tr>
<tr>
<td><strong>Chart 3</strong></td>
<td>Hotel Price Trends by CST and Blue Flag Certification</td>
<td>81</td>
</tr>
<tr>
<td><strong>Chart 4</strong></td>
<td>Detailed Hotel Price Trends by CST Certification and Blue-Flag Location</td>
<td>83</td>
</tr>
<tr>
<td><strong>Box 1</strong></td>
<td>Quantitative Results Summary</td>
<td>97</td>
</tr>
</tbody>
</table>
List of Tables

**Interviewees Table** Distribution of Interviewees 71

**Table 1** Frequency Distribution for Hotel-Year Observations CST Certification Characteristics 73

**Table 2** Average for Hotel-Year Observations Variables of Interest by CST Status 74

**Table 3** Number of Hotels by CST Status per Year 75

**Table 4** Number of Hotel-Year Observations by Distance to a BF Beach 76

**Table 5** Number of Hotels 15 Kilometers or Closer to the Center of a Blue Flag Area, by Year 77

**Table 6** Averages for Variables of Interest by Hotel Blue Flag Location Status 78

**Table 7** Number of Hotel-Year Observations by Distance to Blue Flag Beaches and Number of CST Green Leaves 79

**Table 8** Hotel Price Trends by CST and Blue Flag Certification 81

**Table 9** Detailed Hotel Price Trends by CST Certification and Blue-Flag Location 82

**Table 10** Correlation Matrix 85

**Table 11** Mixed Generalized Panel Regression (without PSM) 88

**Table 12** Probit Regression for PSM, Dependent Variable CST Participation 89

**Table 13** Balance Table: Propensity Score Matching, CST-Certified Versus Non-Certified Hotels 91

**Table 14** Mixed Generalized Panel Regression Using Propensity Score Matching 92
1. INTRODUCTION

1.1 Overview

This research estimates the effects of the environmental performance of a firm and the environmental performance of a community and their interactions on price. I estimate the relationship between environmental performance and room prices in all hotels registered in Costa Rica using the propensity score matching methodology for panel data spanning the period 2001 to 2008. More specifically, to measure the environmental performance of hotels, I use the Costa Rican Certification for Sustainable Tourism, a performance-based voluntary environmental program. As a proxy for the environmental performance of the communities where hotels are located, I use the Blue Flag Program, a voluntary certification program for coastal communities in Costa Rica.

In the last two decades, environmental performance has become an increasingly important component of a company's reputation and overall performance. A number of voluntary environmental self-regulation programs have emerged across industries and economies. However, the mechanisms of industry self-regulation and the benefits of participation in such voluntary certification programs have not yet been exhaustively examined by scholars.

Analysis of the relationships among environmental performance, reputation, and financial performance has generated numerous academic studies and ample research across various disciplines but many aspects of these relationships have not been addressed, including the complex relationships among the environmental performance of a firm, environmental performance of a community, and market prices. Out of more than 200
studies that aim to assess the effects of a firm’s environmental performance and environmental certification on prices, less than 15 use an appropriate methodology (Blackman and Rivera, 2011). There has not yet been a research effort that encompassed more than one type of environmental certification or that evaluated interactions between the environmental performance of a firm and that of a community.

I assert that the effects of environmental performance of a firm on prices merits additional attention, as does expanding the research effort to include other salient factors such as environmental performance of the community in which the firm is located, and the relationships between environmental performance of firms and their communities.

1.2 Theoretical Background

Are firm environmental performance and environmental performance in the community where the firm is located complements or substitutes? The scholarly community is currently far from having a consensus on the issue, as both the research and the theoretical framework are only emerging.

In one of the few salient studies in the area, Rivera (2002) tests the relationship between the environmental performance of a firm and price, finding a significant relationship that affects a firm’s economic outcomes. Vandermerwe and Oliff (1990) analyze the price premium associated with the organic food market in the United Kingdom, finding that roughly a third of all adults pay a premium of between 15 percent and 50 percent for organic produce.

Blackman et al. (2014) and Rivera et al. (working paper) have focused on community environmental performance. Blackman et al. (2014) conclude that community
environmental performance has a positive effect on new firm investment. Rivera et al. (working paper) identify which community-level characteristics are associated with better community environmental performance.

There are no clear, universally accepted guidelines in the environmental community as to what constitutes good environmental performance (Ilinitch et al., 1998). Fried (1993) states that, in response to several different environmental performance measures and definitions, stakeholders have pushed for a generally accepted standard but the academic community has been slow to respond. Metlaf et al. (1995) conduct a comprehensive literature review, discovering only a small number of articles that describe and define environmental performance.

In the absence of a unified and widely accepted definition of good environmental performance, environmental self-regulation programs represent a particularly interesting phenomenon. Environmental certification programs have emerged as a mechanism of self-regulation as well as an instrument of environmental marketing for business communities, making it easier for firms to signal environmentally conscious conduct to consumers. Thus, these certifications have created standards and requirements based on both industry needs and consumer preferences (Thompson et al., 2010).

Studying the benefits of participation in such voluntary certification programs, as well as their effects on firm economic performance, may help define factors that define good environmental performance for firms and communities.
1.3 Research Questions

In this research, I estimate the effects on price of firm environmental performance, environmental performance in the community where the firm is located, and the interaction of these two variables. I assess whether the interaction between the two types of environmental performance results in a complementary effect or a substitutive effect.

On the one hand, firm environmental performance and community environmental performance are two different measures of the same general concept: environmental performance. Thus, it would be logical to expect a substitution effect, when customers have a certain degree of indifference between the two types of environmental performance. Such a conceptual model predicts a relationship in which the presence of one signal (environmental certification of a firm) makes another (environmental certification of a community) less valuable.

On the other hand, one could argue that when both superior (4-5 “green leaves”) firm environmental performance and community environmental performance are in place, it makes information and signaling, as perceived by customers, more credible, thus creating a complementary relationship between the two. Therefore, it is conceivable that customers who value environmental performance in general assign more value to superior firm environmental performance in the presence of good community environmental performance where the firm is located, and vice versa.

In order to test these assumptions, I use the Costa Rican hotel industry as the empirical setting. The context of the highly developed hotel industry in Costa Rica, coupled with the presence of two long-term environmental certification programs for hotels and
coastal communities, respectively, enabled me to collect data and answer the following research questions:

1. Is better environmental performance associated with a *price premium*? Do prices reflect the quality of *environmental performance*?

2. Do tourists care about environmental performance?

3. Are firm environmental performance and community environmental performance complements or substitutes? Can we observe a reputational premium effect when both superior firm environmental performance and community environmental performance are in place?

To measure the environmental performance of the hotels, I use the Certification for Sustainable Tourism (CST) program, a voluntary performance-based environmental certification. As for the environmental performance of the communities where the hotels are located, I use the Blue Flag program. The Blue Flag certification program is an international self-regulatory initiative that requires businesses, communities, and local governments operating at specific tourist destinations to jointly apply for certification to demonstrate superior environmental performance.

**1.4 Research Methodology**

This study aims to answer these questions through rigorous data analysis, using inputs from environmental certification programs for hotels and communities along with pricing data for all hotels registered in Costa Rica for a period of eight years. Drawing upon this data, I try to ascertain the market price premium for environmental performance while controlling for self-selection bias. To find a positive price premium associated with
good environmental performance, the following conditions should hold: (i) it is costly to achieve superior environmental performance and (ii) environmental performance is an attribute valued by consumers.

After analyzing a number of approaches, I chose propensity score matching methodology as the most appropriate way to analyze the multi-faceted data. As defined by Rosenbaum and Rubin (1983), propensity score matching is the conditional probability of receiving a treatment, given pre-treatment characteristics.

For the data panel covering the Costa Rican hotel industry, the environmental certification programs, and the effects associated with their relationship, this methodology offers an important advantage. The firms participating in the CST Program are more likely to self-select into the program and such self-selection might bias the results of the study, if one simply compares effects for "treated" and "untreated" groups (Heckman, 1979). Propensity score matching methodology allows control for self-selection bias, generating more reliable results.

To complement the quantitative findings of this research, I developed a qualitative analysis: a series of semi-structured, in-depth interviews conducted with Costa Rican hotel owners and management, meant to supplement and clarify complexities related to participation in the voluntary environmental programs.

For a theoretical lens, I draw on the concepts of resource-based view (RBV) (Penrose, 1959; Wernerfelt, 1984; Barney, 1991; Hart, 1995; McWilliams and Siegel, 2001; McWilliams et al., 2006), hedonic prices (Rosen, 1974; Kuminoff et al., 2010), differentiation value (Wiedmann et al., 2009; Vickers and Renand, 2003; Lancaster, 1966), and reputational theory (Rao, 1994; King and Whetten, 2008).
Building on this conceptual framework, the study develops hypotheses of a complex market where both firm environmental performance and community environmental performance are valued individually, while their interaction produces various effects that depend on the quality of firm environmental performance.

Drawing upon the resource-based view theory and the concept of hedonic prices, this study theorizes that firm environmental performance and community environmental performance generally positively affect prices of products or services offered by a firm. This model also integrates insights from differentiation value in marketing as well as reputational theory.

1.5 Contribution to the Management Discipline and Public Policy Implications

Because existing research in the area is far from exhaustive, there is no conclusive evidence as to whether tourists care about environmental performance and whether hotel prices reflect the quality of environmental performance of firms or communities. Furthermore, it appears that no research effort has been undertaken yet to explore the relationship and substitution and complementary effects associated with different measures of environmental performance in a developing country context. Given the above, this study is designed to fill a gap in existing academic research, providing empirical evidence of how firm and community environmental performance interact in the context of a tourism industry in a developing country. More specifically, this research explores firm environmental performance and the environmental performance of the community containing the firm, and their combined effects on prices, while distinguishing between different levels of quality of firm environmental performance.
Better understanding of how prices, quality of services or goods sold, and firm costs relate to the environmental performance of a firm and its host community is critical for defining the links and interdependencies between environmental performance and financial performance. This dissertation provides new critical insights into this matter. We expect non-linear relationships between various levels of environmental performance and price premium. Consumers’ attitudes and the context in which consumption takes place most likely play substantive roles. Additionally, information asymmetries would pose a reputational challenge for a firm.

This study aims to contribute to the resource-based view theory and related research by explicitly establishing how and when substitutive and complementary effects occur between firm and community environmental performance. There are currently no studies demonstrating in quantitative terms that community environmental performance can be translated into a competitive advantage for a firm. This research for the first time establishes links between community environmental performance and firm environmental performance.

Given the interest and difficulties facing scholars in understanding the effects of voluntary environmental programs on firms in developing countries, the research group at the Tropical Agricultural Research and Higher Education Center (CATIE), Costa Rica, and George Washington University, Washington DC, has developed a unique data set from Costa Rica's hotel industry that contains information for both the hotels’ environmental performance and the environmental performance of the coastal communities in which these hotels are located.
Using this data set, this study applies the propensity score matching methodology to estimate the relationships between the environmental performance of firms and communities and the prices of rooms for all hotels registered in Costa Rica. Although propensity score matching has been used before to estimate a price premium, it is used here for the first time with panel data to measure a price premium associated with the environmental performance of both a community and a firm. Thus, the empirical contribution of this research is not introducing a new technique in data analysis, but in the new application of this technique, resulting in more robust results. Analysis of the two overlapping environmental certifications and their interactions presents, for the first time, a more complete view of the market.

In fact, Segarra-Oña et al. (2012) note that research on environmental certification in tourism, and specifically hotel industry, could be enriched with longitudinal studies, as well as studies featuring in-depth qualitative analysis that take into account various organizational factors. This research is addressing both of the issues mentioned above, as it estimates the economic effects of a hotel environmental certification and a community environmental certification on prices using a database spanning eight years, while trying to complement this quantitative analysis with qualitative in-depth interviews to uncover underlying processes and characteristics that might influence the interaction in question. Furthermore, the geographical scope of this study provides a meaningful empirical context, Costa Rica being one of the nations where tourism and hospitality sector comprise a considerable part of the national GDP.

This dissertation responds to the call for research identifying factors that drive better environmental performance and motivate participation in voluntary environmental
programs among firms and communities in developing countries (Blackman, 2008). By analyzing implementation of voluntary environmental certifications in a developing country, this study is in a unique position to describe the relationship and processes that translate environmental performance into price premiums. In this sense, my ambition goes further than making a theoretical and empirical contribution to the body of academic research: with this research, I strive to generate useful information for policy makers.

Consumer perceptions about a firm’s environmental performance are critical for determining differentiation advantages that yield price premiums (Reinhardt, 1998; Rivera, 2002). If firms can signal their superior environmental performance in a credible manner through voluntary environmental certification programs, and if such signaling results in firms enjoying a price premium, then policy makers can take advantage of such voluntary self-regulation programs, improving environmental protection at potentially lower cost.

While the focus of this research is largely on the price effects and price premium associated with environmental performance, future research could focus on other aspects, such as quantity of goods and services sold or cost variables. Other questions that could be tested in future research, drawing upon the findings of this study, include: (i) Do firm environmental performance and that of the surrounding community increase hotel occupancy rates? (ii) What is the cost of good environmental performance for a firm and a community?
1.6 Research Context: Costa Rica Hotel Industry and Voluntary Environmental Certification Programs

Costa Rica’s geographical proximity to North America and its remarkable economic and social development have made it one of the most popular tourist destinations in the western hemisphere. The United Nations World Tourism Organization (UNWTO) and the International Labour Organization (ILO) 2013 report (UNWTO and ILO 2013) highlight the remarkable accomplishments of Costa Rica’s tourism industry, especially its eco-tourism approach, within the last fifteen years. The country’s government has meanwhile been actively promoting its tourism industry through an international marketing campaign.

For many years, Costa Rica has enjoyed the highest number of tourists in Central America (Boletín de Estadísticas Turísticas de Centroamérica, 2010). In 2008, over two million international tourists visited Costa Rica, more than 800,000 of them from the United States (ICT, 2008). Tourism accounted for 7.3 percent of Costa Rica’s GDP in 2008, or US $2,174 million, nearly 30 percent more than the income generated by exports of coffee, bananas, and pineapples combined.

This research aggregates and analyzes panel data for two major voluntary environmental certification programs in Costa Rica: the Blue Flag Program, which provides certification for coastal communities, and the Certification for Sustainable Tourism (CST) program, promoting beyond-compliance environmental performance among local hotels.

The Blue Flag Ecological Program was created in response to the dangers of beach pollution and its repercussions for public health and the tourism industry. It is in its twelfth
year of operation, with a marked increase that began in 2002. The Blue Flag certification is granted annually to coastal communities in Costa Rica, recognizing the concerted efforts of various stakeholders, including schools, the general public, and municipalities, to bring their respective territories into compliance with the program’s environmental requirements.

Under the Blue Flag program, Costa Rican beaches are assessed on water quality of the ocean as well as the drinking water supply, waste disposal, sanitary facilities, signage, tourist safety, environmental education and involvement of the community in beach maintenance. Only beaches with a 90 percent score succeed in receiving the coveted “Blue Flag.” Beaches so awarded are then monitored monthly for maintenance concerns.

*The Certification for Sustainable Tourism Program (CST)* was designed to differentiate tourism businesses based on the degree to which they comply with a sustainable model of resource management. CST is regulated by the Costa Rican National Accreditation Commission. Program participation is voluntary and is open to all hotels, bed and breakfasts, cabins, etc. in Costa Rica, without restriction on location or size.

CST evaluates the interaction between business and the surrounding natural habitat; management policies and operational systems for energy saving, water pollution and waste handling; interaction and communication with clients on issues of sustainability; and interaction with adjacent communities. The CST program provides a system of “sustainability levels” - or “green leaves” - on a scale of one to five, which indicates relative position of the firm in terms of environmental performance. In this dissertation, I refer to the one “green leaf” level of CST certification as “basic” environmental performance, two-three “green leaves” in CST certification as “good” environmental performance, and four-five “green leaves” as “superior” environmental performance. CST certification has been
recognized by the World Tourism Organization and other prominent industry stakeholders.
2. Empirical Context

2.1 Characteristics of the Data Set

To examine the hypotheses described above in an empirical setting, the research required a context in which the environmental performance of firms, the environmental performance of communities, and the prices of goods or services offered by firms would be observable and measurable. The study seeks to provide more robust evidence of the link between these variables. The first step was to include in the data set a number of additional variables – for example, quality and market segmentation of goods or services – to control for these factors. Lastly, the relevant body of data would need to aggregate observations on a large number of firms and communities for a period of several years.

Creating panel data with these characteristics is no easy task. While obtaining the price information for an entire industry is a challenge in itself, complementing it with data about the environmental performance of all the firms that make up this industry and their host communities is a formidable task. This partially explains why the combined effects of environmental performance of firms and communities and their interaction have not been examined through the prism of real-world data before now. The scholarly community often faces a lack of information when it comes to complex multi-faceted data requirements like this.

In the context of developing countries, the urgency of finding evidence linking environmental performance and the prices of goods and services is even stronger, because environmental compliance and reporting in such countries are often at a lower level than in more developed nations (Lankoski, 2006), which leads to economic losses and
negatively affects the environment. This, in turn, has put even more emphasis on obtaining the necessary data.

Given all the considerations described above, I aspired to find an industry within a developing country that would allow for credible data collection, including prices for goods and services, environmental performance of firms, and environmental performance of communities. To maximize the validity of this research and enable reliable extrapolation to other geographical locations, I furthermore wanted to identify an industry present in most developing nations. With this in mind, I joined a larger project of the Environment and Development initiative (EfD) at CATIE (Tropical Agricultural Research and Higher Education Center) in Costa Rica, which also included scholars and practitioners from Resources for the Future (RFF) and George Washington University (GWU). Being a part of this group, I contributed to developing a panel data set for the Costa Rican hotel industry, which has become the empirical basis for this dissertation.

A number of characteristics make the hotel industry in Costa Rica a particularly good fit for the purposes of this study. First, we were able to obtain information about price per night for a double room for more than 300 hotels for an eight-year period, which provided in total nearly 2,600 firm-year sample observations.

More importantly, the Costa Rican hotel industry context allowed us to access and aggregate credible data on environmental performance of the sample hotels, as well as the coastal communities in which these hotels are located, through two well-established voluntary environmental programs in that country: the Certification for Sustainable Tourism (CST) program and the Blue Flag program. These programs and the
environmental certifications granted by them were used as proxies for environmental performance of the hotels and coastal communities.

The data set collected by the group of scholars directed by Jorge Rivera spans eight years – from 2001 to 2008\(^1\). After adding the CST and Blue Flag program data, the data set expanded to include common firm descriptors such as number of employees, location, and price per room, as well as environmental performance information for the hotel and the community in which it is located.

### 2.2 Costa Rica’s Geography and Tourism Industry

Costa Rica is a nation located in Central America, bordering Nicaragua on its north and Nicaragua and Panama on its south. The country’s total population in 2008 (the end of the time period covered) was 4.5 million, of whom approximately 1.5 million lived in San José, the nation’s capital. Costa Rica had a gross national income (GNI) per capita of US $7,660 in 2003, US $11,000 in 2008, and US $11,869 in 2011, PPP (purchasing power parity).\(^2\)

The Central Intelligence Agency (CIA) World Fact Book 2010 puts Costa Rica’s gross domestic product (GDP) per capita at US $10,900. According to the same source, the country has a very high adult literacy rate of 96 percent, a high average life expectancy of 78 years, and one of the highest Human Development Index (HDI) marks in the region (0.854 in 2007). With a steady track record of nearly 60 years of unbroken democracy,

---

1. The data covers the time period from 2001 to 2008, the last year of which coincided with the beginning of the global financial crisis. Such strong exogenous factor could have affected the economic performance of the Costa Rica tourism industry as a whole and the local hotels in particular, which, in turn, could influence the results of this study.
Costa Rica is one of the most prosperous and historically stable nations in Latin America. The poverty level in the country has been declining in recent years, dropping from 21 percent in 1999 to 16 percent in 2006 (CIA World Fact Book, 2010).

Costa Rica enjoys tropical weather. Even though the country has several microclimates defined by rainfall, elevation, geography, and topography, overall, Costa Rica’s climate can be characterized by a dry season, lasting from December through April and the “green-rainy” season from May to November. They are both hot by usual US standards.

Weather patterns determine tourist flow across the year; even though tourism remains an important part of the country’s economy throughout the entire year, Costa Rica also has specific tourism seasonality. The first peak of the tourist season falls from December through April. The United Nations World Tourism Organization and the International Labour Organization (UNWTO and ILO, 2013) attribute this to the dry weather combined with the December holiday season in countries where most tourists visiting Costa Rica come from. Visitors from the United States, Canada and Europe prefer to vacation in Costa Rica at this time to escape cold winters in their home countries. The second peak season in Costa Rica occurs between June and August, traditional summer holiday time in North America and Europe. As for September through November, hurricane season and constant rain contribute to making international tourist arrivals substantially lower. As a rule, room occupancy rates in Costa Rican hotels strongly correlate with seasonality patterns, as do the number of tourists present in the country (UNWTO and ILO, 2013).

The main attractions that draw tourists to Costa Rica are its beaches and nature-based activities (Rivera, 2002; Blackman et al., 2014), which contribute to making the
environmental performance of Costa Rica’s hotels and communities potentially even more valuable attributes for visiting tourists.

Geographically, Costa Rica is divided into three parts. In the western part of the country on the Pacific coast are the big resorts of Guanacaste province and Manuel Antonio National Park. The east of Costa Rica is on the Caribbean Sea and is famous for its turtle habitat and Cahuita National Park. The Pacific and Caribbean zones of Costa Rica are separated by the Cordillera de Tilarán, Cordillera Central, and the Cordillera de Talamanca, a chain of mountains dividing the country from north to south. Cordillera de Tilarán also includes Monteverde, a small town but a major eco-tourism destination well-known for its wild jungle and adventure tourism attractions.

A combination of favorable factors such as geographical proximity to North America, remarkable progress in economic and social development over recent decades, and rich natural resources have helped build a very successful tourist industry in Costa Rica. In fact, UNWTO and ILO (2013) highlight the remarkable accomplishments of Costa Rica’s tourism industry and the success of its eco-tourism approach over the last fifteen years, which has been widely acknowledged worldwide. The Costa Rican government has promoted the tourism industry through an international marketing campaign and financial incentives. In 1985, tourism businesses started receiving multiple incentives, including tax exemptions for tourism-related supply purchases, infrastructure construction and vehicle (motorboat or car) purchases, along with faster depreciation for tax purposes for the tourism sector. The agency managing these incentives is the Costa Rican Tourism Institute (ICT).
The Travel and Tourism Competitiveness Index 2013\textsuperscript{3} places Costa Rica 6\textsuperscript{th} in the Americas region and 47\textsuperscript{th} overall in the world. The index highlights the natural resources of Costa Rica, ranking the country 7\textsuperscript{th} in the world in this category, and ranking it 26\textsuperscript{th} in environmental sustainability. The areas where Costa Rica requires substantial improvement are health and hygiene (78\textsuperscript{th}) and ground transportation (100\textsuperscript{th}), deficits which make in-country travel difficult.

Costa Rica has the largest number of tourists among Central American countries every year (Boletín de Estadísticas Turísticas de Centroamérica, 2010). In 2008, 2,089,174 international tourists reportedly went to Costa Rica, 807,162 of them from the United States (ICT, 2008), rising to 2,343,213 international tourists in 2012, 921,097 of whom came from the United States (ICT, 2012). The high percentage of American tourists underscores Costa Rica’s vulnerability to exogenous shocks from the US market (UNWTO and ILO, 2013). Like many other major tourist destinations, Costa Rica experienced adverse effects of the global financial crisis. Between 2008 and 2009, foreign tourist arrivals dropped by 9 percent. The decline in US tourists was the largest in absolute terms (56,200) over that one-year period, although the 14 percent drop in European tourists (UNWTO and ILO, 2013) was proportionally greater. Average tourist spending per day dropped from US $117 in 2008 to US $96 in 2009 and total tourism receipts declined 10 percent in 2009 (UNWTO and ILO, 2013).

UNWTO and ILO (2013) estimate that employment generated by the tourism industry and related sectors increased significantly during the period of this study, from 2001 through 2008. Between 2003 and 2008, for example, the proportion of workers

\textsuperscript{3} http://www.weforum.org/reports/travel-tourism-competitiveness-report-2013
benefiting from social insurance grew by 61 percent in the hotel and restaurant sector. UNWTO and ILO (2013) estimate that 120,000 Costa Ricans work in the tourism industry and related sectors, which is 16 percent of the total Costa Rican workforce. The average expenditure per tourist was US $1,408 and the average stay was 11.1 nights (ICT, 2008).\(^4\)

### 2.3 Rise of Voluntary Environmental Programs in Developing Countries

Environmental regulation is one the pillars of the competitiveness of tourism industries in developing countries, as defined by the Travel and Tourism Competitiveness Index\(^5\) (TTCI), the annual ranking by the World Economic Forum. Furthermore, strengthening environmental policies not only can attract tourists, but also can encourage business developers and service providers to enter new markets or expand their business, creating a competitive advantage for a destination. Enforceable laws and regulations aimed at protecting nature at the local and national level contribute to creating a favorable business environment that allows tourism to thrive (Hawkins and Calnan, 2009). Voluntary environmental programs, as one form of environmental regulation, can play a role in the development of tourism destinations in the developing world.

For a long time, labor and environmental regulations have been a prerogative of the state; governments have initiated and managed these regulations directly or by delegation to international organizations. Industry self-regulation has emerged as a relatively recent phenomenon and is expanding across developing nations.

Industry self-regulation is defined as the presence of labor and/or environmental standards that are not established by government and are complied with by firms on a

---

\(^4\) These values are based on tourists who entered the country by plane.  
voluntary basis. Self-regulation standards exist in various forms: codes of conduct, self-reporting schemes, certification programs, etc. (Prado, 2013).

To enforce and monitor environmental and labor regulations, governments need resources, which are often limited or not readily available, especially in developing countries. Prado (2013) suggests that self-regulatory initiatives represent an opportunity to complement, enhance, or even replace government regulations. Under self-regulation schemes, non-governmental institutions might be able to provide information about unobservable attributes of firm production processes or operations, creating a real alternative to the traditional command-and-control approach.

According to Prado, self-regulatory institutions can be categorized by the type of market failure they are trying to address – asymmetric information, externalities, or a combination of both. With asymmetric information, manufacturers are aware of the real quality of a service or product, including its environmental attributes, while for consumers these qualities are unobservable. Following the conclusions of Akerlof (1970), such information asymmetry can result in suboptimal market size or even a total stop of trading of these products. In the case of externalities, environmental resources without clearly defined property rights can create a market failure, because some actors may impose costs on others.

In her study, Prado (2011) highlights the importance of a favorable institutional environment that encourages key stakeholders to achieve effective self-regulation. She also claims that visible and credible enforcement is critical for the efficiency of self-regulatory institutions, which is consistent with the findings of Lenox and Nash (2003) and Rees (1997).
Voluntary certification programs have proven to be one of the most successful forms of industry self-regulation, particularly in developing nations. However, very few studies have explored an empirical context and data that include more than one certification program (Prado, 2011; Smith and Fischlein, 2010; Bartley, 2007; Sasser et al., 2006; Durand and McGuire, 2005).

King et al. (2002) argue that certification programs are an answer to the search for legitimacy in that they help distinguish between good and bad performers. Maxwell et al. (2000) also highlight that certification programs can decrease the creation of new regulation.

Bartley (2007), Sasser et al. (2006) and Smith and Fischlein (2010) explain how non-governmental organizations, social movements and other stakeholders can activate the entrance of various certification programs into the institutional field. On the other hand, Durand and McGuire (2005) affirm that, to continue having a legitimate position in the institutional field, the organizations that manage the certification programs need to expand their services to other markets, even when that means competing with other certifications.

However, the evidence speaking to the ability of voluntary environmental certifications to improve firm environmental performance is inconclusive. Potoski and Prakash (2004) and Toffel (2006) find that certified firms achieve superior performance compared to non-certified ones. On the other hand, Blackman and Rivera (2011) and King et al. (2005) do not find statistically significant results to support this hypothesis.
2.4 Certification for Sustainable Tourism (CST) Program

The default solution for alleviating environmental damage by businesses is often to enact laws determining maximum discharge amounts of polluting substances. Voluntary regulation, by contrast, does not mandate, but only implements incentives for good environmental performance (Blackman, 2008; Blackman and Rivera, 2010). Blackman (2008) summarizes key preliminary conclusions from previous research regarding application of voluntary environmental regulation in developing countries. These include the following:

First, it is improbable that voluntary regulation will work in countries where regulatory pressures are missing. Second, voluntary initiatives must include quantifiable goals, transparency, monitoring, enforcement mechanisms, and consequences for non-compliance. Third, to take advantage of broader and deeper non-regulatory pressures, programs should be at the national level rather than just at a local level. Fourth, programs should make information on pollution and progress in its abatement publicly available.

The Certification for Sustainable Tourism (CST) program was established in 1997 by the Costa Rican Ministry of Tourism. It was one of the first performance-based voluntary environmental programs created by a developing country government. The CST seeks to categorize and certify each tourism-related company according to its compliance with a model of sustainability. It uses a questionnaire divided into four general areas and 20 descriptors for a total of 153 questions. The questions are binaries designed to evaluate hotel compliance with specific standards or conditions (Yes for compliance and No for non-compliance). The questions are weighted by their relevance to certification level on a scale of one to three, three being the most important (Rivera, 2004; Rivera and deLeon,
The original guide and questionnaire for hotels to apply for the CST Certification can be found at:


The four general areas evaluated are: 1. physical-biological parameters; 2. infrastructure and services; 3. external clients, and 4. socioeconomic environment.

1. Physical-biological parameters: Evaluates the interaction between the company and its surrounding natural habitat.

2. Infrastructure and services (exclusive to lodging companies): Evaluates management policies and operational systems within the company and its infrastructure regarding energy saving, water pollution, and waste handling policies and technology.

3. External clients: Evaluates the interaction of the company with its clients in terms of how much it allows and invites clients to be active contributors to company sustainability policies.

4. Socioeconomic environment: Evaluates the interaction of the establishment with adjacent communities, analyzing, for example, the degree to which tourist companies contribute to growth and development of their regions by generating new employment and achieving other social benefits.

The official web page of the program describes each of the four areas in greater detail: (http://www.turismo-sostenible.co.cr/).

Of the 153 questions, 106 are directly related to the environment, with the first general area (physical-biological parameters) exclusively devoted to environmental performance, validating that the CST program focuses principally on environmental performance. The other sections and questions are related primarily to other aspects of sustainability more broadly conceived.

The hotels are given a percentage for environmental “achievement” in each of the four general areas based on their responses. The number of “green leaves” obtained is determined by the lowest level achieved in any of the four areas. This method of evaluation helps ensure that, if environmental performance is not good, the level of certification will
be low. It also helps promote the hotels’ attention to each area. The number of green leaves is awarded according to the following structure: 0-19 percent, receives zero green leaves; 20-39 percent, one green leaf; 40-59 percent, two green leaves; 60-79 percent, three green leaves; 80-94 percent, four green leaves; and five green leaves for 95 percent or more. If a hotel achieves one green leaf, this means that the firm has taken the first step on the road to sustainability. Five green leaves mean that the company has exhibited uniformly outstanding performance in sustainability (http://www.turismo-sostenible.co.cr).

Certification inspections are conducted by a team of at least two government officers who visit the hotels and examine their environmental performance. The certification procedure also includes submission of documents as evidence. In the semi-structured interviews that I conducted in Costa Rica, owners and managers of hotels validated that these agents go to the hotels regularly and inspect them to verify answers provided on the questionnaire.

The panel data exhibits high variability in hotel environmental performance across years, with numerous instances of hotels earning fewer green leaves or even losing certification in subsequent years. Very few of the hotels have been able to achieve the maximum level of certification. These considerations taken as a whole provide us with evidence consistent with a certification program that makes it relatively difficult for hotels to cheat or engage in decoupling.

In 2000, the Ministry of Tourism started to highlight the program in its international advertisements aimed at promoting tourism, airing these, for example, in National Geographic magazine, on the Discovery Channel, and on CNN (Rivera, 2002). The
detailed results of program evaluations are also available on the Internet in English and Spanish.

Very little research has been conducted on the implementation of voluntary environmental certification programs for businesses in developing countries. Blackman et al. (2004) evaluate the Program for Pollution Control, Evaluation and Rating (PROPER), a public disclosure program. Blackman et al. (2004) conducted a survey of 146 plants and found evidence that PROPER gives new information to plant managers and makes emissions information publicly available, both of which act as effective modalities in reducing pollution.

Rivera (2002) provides some of the first cross-sectional empirical evidence about voluntary environmental programs established in developing countries. He focuses on hotel participation in the CST Program. According to him, firms participate in voluntary environmental programs for three main reasons. One is to try to reduce costs by using environmentally friendly and efficient technologies and processes. Two, they seek to gain “green” reputations that increase their price premiums and market share. Three, their participation can be an attraction to environmentally-conscious investors. Empirical evidence also suggests that stronger regulatory pressures and explicit government support for voluntary environmental programs are significantly related to participation in voluntary initiatives (Rivera, 2002). In his study, Rivera (2002) finds that only hotels with a CST score of three or more green leaves have statistically significantly higher prices. He estimates that, on average, hotels with a CST rank of three or more green leaves have room prices US $30 higher per night than hotels not enrolled in the CST certification program.
Hawkins (2004) refers to environmental certification programs as one of the measures to preserve biodiversity and spur economic growth, since participation of tourist destinations and businesses in voluntary environmental programs can be a differentiating factor in the eyes of consumers, providing competitive advantage. In this context, Hawkins mentions CST as a product of the Costa Rican tourism authorities, which may be successfully replicated in other parts of the world.

2.5 The Blue Flag Program

A “Blue Flag” Program was first begun in France in 1987 and is administered by the Foundation for Environmental Education there. The program is an international self-regulatory initiative that requires businesses operating at specific tourist destinations to jointly apply to receive certification of superior environmental performance. To date, this program has been implemented in over 40 countries around the world. The requirement for joint application and third-party certification offers a rare opportunity to study voluntary collective business action as a method to promote positive environmental externalities.

The Costa Rican implementation of the Blue Flag program, which commenced in 1996, is one of the most notable environmental certification programs in the developing world (Blackman et al., 2014; Dodds and Joppe, 2005). It is administered by the National Water and Sewer Agency⁶ (AyA). The Blue Flag Program was launched specifically for beach communities. However, in 2002, a category for non-beach communities was added.⁷ Beach communities, however, still represent the majority of participating communities.

---

⁶ It also operates with the support of the Ministries of the Environment, Education, Health, and Tourism, and the Tourism Business Chamber.
⁷ http://banderaazulecologica.org/comunidades/147
Because it was not possible to collect the necessary information on non-beach communities, only beach communities are considered in this dissertation.

Communities in Costa Rica can receive a Blue Flag certification with ratings from one A to three As. The score is derived from evaluation of five basic services: the quality of beachfront sea water, beach quality/waste management, potable water quality, environmental education efforts, and beach safety and administration. In this system, a beach with a minimum score of 90 percent receives one A; beaches with a score of 100 percent that also are staffed with lifeguards during high season and post rip-tide warning signs are rated AA; and beaches with a score of 100 percent that are also staffed with lifeguards and first aid-trained personnel all year round, and that provide access for disabled persons as well as tourist information, sanitary services and showers, are rated AAA.

Few researchers have studied the implementation of the Blue Flag Program in Costa Rica. These few include Rivera et al. (working paper) and Blackman et al. (2014). Rivera et al. (working paper) identifies community-level characteristics associated with higher program participation. Using a probit regression with cross-sectional data for 2008, they find that a higher number of businesses, higher rates of foreign visitors, higher political participation, higher regulatory pressures, lower income inequality and lower levels of poverty are community characteristics positively correlated with Blue Flag program certification. Blackman et al. (2014) use propensity score matching and fixed effects in a panel, finding that Blue Flag certification has a positive effect on new hotel investment. With the use of these methodologies, Blackman et al. (2014) is one of the few studies that deal with the selection bias problem and can claim strong support for causality.
At the time when the environmental certification programs were on the rise, hundreds of certifications appeared in different parts of the world and across various industries, often making it difficult for a consumer to navigate and differentiate amongst a variety of initiatives. Today, the market reflects the need for fewer widely recognized overarching frameworks, which would harmonize existing certification programs and give them additional credibility in the eyes of consumers (Potoski & Prakash, 2004). Such convergence and unification of multiple certifications around one global standard allows to create consistency in terms of “ground rules”, while preserving differentiation on the local level.

In tourism, the Global Sustainable Tourism Council (GSTC) establishes and manages global sustainability standards, which are aimed at providing “the guiding principles and minimum requirements that any tourism business or destination should aspire to reach in order to protect and sustain the world’s natural and cultural resources, while ensuring tourism meets its potential as a tool for conservation and poverty alleviation” (http://www.gstcouncil.org/). To this end, GSTS has developed with two sets of sustainability criteria: Destination Criteria (GSTC-D) and Hotel & Tour Operator Criteria (GSTC-H&TO). For voluntary environmental programs with a specific geographic or industry scope, being endorsed by the GSTC constitutes international recognition and acknowledgment of the standards they promote.

As prominent sustainability initiatives, both CST and Blue Flag programs were part of the consultations and contributed to the process of creating indicators and methodology for, respectively, GSTC-H&TO and GSTC-D standards. However, while CST program was among the first listed among GSTC-Recognized Standards for Hotels & Tour
Operators, The Blue Flag is yet to obtain GSTC endorsement as a recognized standard for tourism destinations.
3.1 Are Voluntary Environmental Programs Really Effective?

While sustainability and environmental certifications are widely thought to create financial benefits for firms through price premiums and consumer loyalty, the empirical evidence to confirm this notion is limited and requires further analysis and consistent credible methodology across research efforts. In their cross-study research, Blackman and Rivera (2010) examine the evidence for the socioeconomic impact of various sustainable certifications in agriculture and tourism. They conclude that less than half – namely 14 out of 37 – of relevant studies focusing on the environmental and financial benefits of sustainability certification take into account factors such as selection bias and construct credible counterfactuals. In turn, out of the 14 studies using credible methodologies that are likely to produce reasonably unbiased assessments of the effects of sustainability certification, only six show statistically significant quantifiable benefits of environmental certification.

When scrutinized from the quantitative standpoint, even the most widely adopted international environmental certification programs, such as ISO 14001, fall short of establishing meaningful environmental impact. With a cross-country data analysis, Potoski and Prakash (2013) show that the level of participation in this certification program does not seem to result in statistically significant reduction of pollution on the national level.

Similarly, Darnall and Sides (2008) find that participants in voluntary environmental programs in the United States do not exhibit significant environmental performance improvements when compared with non-participants, while the latter do demonstrate improved environmental practices.
Interestingly, the level of non-participants’ performance improvement seems to be correlated with the monitoring and compliance mechanisms employed by the respective voluntary environmental programs. More specifically, non-participant firms compared with their peers partaking in environmental initiatives, which rely on self-monitoring for implementation, show a very high level of environmental performance improvement – about 24 percent. At the same time, non-participants compared with firms enrolled in the voluntary programs, which use external certification as a compliance tool, demonstrate only 7.7 percent improvement (Darnall and Sides, 2008).

These results may indicate the self-selection and free-riding issues pertaining to voluntary environmental programs: it appears that firms that qualify for the program requirements tend to self-select into participation, which would explain non-participants’ environmental performance improvement as a simple process of “catching up” with the market and more advanced technology.

Furthermore, voluntary environmental programs vary in terms of rigor of standards, monitoring and control mechanisms, and quality of implementation, but the information for differentiating between more rigorous initiatives and less effective ones is limited. As a consequence, the lack of compliance enforcement and sanctions in less robust voluntary environmental programs allows their participants to enjoy the benefits of environmental certification by association with more credible programs and to free-ride on their reputation (Darnall and Carmin, 2005).

The free-riding and under-compliance in the context of voluntary environmental initiatives is a part of the bigger issue of greenwashing, which has been receiving increasing attention in the academic literature. Effectively, by participating in a voluntary
environmental program, firms make a public claim that they adhere to certain environmental standards and practices that are defined by the respective programs. According to Kim and Lyon (2014), various aspects of corporate performance, such as increased production output, deregulation, and lower profits, may affect the environmental claims made by firms in the direction of either exaggerating or downplaying their actual environmental performance. In this sense, the dynamics of firm performance in other areas may influence its willingness to highlight and promote its environmental activities (or pretense thereof). Following the same logic, the decision to participate or not to participate in voluntary environmental initiatives can be motivated by firm performance in different areas or exogenous factors, making it even harder to distill the participation drivers.

Another “grey area” in the analysis of voluntary environmental programs has to do with their effectiveness as an alternative to traditional public policy tools and regulations. For example, in the United States, such programs gained momentum in 1990s, becoming a widely-used and enthusiastically praised policy instrument. Later on, when the impact and outcomes of these initiatives were scrutinized by rigorous techniques, their effectiveness and efficiency were disputed, spurring an ongoing debate among academics and practitioners. At the same time, some voluntary environmental programs implemented as a substitute for other environmental policy tools have been used by companies and industries as a way to pacify criticism, improve their public image, and even avoid stricter regulations – all of this without achieving actual environmental performance improvements. In this light, voluntary environmental programs may have had an adverse impact, resulting in missed opportunities for pollution abatement (Koehler, 2007).
Although the evidence in favor of the effectiveness of voluntary environmental programs remains limited and demands further research and improved methodology, voluntary policy approaches have produced convincing examples of successful environmental initiatives in some cases. The achievements of these initiatives indicate that a well thought through design and diligent implementation, along with the appropriate choice of public policy tools, may bring about a genuine and positive change and catalyze the uptake of good environmental practices (Blackman, 2008).

3.2 Voluntary Environmental Programs: Beyond Quantitative Evidence

The ongoing scholarly debate on whether voluntary environmental programs actually lead to tangible results in terms of pollution reduction and positive socioeconomic impact raises questions. Should such programs remain an important policy instrument? Should international stakeholders, governments, and the private sector continue to invest resources and effort into promoting these environmental mechanisms?

Matisoff (2014) argues that, despite the fact that hard quantitative evidence has failed to prove that such programs do yield tangible benefits for firms or society at large, there may be other gains generated by environmental certification. These gains, such as creating mechanisms for firms to signal environmentally responsible behavior, developing a shared knowledge base and best practices, behavior change, etc., are much more difficult to quantify and measure. As a result, evaluation methods based on econometrics do not capture and evaluate such benefits of voluntary environmental programs, and as a result deem them ineffective. Furthermore, evaluation methods based on statistics may control for these effects, distorting analyses and conclusions. Given the above, Matisoff concludes
that effectiveness and efficiency of environmental certification programs should be defined through cost-benefit comparison with the alternative policy measures or inaction – i.e., not adopting any measures.

There is a growing recognition that quantifying the impact of voluntary environmental programs solely with econometric instruments is insufficient and presents an incomplete picture. This creates the need for new approaches to evaluation of these programs. Specifically, spillover effects amongst participants and non-participants, information diffusion, and other factors such as improved cooperation between businesses and government should be taken into account and their effects and value evaluated (Lyon and Maxwell, 2007). Furthermore, adopting voluntary environmental norms is often associated with long-term effects; thus, it is difficult to identify differences in performance between participants and non-participants shortly after the program launch.

To expand the existing evidence base and obtain more conclusive results on environmental and socioeconomic benefits provided by sustainability certifications, more research on various certification programs in diverse sectors is needed. Furthermore, evaluation design needs to move from an ex post to an ex ante approach to create a consistent, reliable evidence base across industries and certification programs, and to distill common drivers and motivation factors (Blackman and Rivera, 2010).

3.3 Why Do Firms Participate in Voluntary Environmental Programs?

While voluntary environmental programs appear to have limited environmental impact and varying benefits for participants, and tend to engender free-riding, why do firms
still choose to engage in these programs? What perceived gains for a firm – beyond the public good – do they see in complying with voluntary environmental standards?

One of the motivating factors appears to stem from the market itself rather than from regulators: customer demand for “green” products, shareholder pressure, and community and neighborhood group pressure may significantly influence a company’s decision with regard to participating in voluntary environmental initiatives. This, however, applies chiefly to firms that produce consumer goods or services; in order to maintain a positive public image and strong trademark, they aim to differentiate themselves from competitors. Companies focused on the business-to-business segment are less incentivized by pressures of this type to participate in voluntary environmental programs (Henriques and Sadorsky, 1996).

Overall, most industry-led and government-driven voluntary environmental programs try to encourage participation through some combination of (i) perceived losses from non-participation, such as threat of stricter regulation or increased taxes, and (ii) perceived gains from participating, which may include shared information and resources, monetary subsidies, public recognition and positive publicity (Segerson and Miceli, 1998). The voluntary nature of such environmental initiatives implies that the potential benefits from engaging with the program should compensate for the costs imposed by complying with the new environmental standards or technology; otherwise, the market will choose to preserve the status quo (Alberini and Segerson, 2002).

Segarra-Oña et al. (2012) argue that environmental certification is associated with greater economic revenue, using the case of ISO 14001 certification adoption by the Spanish hotel industry. Interestingly, the study concludes that an influence of the
environmental certification on the bottom line of hotels varies depending on the geographic location of the hotel, and differs significantly for urban, beach, and rural hotels. In this sense, the characteristics of a community (as a geographically bounded area) may moderate the effect that hotel environmental certification has on hotel’s economic performance.

3.4 Voluntary Environmental Programs in Developing Countries

Although firms’ motives for participation in voluntary environmental initiatives may be similar across the world, the challenges and the context these initiatives face may be dramatically different in developing countries as opposed to developed economies. In industrialized countries where advanced technologies are readily available and environmental consciousness amongst both firms and consumers is ubiquitous, voluntary environmental programs often aim at eliciting over-compliance, or compliance beyond existing norms and regulations. At the same time, in the developing world, where compliance often leaves much to be desired, a voluntary approach to environmental regulations sometimes is used as a tool to enhance compliance with the mandatory regulation (Blackman, 2008).

Voluntary environmental initiatives could fill the gap in terms of environmental monitoring and enforcement in developing nations, and to certain extent address the lack of resources, enhance existing regulations, or even be a viable alternative to government regulation (Prado, 2013).

Oftentimes, the limited efficiency of traditional environmental regulations makes pro-active voluntary approaches to environmental policy seem viable and attractive in a developing countries context (Hanks, 2002). The well-known limitations that prevent full
environmental compliance in developing economies include frail institutions and legal systems, political uncertainty, absence of knowledge base and access to technology, and weak industry regulation. Voluntary environmental programs, however, may represent a more flexible path toward environmental compliance in the developing world, and are thought to be able to overcome these limitations (Eskeland and Jimenez, 1992).

Nonetheless, the constraints described above are essentially a “double-edged sword,” as they can also negatively affect voluntary environmental initiatives, especially with respect to eliciting participation. For example, a credible threat of stricter regulations and environmental liabilities is considered one of the key factors that influence firms’ decisions to engage in voluntary programs (Khanna and Anton, 2002). Weak institutions and inconsistent legal enforcement in developing countries can hardly create a credible threat, making the perceived benefits of participation in voluntary environmental initiatives questionable.

However, participation in voluntary environmental programs in developing countries can be driven by factors other than regulatory threat. For example, hotels in Costa Rica, participating in the CST program, appear to be motivated by reasons such as attracting eco-conscience customers, regular monitoring, and industry association membership (Rivera, 2002, 2004).

In fast-growing developing economies, environmental self-regulation may also be spurred by economic globalization and the consequent increase in international stakeholder pressure. For instance, in China, which experienced rapid economic development and inflow of foreign investments over the last 15 years, mandatory environmental regulation often has not been enough to satisfy foreign stakeholders from developed markets, creating
new incentives for firm self-regulation. It appears that multinational ownership and orientation toward international markets elicit environmental management beyond compliance among Chinese companies (Christmann and Taylor, 2001).

As of today, research about voluntary environmental programs in developing countries remains scarce, and the number of comparative studies covering different types of voluntary regulation is even scarcer, making it challenging to draw conclusions as to whether such initiatives actually result in tangible environmental improvements. The lack of scholarly research on these topics is partially due to the difficulties associated with collecting trustworthy consistent data on environmental performance for firms in developing nations. Yet, understanding the effects of voluntary environmental initiatives in the developing world is impossible without such research (Blackman, 2008).

3.5 What are Success Factors for Voluntary Environmental Programs?

Voluntary environmental programs face the same key challenges as any collective action effort: self-selection, free-riding, lack of motivation among participants, and ensuring consistent compliance with the program requirements.

The key to effective design and implementation is defining the incentives for stakeholders to compensate firms for the effort associated with participating in voluntary environmental initiatives in – other words, answering the question “what’s in it for them.” The evidence suggests that successful voluntary environmental programs address these issues by taking into account the industry, market, and institutional context, incorporating different mechanisms and solutions into their design, and adapting at the implementation stage if needed (Potoski and Prakash, 2013).
Another critical issue is introducing an evaluation component into voluntary environmental program design at the initial stages of program development. To assess the real impact of an environmental certification initiative, rigorous control group and counterfactuals need to be designed *ex ante*. Blackman and Rivera (2010) consider different approaches to constructing a credible counterfactual, concluding that quasi-experimental matching appears to be the most widely used method in the existing academic literature on the impact of environmental certification programs.

According to Blackman (2008), the crucial factor for success of voluntary environmental initiatives, especially those in developing countries, is to set clear and tangible targets, define the baseline, and follow through with transparent monitoring and enforcement mechanisms. Without these components, voluntary environmental programs are less likely to succeed and more likely to result in schemes that could be characterized as “green-washing” – in other words, favor participating firms without eliciting real environmental improvements (Blackman, 2008). These findings are in line with those of Prado (2011), who emphasizes that efficient self-regulation in the context of environmental programs can be achieved only when credible and transparent enforcement mechanisms are in place and when compliance is enhanced by a supportive institutional environment.

The somewhat limited impact of many voluntary environmental programs can also be explained by the fact that, while it looks good on paper to be more environmentally friendly, the perceived benefits of participation do not outweigh the costs associated with real technology improvements. In other words, firms may be persuaded to participate in voluntary initiatives by peer pressure, regulatory threats, or good corporate citizenship principles; however, they are often less willing to fully deliver on their commitments and
allocate the needed financial and non-financial resources. This gap between the initial commitment and the actual environmental performance may be explained by the lack of alignment between requirements and standards imposed on companies by voluntary environmental initiatives and firm strategic decision-making processes. Better alignment of environmental standards with the economic incentives that drive firms’ day-to-day operations might result in more robust program design. When economic incentives to reduce pollution beyond compulsory levels for certain industries or segments of the market are in place, voluntary environmental programs may catalyze the adoption of more advanced environmental practices (Koehler, 2007).

Institutional capacity and vision seem to be another set of critical factors for successful self-regulatory initiatives. The institutions in charge of voluntary environmental initiatives try to develop clear, well-defined standards and ensure their uptake and consistent implementation through the dissemination of best practices, providing information and consultancy, and creating tangible incentives for firms to participate. However, despite the best intentions, these institutions are not always prepared to deal with hidden complexity and unobservable factors that strongly influence adoption and compliance amongst firms and industries. This creates a trade-off between the implementation process and achieving business objectives, especially in fields with less observable internal processes and operational drivers. Promoting goal internalization and establishing niche institutions may alleviate this issue, reducing the “mean versus ends” conflict in the process of voluntary environmental program implementation (Prado, 2013).

All in all, the practical implementation and academic research on voluntary environmental programs, despite skepticism, bear promise. It is true that, without
appropriate stakeholder oversight and adequate institutional capacity, such programs sometimes replace real change with a pretense of environmental action. Yet, with efficient stakeholder oversight, impartial monitoring and mechanisms for punishing non-compliance, self-regulatory initiatives represent viable policy solutions paving the way to sustainable development (King et al., 2012).
4. Conceptual Model and Hypotheses

4.1 Conceptual Model

This research draws upon the resource-based view (RBV) theory, differentiation value, and an examination of voluntary environmental programs as measures of environmental performance to develop a model of a resulting price premium.

4.2 Resource-based View (RBV): Why Do Firms Strategically Engage in Achieving Superior Environmental Performance?

Why do firms strategically engage in achieving superior environmental performance? This question can be explored using the resource-based view (RBV) of the firm. The resource-based view was introduced by Penrose (1959) and later supplemented and expanded by Wernerfelt (1984) and Barney (1991). The resource-based view assumes that firms are bundles of heterogeneous resources and capabilities that are imperfectly mobile across firms. Extending this notion, Barney (1991) argues that, if these resources and capabilities are valuable, rare, inimitable, and non-substitutable, they constitute a source of sustainable competitive advantage.

Hart (1995), who was the first to apply the RBV framework in the environmental context, proposes a natural resource-based view of a firm, formulating a theory of competitive advantage based on the firm’s relationship with the natural environment. Hart proposes that environmentally-oriented resources and capabilities can be seen as sources of competitive advantage for certain types of firms. Specifically, if superior environmental performance by a firm is both valuable and difficult to imitate, it can constitute a competitive advantage (McWilliams et al., 2006).
Prominent environmental performance can be hard to imitate or achieve because firms must devote considerable resources to both complying with high environmental standards and signaling good environmental behavior to the market. Furthermore, because additional capital might be needed to generate characteristics associated with environmental performance in a firm, capital costs may be higher (McWilliams and Siegel, 2001). How much a firm must spend to achieve a certain level of environmental performance depends on its internal processes, such as its technology, production cycle, management process, etc., which are not trivial to change. Yet superior environmental performance is a valuable resource for most firms because it is valued by consumers and other market stakeholders, including investors, employees, and communities.

Building on this perspective, actions to improve firm environmental performance may imply additional expenditures. These actions can be viewed as a form of investment in a firm because environmental performance is a mechanism for product differentiation, constituting a source of competitive advantage. Therefore, costs incurred by improving environmental performance “should be considered as a form of strategic investment” (McWilliams et al., 2006: 4). Using cost-benefit analysis, a firm can determine an optimal level of environmental performance, comparing the costs of achieving different levels of environmental performance with the strategic benefits associated with them – i.e., behavior valued by the market. Thus, firms can identify precisely the level of environmental performance for which the marginal increase in revenues (from increased demand) matches the additional costs of resources to provide better environmental performance (McWilliams and Siegel, 2001).
All of this is made possible by the fact that environmental performance is valuable to consumers, and they are willing to pay more for a good or service that includes the attributes of environmentally responsible production and marketing.

To summarize, I use the resource-based view (RBV) to argue that firm environmental performance can be used as a vehicle for product differentiation, a source of competitive advantage and a part of marketing strategy. However, to better establish the mechanism at work in converting environmental performance into price premium, I turn to the conceptual framework of hedonic prices.

4.3 Hedonic Prices: How Environmental Performance Translates into Price Premium

Rosen’s (1974) path-breaking article introduces a model of product differentiation that builds on Lancaster’s (1966) consumer theory. The core assumption of this model is that goods and services available in a market are valued for their specific attributes or characteristics. The first use of a hedonic model to explain the price of differentiated products can be traced back to the 1920s (Kuminoff et al., 2010), but it was Rosen (1974) who first developed the theory, which interprets the additional value obtained in the price function as consumers’ marginal willingness to pay for the attributes in equilibrium. According to Rosen, hedonic prices are defined as the “implicit prices of attributes and are revealed to economic agents from observed prices of differentiated products and the specific amounts of characteristics associated with them. They constitute the empirical magnitudes explained by the model” (1974: 34).
This model thus characterizes the market price of a good or service as a function of the value of the attributes that comprise that product or service (Rosen, 1974; Halvorsen and Pollakowski, 1981; Brown and Rosen, 1982; Cassel and Mendelsohn, 1985).

The *hedonic price model* has been used in different empirical settings, including in the tourism sector (Sinclair et al., 1990; Clewer et al., 1992; Jaime-Pastor, 1999; Espinet et al., 2003; Kuminoff et al., 2010; Chen and Rothschild, 2010). Espinet et al. (2003) find that the size of a hotel, its location, parking space availability, and distance to the beach are all determinants of its room price. In a different study, Kuminoff et al. (2010) use the hedonic model to estimate a premium that customers are willing to pay for staying at certified “green” hotels in the US state of Virginia. To avoid assuming a specific functional form, Kuminoff conducts an internal meta-analysis running 40,000 regressions based on various combinations of hotel specifications, resulting in a green price premium between US $9 and US $26.

The formal *hedonic price model* can be found in Appendix 1. The basic model structure (Espinet et al., 2003; Chen and Rothschild, 2010) consists of, first, characterizing the service offered by a given firm $H$ as a combination of attributes (quality, size, etc.), such that

\[ H_i = (g_i, q_{i1}, q_{i2}, q_{i3}, ..., q_{ik}, ..., q_{im}) \]  

where $i = 1, ..., n$ represents the firm, $g_i$ represents the environmental performance of firm $i$, and $q_{ik}$ ($k = 1, ..., m$) indexes each of its other attributes. Therefore, the hedonic price for
each firm is a function of the market value of the attributes of the service or product offered by this firm:

\[ P_i = P(g_i, q_{i1}, q_{i2}, q_{i3}, ..., q_{ik}, ..., q_{im}) \]  

(2)

Here, the functional form of \( P \) is assumed to be constant across all firms in the market and over time, but the amount of each attribute may vary from one firm to another.

Because this functional form is obtained from the market equilibrium, what we observe is the intersection between demand curves of different customers – each of whom may have different valuations of the attributes that comprise the hedonic price – and supply curves of different firms, which may also have different production functions (Rosen, 1974; Desormeaux and Piguillem, 2003). Consequently, we can estimate how each attribute is valued in the market; however, we cannot extrapolate and distinguish between the supply and demand curves.\(^8\)

Following the same logic, firm environmental performance constitutes one of the attributes comprising the price function. It has a specific valuation by customers, just like other attributes. When modeling demand and supply, we can observe that the market price of a good or service is a function of the market values of the attributes it contains, environmental performance being one of these. Customers are accordingly willing to pay a price premium for a good or service that has the attribute of being produced by a firm with higher environmental performance. Therefore, we can expect to see a positive market

---

\(^8\) An exception to this is the case when customers are identical and the suppliers different, in which case the function observed would be the demand function. Also, if suppliers are identical and customers differ, the function observed would be the supply function. If both the buyers and sellers are identical, then only one combination of attributes would be traded in the market, with no product differentiation (Rosen, 1974).
valuation of a firm’s higher environmental performance. Consequently, my first hypothesis is:

**Hypothesis 1:** Higher firm environmental performance has a positive effect on the price of the good or service offered by the firm.

Figure 1 illustrates the hypothesis proposed.

**Figure 1**

*Conceptual Model for Hypothesis 1*

**Relation between Firm Environmental Performance and Price**

Firm Environmental Performance → Price

4.4 **Community Environmental Performance**

Considered through the lens of the resource-based view, environmental performance of an area/community where a hotel is located may also be perceived as one of the characteristics of the hotel’s services. In Costa Rica, the Blue Flag voluntary certification program may serve as a proxy for the environmental performance of coastal communities.
Scholars have been studying the environmental performance of communities in Costa Rica using the Blue Flag program. Blackman et al. (2014) and Rivera et al. (working paper), focusing on the environmental performance of the community, found that (i) good community environmental performance has a positive effect on new-firm investments and (ii) there are community-level characteristics associated with better environmental performance.

Based on the resource-based view theory and complemented by the study of hedonic prices, we can expect that customers value environmental performance of the community that hosts a hotel. Because Costa Rica is a major eco-tourism destination, many of the tourists who go there place great value on the environment and its conservation. Therefore, it is feasible to assume that a hotel could charge a higher price if located in an area characterized by excellent environmental performance. Building on this idea,

**Hypothesis 2:** Community environmental performance where a firm is located is an attribute that has a positive and statistically significant effect on the firm's prices.

Figure 2 illustrates the hypothesis proposed.

**Figure 2**

*Conceptual Model for Hypothesis 2*

**Relation between Community Environmental Performance and Price**

![Diagram of Conceptual Model for Hypothesis 2]
4.5 Interaction effects between firm environmental performance and community environmental performance: Complements or substitutes?

So far, hypotheses 1 and 2 touch on the separate effects of, respectively, firm and community environmental performance. In the existing academic literature, the research on hedonic prices in the empirical context of the tourism industry operates under the assumption that there is no interaction between attributes of a product or service (Chen and Rothschild, 2010; Thrane, 2007). No existing studies have considered environmental performance of both hotels and the communities in which they are located – measured through environmental certifications or otherwise – as potentially symbiotic attributes.

In this research, I aim to develop a theoretical model to explain the relationship between firm environmental performance and community environmental performance. More specifically, my goal is to explore when they act as substitutes and when as complements. To do so, I build on the previous research on differentiation value and reputation theory. I turn to the framework of ethical consumption of products and services, which has several attributes, to understand the substitution effect. To model the effects of a complementary relationship between firm environmental performance and community environmental performance, I draw upon reputation theory.

4.6 Building on Differentiation Value: Substitution Effect

4.6.1 Ethical Purchase Behavior

The management field has produced a significant amount of research over the years that explores characteristics that contribute to creating unique value and differentiating
products and services from similar ones offered by competitors (Smith, 1956; Rosen, 1974; Day and Wensley, 1988). While the majority of researchers agree on the importance of ethical and environmental factors for creating differentiation value characteristics (Strong, 1996), there is still no consensus about how to systematically measure and evaluate the behavior of “ethical” consumers (Carrigan and Attalla, 2001; Vermeir and Verbeke, 2006).

It has been particularly challenging to measure the propensity to consume green products and services. Strong (1997), for example, outlines impediments to linking fair trade principles to consumer purchasing behavior.

4.6.2 Luxury Goods versus Commodities

Additionally, difficulties in measuring the behavior of the consumers of green products increase when it comes to luxury goods. Little research has been conducted on ethical luxury consumption (Wiedmann et al., 2009). Davies et al. (2012) finds the propensity to consider ethics when purchasing luxury goods is lower than with commodity purchases. I hypothesize that this is the case because luxury goods are complex and have multiple characteristics, or “attributes” in hedonic price terminology. Lancaster (1966) was the first to argue that consumers buy products “not in themselves, but for the characteristics that they bundle up” (Vickers and Renand, 2003). In addition, luxury products are often symbols of personal and social identity (Vickers and Renand, 2003). The analysis of unique value, self-identity value, and distribution channel preferences may help explain ethical behavior in the context of luxury goods purchases.

Building on the theory of luxury consumption behavior (Wiedmann et al., 2009), we can expect that customers value firm environmental performance as a mechanism to
distinguish themselves from their peers, to impress others and to create a favorable social image. Self-identity value “assesses the symbolic meaning of luxury products for the consumer’s identity” (Wiedmann et al., 2009: 637).

Today, consumers face more product choices than ever before. They also on average enjoy better education and greater wealth, and have higher brand consciousness (Harrison, 2003). In the research focusing on ethical goods consumption, ethical consumer behavior is defined as “decision-making, purchases and other consumption experiences that are affected by the consumer’s ethical concerns” (Cooper-Martin and Holbrook, 1993: 113).

4.6.3 Attitude-Behavior Gap

However, research on ethical consumer behavior has led scholars to discover an attitude-behavior gap (Roberts, 1996; Carrigan and Attalla, 2001; Vermeir and Verbeke 2006; Davies et al., 2012). In other words, when observed in an empirical setting, consumers’ ethical beliefs are not consistently mirrored in their buying behavior. Davies et al. (2012) highlight that, while 30 percent of consumers self-identify as ethically conscious buyers, this ethical consciousness does not appear to have the same level of intensity in their actual consumption, producing an attitude–behavior gap.

Some researchers opine that the attitude-behavior gap is caused by estimation bias or research error because the people interviewed might feel pressured to answer in a way they think is socially acceptable (Randall and Fernandes, 1991; Chung and Monroe, 2003; Auger and Devinney, 2007). Another research error may be selection bias in the samples used in the studies, because people who care more about ethical issues would be more
likely to respond to surveys and participate in experiments (Chung and Poon, 1994). Finally, Davies et al. (2012) propose another explanation: the reason for the attitude-behavior gap may be related to barriers in cognitive decision-making.

The attitude-behavior gap makes it difficult to measure actual ethical consumer purchase behavior through surveys (De Pelsmacker et al., 2005), as “it is extremely difficult to find out what truly affects consumers’ willingness to pay a premium for socially responsible products” (Ha-Brookshire and Norum, 2011: 344).

While there are consumers willing to pay a premium for ethical products, and Auger and Devinney (2007) and Strong (1996) affirm that ethical buyers follow social and environmental principles, few studies have investigated the consumer attitude-behavior relationship in complex goods, especially in ethical consumption (Ha-Brookshire and Norum, 2011). In fact, most ethical consumption research has analyzed commodities (Bezençon and Blibi, 2010), in which there is little differentiation among the goods offered in the market. For instance, “fair trade” goods are principally coffee, cocoa, and other commodities.

4.6.4 Recent Shifts

Recently, a growing propensity to “buy green” has been documented. For example, Aguilar and Vlosky (2007), in a study comparing data collected ten years apart (1995 and 2005), examined willingness to pay of U.S. consumers for four wood products, finding a strong relationship between consumer income and willingness to pay, more so in the latter year. They also found widespread belief that product certification can help diminish deforestation and increased willingness to pay for certified products.
However, there remains the attitude-behavior gap on environmental issues (Young et al. 2010). Of consumers who report they are strongly concerned about the environment, 30 percent do not translate this into their actual purchases. Young et al. (2010) and Carrington et al. (2010) suggest complexity is a significant barrier, and suggest greater standardization of product labeling (Young et al., 2010).

4.6.5 The Fluctuating Role of Uniqueness Value

In locations where community environmental performance is low, good (but not outstanding) firm environmental performance would be enough to give customers a uniqueness value. Verhallen (1982), Lynn (1991), Wiedmann et al. (2009) and Pantzalis (1995) understand uniqueness value as an observed exclusivity and distinctiveness of a product or service that increases consumer desire for it.

However, in communities with good environmental performance, good but not outstanding firm environmental performance would not be enough to provide this uniqueness value, especially because customers who go to firms situated in communities with good environmental performance can be more sophisticated and ask for more. For example, Bezençon and Blibi (2010) say that, when there is higher ethical product-decision involvement, more customers select specialized distribution channels. Thus, customers who go to communities with good environmental performance would be less easily impressed by an average level of community environmental performance.

Therefore, I expect that, for good but non-exceptional levels of firm environmental performance, community and firm environmental performance will act as substitutes for each other because a second certification does not offer a uniqueness value to customers.
The only exception would be if a firm achieves outstanding environmental performance, which could give a uniqueness value even in a community with good environmental performance.

This model is consistent with a complex market in which oversimplification in quantitative analysis may be contributing to an attitude-behavior gap observed by several scholars. The green luxury market is not a green commodity market. The green luxury market requires much more complex modeling because simplifications may gloss over important nuances. It is necessary to focus more on attributes because the goods and services are heterogeneous. Hypothesis 3 states:

**Hypothesis 3:** Community environmental performance moderates the relationship between firm environmental performance and price of its product/service, in such a way that the positive effect of the firm’s good environmental performance on price is weaker if a firm operates in a greener community.

Thus, firm environmental performance and community environmental performance behave as substitutes when a firm achieves a satisfactory, but not superior, level of environmental performance.
Figure 3 illustrates the hypothesis proposed.

Figure 3

Conceptual Model for Hypothesis 3

Moderation Effect

Community Environmental Performance

Firm Environmental Performance

Price

4.7 The Interaction between Hotel Environmental Performance and Community Environmental Performance: Complementary Effect Building on Reputation Theory

Hypotheses 1 and 2 explain individual effects of community and firm environmental performance. Hypothesis 3 explains a substitution effect between the two kinds of environmental performance. However, I also expect to find a compounded value of the interaction of these two environmental performances (the individual effects of CST and Blue Flag certifications). It is plausible to postulate complementarity between the two certifications: tourists may be interested in a vacation experience in an environmentally friendly area without distinguishing between the hotel environmental performance and the community environmental performance.

An alternative explanation could be that customers value not only the environmental performance of a hotel or community but also the combination of both as a
sign of environmental reputation. A useful theoretical model to explain environmental reputation can be found in Rao (1994), in which reputation is constructed on consistent “victories.” Rao (1994) finds evidence that suggests that victories in certification contests are credentials that enable firms to acquire reputation. He argues that, in a world of imperfect information, consumers rely on proxies or signals to make rational assumptions about firm intentions and behaviors. Reputation models assume a strong relationship between consistent past actions and future expectations.

King and Whetten (2008) distinguish between legitimacy and reputation. Even though both are perceptions of approval of an organization’s actions, reputation implies more. These authors define legitimacy as a perception that organizations conform to standards that are widely taken for granted. Reputation is defined rather as a perception that organizations are distinctive in a positive way within their peer group (King and Whetten, 2008). That means that, even though the two concepts are related, legitimacy is focused on whether or not a company complies with minimum standards while reputation is granted to companies viewed relatively favorably compared to an ideal standard.

I argue that reputation is a key concept. Companies with good reputations, which distinguish themselves from their peers by exhibiting outstanding behavior, will be able to do efficient contracting and therefore obtain a price premium.

Accountability standards that define norms of ideal behavior for a particular category of company are one basis of perceptions that build reputation (see King and Whetten, 2008, for an analysis of reputation and organizational identity). Becoming CST-certified allows a firm to be part of a select group but the certification is not enough to distinguish the hotel from its competitors. Becoming CST-certified is only one victory in
Rao’s terminology. I argue that having both CST and Blue Flag certifications enhances firm reputation and reduces information asymmetry between clients and hotels.

Assuming that customer ratings represent a valid reflection of customer perception, and ultimately - customer valuation of a product or service, the difference in customer ranking between certified and non-certified hotels can, to some extent, reveal the additional value that certification provides for firms. Peiró-Signes et al. (2014) analyze the impact on Spanish hotels of the ISO 14001 certification, finding that guest generally tend to rate certified hotels higher than non-certified. This effect is more salient in four-star level hotels, and almost insignificant amongst five-star luxury hotels. These findings, in an interesting way, confirm the theoretical logic of this study: for four-star hotel the certification may represent a new valuable attribute that enhances the reputation of a hotel in the eyes of consumers; in case of the five-star luxury hotels, a certain level of environmental performance is expected, therefore ISO 14001 does not add any differentiation or uniqueness value.

Reputation is not based on a single piece of evidence at a single moment of time. Reputation is socially constructed through an accumulation of victories (such as favorable certification results) over time and across multiple indicators. Thus, I expect that hotels that participate in both the CST and Blue Flag programs achieve stronger reputations, being more accepted into the organizational field in general, and by consumer associations, international tourism agencies, and tourists in particular. I hypothesize that these stronger reputations allow hotels to charge higher prices.

I expect to see a positive interaction between the environmental performance of a firm and the environmental performance of its community. In the presence of superior
community environmental performance, I expect a stronger positive relationship between the environmental performance of the firm and the price of the service. It would be necessary for the firm itself to achieve a superior environmental performance in order to obtain differentiation value and in this way obtain a premium for reputation.

Consequently, my last hypothesis is:

**Hypothesis 4:** A community’s environmental performance moderates the relationship between a firm’s environmental performance and its product/service prices, in such a way that the positive effect of the environmental performance of the firm in the price of the good or service offered is stronger in firms operating in greener communities, but only if the firm itself achieves superior environmental performance, obtaining in that way a premium for reputation.

Figure 4 illustrates the hypothesis proposed.

**Figure 4**

**Conceptual Model for Hypothesis 4**

**Moderation Effect**

Community Environmental Performance  
Firm Environmental Performance  
Price
5. Data and Methodology

5.1 Data Sources

To conduct the panel estimation, I used information from multiple sources. I obtained CST certification information from the official web page of the CST program (http://www.turismo-sostenible.co.cr). To fill in information gaps for particular years, hotels were directly contacted by email and phone (in Spanish in most cases, when managers or owners were Spanish speakers, and in English in the cases when they were Americans). Information was double checked at https://archive.org, which includes information published on the official webpage of the CST program for the multiple days recorded each year between 2000 and 2014. For Blue Flag program certification data, I used the publicly available information at the program's web site, banderaazulecologica.org.

Other hotel-related data is from the National Tourism Institute (ICT, 2008), the Digital Atlas of Costa Rica (ITCR, 2008) and the 2000 National Census (INEC, 2000). Information from those sources was combined through a joint effort by Allen Blackman, María Angélica Naranjo, Juan Robalino, Francisco Alpízar, Jorge Rivera, and myself.

First, the ICT data for each year from 2001 to 2008 was combined to form the panel, and a process was developed through several iterations to confirm the identity of hotels across time when hotel name variations occurred. Both by algorithm and a manual search, it was confirmed that I was following the same hotels across years, with only small variations in the name (e.g., “Hotel XX” versus “H. XX”), with the address and phone number not changing. All decisions in the merge were reviewed by at least two people. In
cases where some uncertainty remained after this process, hotels were contacted and asked for clarification. Hotels without enough information were discarded. Then, by using ArcGIS, the data from the other two sources was merged.

The panel contains all hotels registered with the Ministry of Tourism from 2001 through 2008, which includes hotels in all the provinces of Costa Rica. The fact that this registration is required to obtain tax incentives increases the probability that almost all larger and better-quality hotels were included. However, some smaller and lower-quality hotels may not be registered at the Ministry. Additionally, due to missing data in some of the variables for particular observations, approximately 4 percent of the original data is not used in the study. My panel is composed of approximately 2,600 hotel-year observations\(^9\), with some 14 percent of the hotels studied being participants in the CST program.

### 5.1.1 Dependent Variable

The dependent variable is the average double-room high-season price per night. This type of room is not only the most common type of room; it is also the type of room that has the least variation in amenities, making comparison easier between hotels. All prices collected are from the same (high) season to control for seasonal effects on room prices. High season is also when prices are more standard and vary less from special discounts.

\(^9\) Initially the data collected for this study included over 3,500 hotel-year observations; after reviewing all the characteristics of the data set with respect to the missing parameters (price information for specific years, availability of double room service, etc.), the data was narrowed down to 2,607 hotel-year observations, which still covers roughly 75% of all the hotels registered in Costa Rica.
5.1.2 Independent Variables

**Variable: Hotel Environmental Performance**

My first independent variable is hotel environmental performance. Environmental performance of the firm is one attribute of the service offered and therefore positively related to the price of that service. To operationalize this, hotel achievement of CST certification should have a positive effect on the price of the service offered. Hypothesis 1 was developed without excessively stretching Hart’s original (1995) view of environmental resources as a source of sustainable advantage.

To measure the effect of hotel CST certification on price, I use dummy variables for level of participation of the hotel in the CST program. We can assume that hotels that have not applied for certification through the time period covered by this study are hotels with the worst environmental ranking. However, this is an assumption that I cannot test.\(^{10}\)

The green-leaf ranking values the four categories using a minimum function. The scores obtained in each of four categories are used to determine total score, using the lowest categorical score to determine the final number of green leaves. There is no substitutability between categories. This function represents a limiting case of the constant elasticity of substitution production function and strongly encourages hotels to focus on their weakest category to advance in the ranking. Therefore, by using this ranking, I am assuming the importance of having a balance among the four fundamental aspects evaluated in the CST ranking.

\(^{10}\) It is possible that there are hotels that participate in the CST program and have zero green leaves, but I cannot distinguish them from the non-participants.
Variable: Community Environmental Performance

The second independent variable is the environmental performance of communities in which hotels are located. I hypothesize that hotel location in a community certified by the Blue Flag program has a positive and statistically significant effect on hotel price (Hypothesis 2). To measure that, I use a dummy variable that takes the value of one if the hotel is 15 kilometers or closer to a community that has obtained Blue Flag certification. Here we can also conjecture that communities that have not applied for certification throughout the time period covered by this study are the ones with the worst environmental rankings.

5.1.3 Interaction Effect

As explained in section III, hotels probably engage in the CST program as a differentiation strategy for tourists that will reward hotels’ environmentally friendly practices as evidenced by a large number of CST “green leaves,” which few hotels have obtained. This is consistent with environmental performance being a valuable market attribute that constitutes a source of competitive advantage.

This situation is consistent with theories of luxury consumption behavior in value-based segmentation (Wiedmann et al., 2009), in which consumers try to distinguish themselves from their peers “to impress others” and “create a favorable social image.”

Customers that go to non-Blue Flag-area hotels are willing to pay for a CST-certified hotel that has received a minimum of green leaves. However, in Blue Flag-certified areas, these consumers will require a CST-certified hotel with more green leaves, to the point where these generate an exclusivity premium for the hotel.
Payment of price premiums for superior and rare environmental performance would be consistent with the existence of a competitive advantage in hotels’ outstanding environmental performance, which exhibits inimitable and rare qualities, establishing a relationship with RBV theory thanks to the hedonic price formulation.

Evidence found by Rivera (2002) is consistent with such a non-linear relationship. Rivera (2002) finds that basic CST program participation is insufficient to cause significant price premiums. However, that evidence includes findings that hotels with an environmental performance of three or more green leaves do obtain a price premium.

Hypothesis 3 and 4 are intended to explore the form of this relationship without assuming it is linear. Thus, the dummies for CST ranking would be different for 1, 2, 3 and 4-5 green leaves. My last independent variables are interaction effects between CST and Blue Flag certifications for different CST certification levels. Interaction dummies also reflect the spectrum for hotels in Blue Flag-certified areas with the CST certification.

5.1.4 Control Variables

To isolate the effect of independent and interaction variables on the dependent variable, I use several control variables.

These include, first, the province in which the hotel is located (San José, Alajuela, Cartago, Heredia, Guanacaste, Puntarenas, or Limón). I create a dummy variable for each province except Cartago, which instead I use as a baseline, and in that way avoid having an over-specified model. (Figure 2 presents a map of the provinces of Costa Rica.)
Second, I create a variable that takes the value of the hotel’s general rating in number of stars to control for general quality and comfort. Third is a variable that has the value of the number of employees to control for size. Finally, there are year dummies.

In my estimations, I use the natural log transformation for the following two variables: price of a double room and number of employees. This is because both of these variables have a positive skew: the right tail is longer, the mass of the distribution is concentrated on the left, and these have relatively few high values. Using the natural log, I obtain a more normal distribution for these variables.
5.2 Methodology

To test my hypotheses and estimate whether the CST certification is associated with higher prices, I use propensity score matching with mixed generalized panel regression. This methodology best serves the purposes of this research because it allows me to determine the counterfactual: the price as it would have been without the CST certification. Once the estimates for the counterfactual are determined, the actual prices can be compared with them.

If participation in the CST program were random across all hotels in Costa Rica, a straightforward comparison between the prices of non-participants with those of CST-certified hotels would yield an adequate estimation of the price effects of the environmental certification. However, hotel participation in environmental certification programs such as CST is not random. On the contrary, some hotels have a predilection to self-select into voluntary certification programs (Tashman and Rivera, 2010). Unless corrected, this self-selectivity may lead to biased estimates of the program benefits when the price effects for the treatment group (participants in the voluntary environmental certification program) are simply compared with the untreated (non-participants) (Heckman, 1979).

Propensity score matching (Rosenbaum and Rubin, 1983) is a methodology which allows me to correct for the self-selection bias by contrasting the hotels participating in the CST program with a control group of similar hotels that are not CST-certified (Dehejia and Wahba, 1999; Tashman and Rivera, 2010). This control group of hotels has observable characteristics that, on average, match those of the treatment group (the hotels participating in the CST program).
To test the effect of environmental performance, Rivera (2002) uses a recursive two-stage estimation method that corrects for self-selection bias and provides consistent estimates of participation benefits. Here, I plan to apply an alternative estimation method. Using a propensity score matching method, I correct for sample selection bias due to observable differences between treatment and comparison groups (Dehejia and Wahba, 2002). By doing this, I am following the example of Blackman et al. (2014) for the Blue Flag program in Costa Rica, Blackman et al. (2010) for a voluntary environmental program in Mexico, and Tashman and Rivera (2010), who use a propensity score matching method to study the association between corporate social performance practices and membership in the Businesses for Social Responsibility organization in the US.

In the non-experimental comparison group, the estimate of a causal effect obtained by comparing a treatment group could be biased because of the self-selection problem (Dehejia and Wahba, 2002). To avoid this problem, I match treatment units with comparison units that are similar in terms of their observable characteristics. After the units are matched, the unmatched comparison units are discarded and not directly used in estimating the treatment impact. This establishes two comparable groups, enabling more accurate comparison between the hotels.

I use a propensity score matching method instead of a recursive two-stage estimation method because the former has been demonstrated to perform better than the latter in certain settings (Dehejia and Wahba, 1999). The propensity score matching approach is gaining in popularity for causal inference across disciplines including economics, public health, psychiatry, and health and public policy, and has recently been
recommended by leading development researchers as a sensible approach (Hill et al., 2005).

The recursive two-stage estimation method relies on the properties of a variable assumed to be exogenous (the instrument). In this approach, the instrument has to satisfy certain properties to produce valid causal estimates. The instrument must be sufficiently predictive of the treatment, randomly assigned with respect to the outcomes, and must affect the outcomes only through its effect on the treatment. If these criteria are not met, the treatment variable cannot be used to identify an unbiased estimate of the causal effect of the treatment for a particular sub-population of the sample. For that reason, I will use a propensity score matching method as an alternative to the Rivera (2002) approach for selection bias because it appears to be more appropriate, given the empirical difficulty of trusting in a valid instrument. In sum, introducing matching propensity score methodology in measuring the market value of participating in a voluntary environmental program will allow me to obtain results more robust than can be expected from other methodologies.

5.2.1 Implementation of the Propensity Score Matching Methodology

Following the propensity score matching procedure, I first run a probit regression. In the context of this study, probit regression allows me to determine the probability of participation in a CST program (propensity score) for the hotels based on their observable characteristics such as number of employees (proxy for size), number of hotel “stars,” and geographical location.

Second, following Dehejia and Wahba (1999), I use the probit regression results to construct the control group by matching CST-certified hotels with their non-certified peers that have almost the same probability of participating in the CST program (in other words,
have identical or very similar propensity scores). To do so, I apply the nearest-neighbor method with a caliper tolerance range restriction of 0.001 to identify four non-CST participating hotels, which have the closest probability of participation in the program, for each CST-certified hotel.

Third, I use the balance table obtained with the probit regression in the propensity score matching to compare CST participants with non-participants in the two following ways: (i) directly from the sample (unmatched hotels), and (ii) after the propensity matching (comparing hotels with similar probabilities of participating in the program). I expect that the hotels in the treated and control groups are, on average, different before the propensity matching; after the propensity matching procedure, the two groups are expected to be more similar.

In the last step of implementation of the propensity score matching methodology, I perform a linear regression using the propensity score matching weights, with the natural log of the price of a double room in high season as the dependent variable. There, in line with the hypotheses outlined earlier, I expect to find a statistically significant positive relationship between:

- Participation in the CST program and the price of a double room in high season;
- Participation of a community in the Blue Flag Program and the price of a double room in high season; and
- The price of a double room in high season and the participation of the hotel and the host community in the CST and Blue Flag programs, respectively (i.e., the interaction of the two certifications).
I make an explicit assumption that non-participant hotels have a poorer environmental performance than participant hotels.

5.2.2 Qualitative Methodology

Some relevant questions cannot be answered with quantitative data. To complement the first objective of this research, I add qualitative analysis that explores some of the politics and dynamics concerning why managers and owners care about hotel environmental performance and why they applied for CST certification. I am also interested in understanding why people participate in the Blue Flag and similar programs and why some of these activities are successful and some not. To conduct this part of the research, I traveled to Blue Flag and non-Blue Flag communities in Costa Rica and performed nine interviews with hotel managers and owners, and with members of Blue Flag committees. This enabled me to compare certified communities with those that failed to obtain certificates or even to form a qualifying association to apply for the Blue Flag program. The Interviewees Table shows geographic distribution of the hotels and communities that were interviewed for the qualitative part of this research.
Interviewees Table

Distribution of Interviewees

<table>
<thead>
<tr>
<th>Interview</th>
<th>Participant in Blue Flag</th>
<th>Participant in CST</th>
<th>Participant in the committee</th>
<th>Beach</th>
<th>No beach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>X</td>
<td>*</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Atlantic region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>7</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Center region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>9</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*Former participant in the Blue Flag Program.

Five interviews were conducted in the Pacific area of Costa Rica, two in the mountainous region in the center of the country, and two in the Caribbean region of Costa Rica. The interviews had a semi-structured format, generally starting by asking about the general situation in Costa Rican tourism and then moving to more specific topics regarding the industry, their businesses and communities, environmental topics, and program participation. Interviews lasted between one and three hours. Follow-up questions after the day of the interview were asked in a second interview or by email. For the hotel-based interviews, I asked about occupancy rates, prices, marketing strategies, and the general financial condition of the hotel, and then asked about CST, Blue Flag, and other environmental topics. A similar structure was followed in the interviews with members of Blue Flag committees that were not hotel representatives, but in those cases the interviews
extended more into topics of civil society, community, and committee relationships with local governmental authorities.
6. Quantitative Results

In this chapter, I start by presenting my descriptive statistics, eight years of sample data. After that, I present the results of the Propensity Score Matching panel estimation.

6.1 Descriptive Statistics

In this section, I present the descriptive statistics for my eight-year panel estimation. Here we see the raw data: how expensive on average are rooms in hotels with different levels of CST certification and at different distances from Blue Flag-certified locations.

6.1.1 Hotels and the CST program

Table 1 presents the frequency distribution of the population of registered hotels by CST certification and the number of green leaves obtained by participant hotels (this first table shows the total of hotel-year observations).

Table 1

Frequency Distribution for Hotel-Year Observations CST Certification

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number of Hotel-year observations</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CST-Certified</td>
<td>367</td>
<td>14.1%</td>
</tr>
<tr>
<td>Non CST-Certified</td>
<td>2240</td>
<td>85.9%</td>
</tr>
<tr>
<td>Total</td>
<td>2607</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Even though there are hotels at all levels of CST certification, which ranges from one through five green leaves, very few hotels achieve four or five green leaves. Because of that, I follow the example of Rivera (2002) and aggregate the hotels for these two levels of certification.

Table 2 presents the averages for variables of interest by CST status. Here we can see that CST participants have, on average, more employees and better star classifications.

<table>
<thead>
<tr>
<th>Variable</th>
<th>All</th>
<th>No CST</th>
<th>CST</th>
<th>one green leaf</th>
<th>two g. leaves</th>
<th>three g. leaves</th>
<th>four &amp; five g. leaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>2607</td>
<td>2240</td>
<td>367</td>
<td>89</td>
<td>125</td>
<td>108</td>
<td>45</td>
</tr>
<tr>
<td>Price double room (in 2008 dollars)</td>
<td>82.89</td>
<td>79.16</td>
<td>105.7</td>
<td>96.01</td>
<td>100.17</td>
<td>102.3</td>
<td>148.37</td>
</tr>
<tr>
<td>Distance to a Blue Flag community (in km)</td>
<td>32.85</td>
<td>32.37</td>
<td>35.78</td>
<td>27.42</td>
<td>35.56</td>
<td>42.78</td>
<td>36.11</td>
</tr>
<tr>
<td>Dummy Blue Flag (15 km or less)</td>
<td>0.38</td>
<td>0.39</td>
<td>0.34</td>
<td>0.56</td>
<td>0.37</td>
<td>0.2</td>
<td>0.16</td>
</tr>
<tr>
<td>Number of employees</td>
<td>33.01</td>
<td>29.09</td>
<td>56.91</td>
<td>36.84</td>
<td>56.19</td>
<td>75.97</td>
<td>52.84</td>
</tr>
<tr>
<td>Number of stars</td>
<td>2.61</td>
<td>2.5</td>
<td>3.25</td>
<td>3.18</td>
<td>2.99</td>
<td>3.44</td>
<td>3.69</td>
</tr>
<tr>
<td>Province one San José</td>
<td>0.23</td>
<td>0.23</td>
<td>0.22</td>
<td>0.16</td>
<td>0.22</td>
<td>0.33</td>
<td>0.07</td>
</tr>
<tr>
<td>Province two Alajuela</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
<td>0.18</td>
<td>0.11</td>
<td>0.24</td>
</tr>
<tr>
<td>Province three Cartago</td>
<td>0.01</td>
<td>0.01</td>
<td>0.04</td>
<td>0.07</td>
<td>0.02</td>
<td>0.04</td>
<td>0</td>
</tr>
<tr>
<td>Province four Heredia</td>
<td>0.06</td>
<td>0.05</td>
<td>0.15</td>
<td>0.03</td>
<td>0.14</td>
<td>0.22</td>
<td>0.24</td>
</tr>
<tr>
<td>Province five Guanacaste</td>
<td>0.21</td>
<td>0.23</td>
<td>0.15</td>
<td>0.25</td>
<td>0.22</td>
<td>0.04</td>
<td>0</td>
</tr>
<tr>
<td>Province six Puntarenas</td>
<td>0.27</td>
<td>0.28</td>
<td>0.21</td>
<td>0.3</td>
<td>0.14</td>
<td>0.16</td>
<td>0.36</td>
</tr>
<tr>
<td>Province seven Limón</td>
<td>0.05</td>
<td>0.05</td>
<td>0.07</td>
<td>0.03</td>
<td>0.06</td>
<td>0.1</td>
<td>0.09</td>
</tr>
</tbody>
</table>
Interestingly, the average number of hotel employees achieving four or five green leaves is 53, less than the average for the hotels that achieve three green leaves. One reason is that a significant segment of hotels with superior environmental performance are medium-sized boutique hotels that do not belong to a big hotel chain.

There are no hotels with four or five green leaves in two provinces: Cartago and Guanacaste. A plausible explanation is that Cartago is the province of Costa Rica that draws the fewest tourists. On the other hand, Guanacaste is a region very well-known for its big resorts, but it has fewer forest areas and natural attractions compared with other provinces that include well-known national parks.

Table 3 shows the dynamics of hotel participation in the CST program and the level of environmental performance of the participants over eight years.

Table 3

<table>
<thead>
<tr>
<th>Number of green leaves</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>13</td>
<td>16</td>
<td>16</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>14</td>
<td>21</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total CST</td>
<td>41</td>
<td>44</td>
<td>44</td>
<td>36</td>
<td>39</td>
<td>43</td>
<td>50</td>
<td>70</td>
</tr>
<tr>
<td>Non CST</td>
<td>236</td>
<td>242</td>
<td>257</td>
<td>274</td>
<td>297</td>
<td>309</td>
<td>301</td>
<td>324</td>
</tr>
<tr>
<td>Total</td>
<td>277</td>
<td>286</td>
<td>301</td>
<td>310</td>
<td>336</td>
<td>352</td>
<td>351</td>
<td>394</td>
</tr>
<tr>
<td>Percentage CST</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
<td>14%</td>
<td>18%</td>
</tr>
</tbody>
</table>
6.2 Hotels and the Blue Flag Program

How close to a Blue Flag area do hotels have to be to be perceived as a “hotel in a Blue Flag area?” The answer is not obvious and has to be answered empirically. Table 4 shows distribution of hotel-year observations by proximity to a Blue Flag area. The distance was measured in a straight line from the center of the Blue Flag community to the hotel, using GPS coordinates. Most of the hotels are relatively close to the center of a Blue Flag area (less than 10 kilometers) or further than 15 kilometers. I used 15 kilometers as the rough boundary between being in a Blue Flag area and not. A robustness test was conducted and the results of my estimation do not change if I use 10 or 20 kilometers as the limit. This division is also consistent with what interviewees considered the Blue Flag distance range.

Table 4

<table>
<thead>
<tr>
<th>Distance to a Blue Flag beach</th>
<th>Number of hotel-year observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>D&lt;=1</td>
<td>626</td>
</tr>
<tr>
<td>1&lt;D&lt;=5</td>
<td>443</td>
</tr>
<tr>
<td>5&lt;D&lt;=10</td>
<td>37</td>
</tr>
<tr>
<td>10&lt;D&lt;=15</td>
<td>12</td>
</tr>
<tr>
<td>15&lt;D&lt;=20</td>
<td>90</td>
</tr>
<tr>
<td>20&lt;D&lt;=30</td>
<td>71</td>
</tr>
<tr>
<td>30&lt;D&lt;=50</td>
<td>502</td>
</tr>
<tr>
<td>50&lt;D</td>
<td>826</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2607</strong></td>
</tr>
</tbody>
</table>

Similar to the observed trend for CST participation in Table 3, Table 5 shows that the number of hotels in a Blue Flag area has grown during the period of the study. However,
hotels close to a Blue Flag area are at a relatively stable 35-39 percent proportion of all sample hotels.

Table 5

Number of Hotels 15 Kilometers or Closer to the Center of a Blue Flag Area, By Year

<table>
<thead>
<tr>
<th>Year</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Blue Flag</td>
<td>173</td>
<td>176</td>
<td>187</td>
<td>203</td>
<td>205</td>
<td>216</td>
<td>213</td>
<td>239</td>
</tr>
<tr>
<td>Blue Flag</td>
<td>104</td>
<td>110</td>
<td>114</td>
<td>107</td>
<td>131</td>
<td>136</td>
<td>138</td>
<td>155</td>
</tr>
<tr>
<td>Total</td>
<td>277</td>
<td>286</td>
<td>301</td>
<td>310</td>
<td>336</td>
<td>352</td>
<td>351</td>
<td>394</td>
</tr>
<tr>
<td>Percentage Blue Flag</td>
<td>38%</td>
<td>38%</td>
<td>38%</td>
<td>35%</td>
<td>39%</td>
<td>39%</td>
<td>39%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Chart 1

Proportion Hotels CST-Certified/ Located Near Certified Blue Flag Areas

Table 6 presents average values for variables of interest by hotel Blue Flag location status. As shown, hotels close to a Blue Flag area are similar as a group in size and number
of stars to hotels far from Blue Flag areas. However, the closer hotels have on average higher prices. (Note that this study considers only the beach Blue Flag areas, which were almost all the Blue Flag areas for a large part of the time frame; it is obvious that provinces not located near the coast do not have hotels close to beach Blue Flag areas.)

Table 6
Averages for Variables of Interest by Hotel Blue Flag Location Status

<table>
<thead>
<tr>
<th>Variable</th>
<th>All</th>
<th>No Blue Flag</th>
<th>Blue Flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>2607</td>
<td>1612</td>
<td>995</td>
</tr>
<tr>
<td>Price double room (in 2008 US dollars)</td>
<td>82.89</td>
<td>76.62</td>
<td>93.06</td>
</tr>
<tr>
<td>Average Distance to the center of a Blue Flag community (in kilometers)</td>
<td>32.85</td>
<td>50.84</td>
<td>3.70</td>
</tr>
<tr>
<td>Dummy Blue Flag (15 km or less to the center of the community)</td>
<td>0.38</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Number of employees</td>
<td>33.01</td>
<td>33.63</td>
<td>32.01</td>
</tr>
<tr>
<td>Number of stars</td>
<td>2.61</td>
<td>2.63</td>
<td>2.57</td>
</tr>
<tr>
<td>Province one San José</td>
<td>0.23</td>
<td>0.37</td>
<td>0.00</td>
</tr>
<tr>
<td>Province two Alajuela</td>
<td>0.16</td>
<td>0.25</td>
<td>0.00</td>
</tr>
<tr>
<td>Province three Cartago</td>
<td>0.01</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Province four Heredia</td>
<td>0.06</td>
<td>0.10</td>
<td>0.00</td>
</tr>
<tr>
<td>Province five Guanacaste</td>
<td>0.21</td>
<td>0.10</td>
<td>0.40</td>
</tr>
<tr>
<td>Province six Puntarenas</td>
<td>0.27</td>
<td>0.10</td>
<td>0.54</td>
</tr>
<tr>
<td>Province seven Limón</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>
6.3 CST and Blue Flag program

Table Seven provides a detailed breakdown of hotel location (in kilometers from the center of a Blue Flag community) by CST certification status, including number of leaves awarded. This table shows that the natural division of the hotels around 15 kilometers from a Blue Flag community, as observed in Table 3, becomes more clear when we see the detailed table that takes into consideration the CST status of the hotels.

Table 7

Number of Hotel-Year Observations by Distance to Blue Flag Beaches and Number of CST Green Leaves

<table>
<thead>
<tr>
<th>Number of green leaves</th>
<th>Number of hotels by distance to a BF beach (in kilometers)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D&lt;=1</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Total CST</td>
<td>79</td>
</tr>
<tr>
<td>Non CST</td>
<td>547</td>
</tr>
<tr>
<td>Total</td>
<td>626</td>
</tr>
</tbody>
</table>

Total of CST hotels at that range

|                        | 0.13  | 0.12   | 0.05     | 0         | 0         | 0.03      | 0.17      | 0.17  | 0.14 |

Chart 2 is designed to show dispersion of the sample’s double-room prices per night. The average price of a double hotel room corrected for inflation stayed relatively unchanged without significant variation during the eight years of this study. This apparent stability contrasts with the divergences of such prices within segmented sub-categories.
Table 8 illustrates the evolution of peak-season double-room hotel prices across the years of the study period. All prices are in US dollars and were corrected for US inflation to make them comparable in real terms. Hotel price trends reflected in the data are also presented graphically in Chart 3. The hotels that are neither certified by the CST program nor located near a Blue Flag area have, on average, consistently lower prices each year than CST-certified hotels that are in Blue Flag areas.
Table 8

Hotel Price Trends by CST and Blue Flag Certification

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>CST</td>
<td>114.44</td>
<td>109.44</td>
<td>106.21</td>
<td>103.68</td>
<td>103.64</td>
<td>97.58</td>
<td>102.81</td>
<td>107.14</td>
</tr>
<tr>
<td>No CST</td>
<td>80.96</td>
<td>81.65</td>
<td>78.58</td>
<td>79.16</td>
<td>78.41</td>
<td>78.9</td>
<td>78.21</td>
<td>78.24</td>
</tr>
<tr>
<td>Blue Flag</td>
<td>95.55</td>
<td>94</td>
<td>90.43</td>
<td>97.84</td>
<td>91.12</td>
<td>90.08</td>
<td>90.21</td>
<td>96.15</td>
</tr>
<tr>
<td>No Blue Flag</td>
<td>80.12</td>
<td>80.88</td>
<td>77.86</td>
<td>73.66</td>
<td>75.09</td>
<td>75.58</td>
<td>76.21</td>
<td>75.09</td>
</tr>
<tr>
<td>CST &amp; Blue Flag</td>
<td>111.57</td>
<td>101.12</td>
<td>95.77</td>
<td>100.96</td>
<td>98.85</td>
<td>95.12</td>
<td>99.38</td>
<td>122.55</td>
</tr>
</tbody>
</table>

Chart 3

Hotel Price Trends by CST and Blue Flag Certification

Table 9 and Chart 4 illustrate trends in average prices in much greater detail by sub-category, dividing the hotel sample into smaller and more defined segments both by
level of CST program certification and by proximity to, or location in, Blue Flag areas.

This creates

Table 9

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>No CST &amp; No BF</td>
<td>74.52</td>
<td>75.10</td>
<td>71.81</td>
<td>69.45</td>
<td>70.60</td>
<td>71.99</td>
<td>70.36</td>
<td>68.24</td>
</tr>
<tr>
<td>CST1 &amp; No BF</td>
<td>107.53</td>
<td>107.51</td>
<td>97.00</td>
<td>82.35</td>
<td>84.12</td>
<td>63.51</td>
<td>62.22</td>
<td>69.22</td>
</tr>
<tr>
<td>CST2 &amp; No BF</td>
<td>89.21</td>
<td>96.14</td>
<td>98.74</td>
<td>114.61</td>
<td>115.26</td>
<td>101.79</td>
<td>122.55</td>
<td>114.02</td>
</tr>
<tr>
<td>CST3 &amp; No BF</td>
<td>124.45</td>
<td>125.67</td>
<td>121.86</td>
<td>89.43</td>
<td>84.91</td>
<td>91.64</td>
<td>91.58</td>
<td>96.79</td>
</tr>
<tr>
<td>CST4-5 &amp; No BF</td>
<td>162.60</td>
<td>147.44</td>
<td>154.95</td>
<td>133.50</td>
<td>134.71</td>
<td>129.55</td>
<td>126.92</td>
<td>141.42</td>
</tr>
<tr>
<td>No CST &amp; BF</td>
<td>92.20</td>
<td>92.52</td>
<td>89.55</td>
<td>97.45</td>
<td>90.26</td>
<td>89.50</td>
<td>89.26</td>
<td>92.24</td>
</tr>
<tr>
<td>CST1 &amp; BF</td>
<td>96.04</td>
<td>92.61</td>
<td>104.20</td>
<td>116.06</td>
<td>124.80</td>
<td>121.35</td>
<td>96.46</td>
<td>103.00</td>
</tr>
<tr>
<td>CST2 &amp; BF</td>
<td>123.82</td>
<td>103.89</td>
<td>78.41</td>
<td>68.38</td>
<td>76.56</td>
<td>73.62</td>
<td>73.87</td>
<td>85.29</td>
</tr>
<tr>
<td>CST3 &amp; BF</td>
<td>138.63</td>
<td>123.95</td>
<td>88.29</td>
<td>120.81</td>
<td>91.32</td>
<td>88.70</td>
<td>111.82</td>
<td>124.73</td>
</tr>
<tr>
<td>CST4-5 &amp; BF</td>
<td></td>
<td></td>
<td></td>
<td>143.89</td>
<td>138.38</td>
<td>208.56</td>
<td>210.00</td>
<td></td>
</tr>
</tbody>
</table>
ten groups: five for hotels that are close to a Blue Flag area and five for hotels that are far from a Blue Flag area. Again, because of the small number of hotels that achieve four and five green leaves in the CST program, I follow Rivera’s (2002) practice and combine those categories into one. Even so, my sample has hotels that achieve four or five green leaves and at the same time are in a Blue Flag area only in the last four of the eight years of my study. In other words, there were no such qualifying hotels until 2005.

The average price of hotels with no CST certification and not close to a Blue Flag-certified area was stable throughout the period; this is generally the lowest average of these categories. The average price of hotels that achieved one green leaf and are not close to a
Blue Flag-certified area started in the mid-range of prices, then declined, ending up at a level similar to the first group described (no CST, no Blue Flag). This means that, on average, hotels far from Blue Flag areas obtain similar prices whether or not they achieve basic CST certification with only one leaf. The group of hotels that are not close to a Blue Flag area and achieved two and three green leaves finished the study period in the medium price level. The hotels that excel in the CST program (four or five green leaves) and are not close to a Blue Flag area had high and stable prices throughout, exceeded only by the hotels with similar CST performance but close to a Blue Flag area.

In the case of hotels close to a Blue Flag-certified area, by the end of the study period, those hotels with three and more green leaves were leading in prices. It is only beginning in 2005 that there are any hotels in the sample that have four or five green leaves and also are near a Blue Flag-certified area. These hotels – though there are only a very small number of them – have on average the highest prices of the sample. These trends support my hypotheses: there is a higher price for hotels that are CST-certified or close to a Blue Flag area, and a substantial price premium for hotels close to a Blue Flag area that excel in the CST program.

Table 10 presents the correlation matrix, in which the average room price is significantly correlated with the average number of hotel employees (hotel size), CST certification, level of CST certification achieved, and being 15 or fewer kilometers from a certified Blue Flag community.
Table 10

Correlation Matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price d. room</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CST Participation</td>
<td>0.18</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CST score</td>
<td>0.21</td>
<td>0.90</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dist. to a B.F.</td>
<td>-0.12</td>
<td>0.04</td>
<td>0.06</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dummy BF 15km.</td>
<td>0.16</td>
<td>-0.03</td>
<td>-0.08</td>
<td>-0.86</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. of employees</td>
<td>0.47</td>
<td>0.18</td>
<td>0.19</td>
<td>0.03</td>
<td>-0.01</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of stars</td>
<td>0.63</td>
<td>0.25</td>
<td>0.25</td>
<td>0.06</td>
<td>-0.03</td>
<td>0.53</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. one San José</td>
<td>-0.10</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.40</td>
<td>-0.43</td>
<td>0.06</td>
<td>0.10</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. two Alajuela</td>
<td>-0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>0.36</td>
<td>-0.34</td>
<td>-0.08</td>
<td>0.00</td>
<td>-0.24</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. three Cartago</td>
<td>-0.01</td>
<td>0.08</td>
<td>0.04</td>
<td>0.13</td>
<td>-0.09</td>
<td>-0.03</td>
<td>0.03</td>
<td>-0.07</td>
<td>-0.05</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. four Heredia</td>
<td>0.06</td>
<td>0.15</td>
<td>0.19</td>
<td>0.26</td>
<td>-0.20</td>
<td>0.17</td>
<td>0.13</td>
<td>-0.14</td>
<td>-0.11</td>
<td>-0.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>P. five Guanacaste</td>
<td>0.01</td>
<td>-0.07</td>
<td>-0.10</td>
<td>-0.44</td>
<td>0.36</td>
<td>-0.07</td>
<td>-0.29</td>
<td>-0.23</td>
<td>-0.06</td>
<td>-0.13</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.53</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>P. six Puntarenas</td>
<td>0.08</td>
<td>-0.05</td>
<td>-0.04</td>
<td>-0.49</td>
<td>0.48</td>
<td>0.00</td>
<td>-0.08</td>
<td>-0.33</td>
<td>-0.26</td>
<td>-0.07</td>
<td>-0.16</td>
<td>-0.32</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.00</td>
<td>0.01</td>
<td>0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>0.99</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>P. seven Limón</td>
<td>-0.02</td>
<td>0.03</td>
<td>0.04</td>
<td>0.09</td>
<td>0.00</td>
<td>-0.04</td>
<td>-0.07</td>
<td>-0.13</td>
<td>-0.10</td>
<td>-0.03</td>
<td>-0.06</td>
<td>-0.12</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.41</td>
<td>0.12</td>
<td>0.03</td>
<td>0.00</td>
<td>0.83</td>
<td>0.05</td>
<td>0.00</td>
<td>0.00</td>
<td>0.16</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

86
6.4 Panel Estimation

Table 11 provides the results of the panel estimation. I use the natural log transformation for the average double-room price and number of employees.

I start by presenting the results of the panel estimation with year fixed effects in Table 12. The effect of being close to a Blue Flag area is positive and significant. The effect of obtaining only one green leaf is not significant but all other levels of CST certification are positive and significant. The interaction effect shows a substitution effect for CST levels between two and three green leaves and complementary effects for a level of four or five green leaves.
Table 11

Mixed Generalized Panel Regression (without PSM)*

<table>
<thead>
<tr>
<th>Nat. log price double room</th>
<th>Robust Coef.</th>
</tr>
</thead>
<tbody>
<tr>
<td>greenleaves1</td>
<td>0.10</td>
</tr>
<tr>
<td>greenleaves2</td>
<td>0.18***</td>
</tr>
<tr>
<td>greenleaves3</td>
<td>0.09**</td>
</tr>
<tr>
<td>greenleaves45</td>
<td>0.31***</td>
</tr>
<tr>
<td>Blue Flag</td>
<td>0.23***</td>
</tr>
<tr>
<td>InteractionCST1</td>
<td>-0.24**</td>
</tr>
<tr>
<td>InteractionCST2</td>
<td>-0.20**</td>
</tr>
<tr>
<td>InteractionCST3</td>
<td>-0.21**</td>
</tr>
<tr>
<td>InteractionCST4-5</td>
<td>0.14</td>
</tr>
<tr>
<td>Province one San José</td>
<td>-0.09</td>
</tr>
<tr>
<td>Province two Alajuela</td>
<td>-0.02</td>
</tr>
<tr>
<td>Province four Heredia</td>
<td>-0.02</td>
</tr>
<tr>
<td>Province five Guanacaste</td>
<td>0.04</td>
</tr>
<tr>
<td>Province six Puntarenas</td>
<td>0.02</td>
</tr>
<tr>
<td>Province seven Limón</td>
<td>0.06</td>
</tr>
<tr>
<td>Nat. log employees</td>
<td>0.10***</td>
</tr>
<tr>
<td>Number of stars</td>
<td>0.32***</td>
</tr>
<tr>
<td>year 2002</td>
<td>-0.01</td>
</tr>
<tr>
<td>year 2003</td>
<td>-0.05</td>
</tr>
<tr>
<td>year 2004</td>
<td>-0.07**</td>
</tr>
<tr>
<td>year 2005</td>
<td>-0.09**</td>
</tr>
<tr>
<td>year 2006</td>
<td>-0.12***</td>
</tr>
<tr>
<td>year 2007</td>
<td>-0.13***</td>
</tr>
<tr>
<td>year 2008</td>
<td>-0.14***</td>
</tr>
<tr>
<td>_cons</td>
<td>3.12***</td>
</tr>
</tbody>
</table>

*a n=2,604 observations
R-squared = 0.55
Adj R-squared = 0.55
* p < .10 ** p < .05 ***p < .01

Because the data set contains variables that do not change across time (such as provinces, which do not vary across years), I cannot conduct a fixed effects estimation using the hotels as a group. Given the above, I chose to use mixed generalized panel regression methodology.
6.5 Propensity Score Matching for the Mixed Generalized Panel Regression

I conduct a propensity score-matching estimation using participation in the CST Program as a treatment. Following the order of the propensity score-matching procedure, Table 14 presents the probit regression with which I try to determine characteristics related to program participation.

### Table 12

**Probit Regression for PSM, Dependent Variable CST Participation**

<table>
<thead>
<tr>
<th>CST Participation</th>
<th>Coef.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Flag</td>
<td>0.24**</td>
</tr>
<tr>
<td>Province one San José</td>
<td>-0.78***</td>
</tr>
<tr>
<td>Province two Alajuela</td>
<td>-0.64**</td>
</tr>
<tr>
<td>Province four Heredia</td>
<td>-0.16</td>
</tr>
<tr>
<td>Guanacaste</td>
<td>-1.02***</td>
</tr>
<tr>
<td>Province six Puntarenas</td>
<td>-1.00***</td>
</tr>
<tr>
<td>Province seven Limón</td>
<td>-0.47*</td>
</tr>
<tr>
<td>Nat. log employees</td>
<td>0.10**</td>
</tr>
<tr>
<td>Number of stars</td>
<td>0.30***</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.55***</td>
</tr>
</tbody>
</table>

*a n=2,604 observations  
* p < .10 ** p < .05 ***p < .01

Table 15 presents the balance table obtained after the probit regression using propensity score matching, comparing CST participants versus non-participants directly from the sample (unmatched) and after the propensity matching (comparing hotels with similar probability of participating in the CST certification program). It is not difficult to notice that, before the matching, the hotels in each group have very different characteristics; Heckman (1979) considers this difference a consequence of self-selection bias. However, after applying the propensity matching, average values of each of the
control characteristics of the hotels for the CST-participant hotels and for the matched non-participant hotels look very similar.

Before the matching, there was a statistically significant difference (p<0.05) in the natural logarithm for the room price variable, the natural logarithm for the number of employees variable, and the number of stars and location dummy variables for Heredia, Guanacaste and Puntarenas provinces. After the matching, the only difference in control variables between CST-certified and non-CST-certified hotels that is statistically significant (p<0.05) is observed for the Heredia province, which indicates well-balanced data. At the same time, the difference in room prices between the treatment and the control groups remains significant.
Table 13

Balance Table: Propensity Score Matching, CST-Certified Versus Non-Certified Hotels

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample</th>
<th>Treated</th>
<th>Controls</th>
<th>Difference in means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nat. log price</td>
<td>Unmatched</td>
<td>4.58</td>
<td>4.21</td>
<td>0.37***</td>
</tr>
<tr>
<td>double room</td>
<td>ATT</td>
<td>4.53</td>
<td>4.43</td>
<td>0.11**</td>
</tr>
<tr>
<td>Blue Flag</td>
<td>Unmatched</td>
<td>0.34</td>
<td>0.39</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td>ATT</td>
<td>0.39</td>
<td>0.39</td>
<td>0.01</td>
</tr>
<tr>
<td>Province one</td>
<td>Unmatched</td>
<td>0.22</td>
<td>0.24</td>
<td>-0.01</td>
</tr>
<tr>
<td>San José</td>
<td>ATT</td>
<td>0.24</td>
<td>0.18</td>
<td>0.06</td>
</tr>
<tr>
<td>Province two</td>
<td>Unmatched</td>
<td>0.16</td>
<td>0.16</td>
<td>0.01</td>
</tr>
<tr>
<td>Alajuela</td>
<td>ATT</td>
<td>0.17</td>
<td>0.22</td>
<td>-0.05</td>
</tr>
<tr>
<td>Province four</td>
<td>Unmatched</td>
<td>0.15</td>
<td>0.05</td>
<td>0.11***</td>
</tr>
<tr>
<td>Heredia</td>
<td>ATT</td>
<td>0.06</td>
<td>0.13</td>
<td>-0.07***</td>
</tr>
<tr>
<td>Province five</td>
<td>Unmatched</td>
<td>0.15</td>
<td>0.22</td>
<td>-0.08***</td>
</tr>
<tr>
<td>Guanacaste</td>
<td>ATT</td>
<td>0.16</td>
<td>0.16</td>
<td>0.00</td>
</tr>
<tr>
<td>Province six</td>
<td>Unmatched</td>
<td>0.21</td>
<td>0.28</td>
<td>-0.07***</td>
</tr>
<tr>
<td>Puntarenas</td>
<td>ATT</td>
<td>0.26</td>
<td>0.23</td>
<td>0.03</td>
</tr>
<tr>
<td>Province seven</td>
<td>Unmatched</td>
<td>0.07</td>
<td>0.05</td>
<td>0.02</td>
</tr>
<tr>
<td>Limón</td>
<td>ATT</td>
<td>0.08</td>
<td>0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Nat. log employees</td>
<td>Unmatched</td>
<td>3.47</td>
<td>2.87</td>
<td>0.59***</td>
</tr>
<tr>
<td>employees</td>
<td>ATT</td>
<td>3.32</td>
<td>3.18</td>
<td>0.13</td>
</tr>
<tr>
<td>Number of stars</td>
<td>Unmatched</td>
<td>3.25</td>
<td>2.50</td>
<td>0.75***</td>
</tr>
<tr>
<td></td>
<td>ATT</td>
<td>3.08</td>
<td>2.97</td>
<td>0.11</td>
</tr>
</tbody>
</table>

* p < .10 ** p < .05 ***p < .01

Table 16 presents the last step of the Propensity Score Matching methodology, a mixed generalized panel regression (using the Propensity Score Matching weights) with the natural log of the price of a double room in high season as the dependent variable.
### Table 14

**Mixed Generalized Panel Regression Using Propensity Score Matching**

<table>
<thead>
<tr>
<th>Nat. log price double room</th>
<th>Robust Coef.</th>
</tr>
</thead>
<tbody>
<tr>
<td>greenleaves1</td>
<td>0.01</td>
</tr>
<tr>
<td>greenleaves2</td>
<td>0.19***</td>
</tr>
<tr>
<td>greenleaves3</td>
<td>0.21***</td>
</tr>
<tr>
<td>greenleaves45</td>
<td>0.22**</td>
</tr>
<tr>
<td>Blue Flag</td>
<td>0.21**</td>
</tr>
<tr>
<td>InteractionCST1</td>
<td>-0.08</td>
</tr>
<tr>
<td>InteractionCST2</td>
<td>-0.24**</td>
</tr>
<tr>
<td>InteractionCST3</td>
<td>-0.23**</td>
</tr>
<tr>
<td>InteractionCST4-5</td>
<td>0.29**</td>
</tr>
<tr>
<td>Province one San José</td>
<td>-0.03</td>
</tr>
<tr>
<td>Province two Alajuela</td>
<td>0.34***</td>
</tr>
<tr>
<td>Province four Heredia</td>
<td>0.09</td>
</tr>
<tr>
<td>Province five Guanacaste</td>
<td>0.16</td>
</tr>
<tr>
<td>Province six Puntarenas</td>
<td>0.15</td>
</tr>
<tr>
<td>Province seven Limón</td>
<td>0.18</td>
</tr>
<tr>
<td>Nat. log employees</td>
<td>0.07**</td>
</tr>
<tr>
<td>Number of stars</td>
<td>0.23***</td>
</tr>
<tr>
<td>year 2002</td>
<td>-0.02</td>
</tr>
<tr>
<td>year 2003</td>
<td>-0.06</td>
</tr>
<tr>
<td>year 2004</td>
<td>-0.04</td>
</tr>
<tr>
<td>year 2005</td>
<td>-0.09</td>
</tr>
<tr>
<td>year 2006</td>
<td>-0.02</td>
</tr>
<tr>
<td>year 2007</td>
<td>-0.10</td>
</tr>
<tr>
<td>year 2008</td>
<td>-0.07</td>
</tr>
<tr>
<td>constant</td>
<td>3.34***</td>
</tr>
</tbody>
</table>

* n=602 observations

R-squared = 0.43

* p < .10 ** p < .05 ***p < .01

### 6.6 Results for Hypothesis 1

In relation to the CST certification effect on price, I hypothesized in chapter three that “Good environmental performance of a firm has a positive effect on the price of the
good or service offered by the firm.” To evaluate the direct effect of the CST certification, it is necessary to focus on the dummy variables *greenleavesone* to *greenleaves45* in Table 14.

CST program certification has different effects on price depending on the level of environmental performance achieved. Participating in the program and obtaining only one green leaf (the minimum) did not have any significant impact on the price of the service offered by the hotel.

For CST scores from two to five green leaves, the effect of the CST program on the price of the services is positive and significant, and I cannot statistically disprove that they have the same magnitude.

This evidence is consistent with Hypothesis 1 for CST levels of two through five green leaves, underscoring that the environmental performance of the firm is a valued attribute in the market. However, only one green leaf does not have any statistically significant effect.

### 6.7 Results for Hypothesis 2: Environmental Performance of Location

My second hypothesis is about the effect of the environmental performance of nearby communities on the price of the hotel service; i.e., I propose that the environmental performance of a community where a firm is located is an attribute that has a positive and statistically significant effect on price in the firm’s service market. My findings are consistent with this hypothesis. A hotel location within 15 kilometers of a certified Blue Flag beach has a positive and significant impact on the price of the service offered by the
hotel. This is consistent with the theory that good environmental performance of a community near a hotel's location can constitute a competitive advantage for that hotel.

The direct effect of being close to a Blue Flag-certified beach has a similar magnitude of effect as participating in the CST program and obtaining two or more green leaves. This means that there is a similar market valuation of both the environmental performance of the hotel and that of the community.

6.8 Interaction Effects between Environmental Performance of Firm and Community: Complements or Substitutes?

6.8.1 Substitution Effect

With Hypothesis 3, I expect to see a negative interaction between the environmental performance of the firm and the environmental performance of the community. In other words, I propose that community environmental performance moderates the relationship between a firm’s environmental performance and the price of its product/service in such a way that the positive effect of a firm’s good environmental performance on price is weaker if a firm operates in a greener community. The environmental performance of firm and community behave as substitutes when a firm achieves satisfactory, but not superior, environmental performance.

The results of Table 16 show that the interaction effect is negative and significant for hotels between two and three green leaves, indicating that the total effect of CST certification on hotels with CST certification with two and three green leaves and close to Blue Flag communities is not significant.
We have seen in the discussion of Hypothesis 1 that the direct effect of the environmental performance of the hotel on the price of the service offered is not significant when the hotel obtains only one green leaf in the CST program. Now I have also found that the interaction effect for hotels close to a Blue Flag beach that are awarded one green leaf in the CST program is also not significant. Thus, the results appear to indicate that obtaining one green leaf does not have any effect on the price of the service, regardless of whether the hotel is close to a Blue Flag beach or not.

In the case of hotels that obtain two or three green leaves in the CST program and are close to a Blue Flag beach, the interaction effect is negative and significant. That means that the market is willing to pay for only one certification in the case of good, yet not outstanding, environmental performance. If a hotel obtains two or three green leaves, the market values only one certification, without incrementally valuing the second certification, because the direct effect of the second certification is canceled out by the indirect effect of the interaction.

### 6.8.2 Interaction between Hotel and Community Environmental Performance:

#### Complementary Effect, Building on Reputation Theory

The interaction effect is significant and positive only when a hotel is close to a Blue Flag beach and achieves superior environmental performance of four or five green leaves in the CST program.

If the hotel is close to a Blue Flag beach and achieves superior environmental performance of four or five green leaves in the CST program, the market appears to value
this with a premium, paying more in total for environmental performance than in any other case.

What we observe here is consistent with Hypothesis 4. To gain a premium from a “green” reputation, it is not enough for a hotel to be in a Blue Flag area and have CST certification. Rather, it is necessary both to be in a Blue Flag area and to be one of the few hotels that excels in environmental performance by obtaining four or five green leaves.

This is consistent with a market in which hotels participating in the Blue Flag program and excelling in the CST program achieve stronger reputations than other hotels. These hotels are more integrated into the organizational field and accepted into consumer associations and international tourism agencies, all of which enable them to charge higher prices.

6.9 Results Summary

The findings of the quantitative analysis reflect a very sophisticated market in which environmental performance is valued when it fulfills the expectations of that market. Analyzing the two certifications and the interaction effect between them provides a more complete view of this market. Box 1 summarizes the quantitative results.
# Box 1: Quantitative Results Summary

<table>
<thead>
<tr>
<th>CST Certification</th>
<th>Blue Flag Certification</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>No CST Certification</td>
<td>Baseline</td>
<td>Price premium of ~ 20% (compared to baseline)</td>
<td></td>
</tr>
<tr>
<td>Basic* 1 ‘green leaf’</td>
<td>No statistically significant effects**</td>
<td>Price premium of ~ 20% (compared to baseline)</td>
<td></td>
</tr>
<tr>
<td>Good 2-3 ‘green leaves’</td>
<td>Price premium of ~ 20% (compared to baseline)**</td>
<td>Price premium of ~ 72% (compared to baseline)</td>
<td></td>
</tr>
<tr>
<td>Superior 4-5 ‘green leaves’</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Level of environmental performance.

** Rivera (2002) has found the same relationships, which have been confirmed in this study.

A location for the hotel within 15 kilometers of a certified Blue Flag beach has a positive and significant impact on the price of the service offered by the hotel. When a hotel achieves CST certification, its effect on the price of services varies, depending on (i) the level of environmental performance accomplished by the hotel, defined in CST certification by the number of green leaves, and (ii) whether the hotel is close to a Blue Flag-certified beach.

Even when a hotel is not located in close proximity to a Blue Flag certified community, any level of CST certification appears to be valued by customers: levels of environmental performance denoted between two and five CST green leaves are translated
into a price premium of approximately 20 percent. Only the most minimal level of environmental compliance, which is defined in the CST program with one green leaf, does not seem to have a statistically significant effect on the price of hotel services.

If the hotel is not certified but is close to a Blue Flag beach, there is also a price premium of 20 percent.

Interestingly, when a hotel obtains two or three green leaves in the CST program (which corresponds to consistently good, but not superior, environmental performance) and, at the same time, is close to a Blue Flag certified beach, it still enjoys a price premium, but it is not greater than the price premium obtained by the CST-certified hotels without Blue Flag beaches nearby. I propose that in this scenario the two certifications act as substitutes; therefore, the market pays for only one certification.

In cases where a hotel is close to a Blue Flag certified beach and the environmental performance of the hotel is outstanding (corresponding to four and five green leaves), I have found a complementary effect: the interaction effect is significant and positive, with increased value not only for the CST and the Blue Flag certifications individually, but also a premium for having both certifications.
This qualitative section provides additional evidence supplementing the quantitative findings, answering questions I could not answer with the quantitative analysis alone. I aim to understand how people involved in these programs perceive them, to generate ideas for future extensions of research, and to uncover potential strategic directions for the Costa Rican environmental programs. Instead of being muted by the dull “thud” of aggregated statistics, each participant in these in-depth, semi-structured interviews provides a unique voice, which I try to take advantage of in this chapter. With this section, I aim to see how forces play out in the specific circumstances of the Costa Rican hotel industry and the combination of two voluntary environmental programs.

First are the qualitative findings for the Blue Flag program. The analysis benefits from the different angles provided by interviews with people in different positions in relation to the program. These range from the person in charge of the program in one location, to lower-level collaborative workers within the program, to various community members involved (or not) in the initiatives, to a person in charge of the program in a community that once had, but then lost, its Blue Flag certification. I then similarly describe findings for the CST program, and finish by focusing on general findings that apply to both programs.
7.1 Findings for the Blue Flag Program

7.1.1 Importance of Leadership

When respondents were asked about the determining factors in gaining Blue Flag certification, the most common answers were about the importance of leadership by someone who “made the cause his own” and “made things happen.” That was also consistent with what I observed in Costa Rica: Blue Flag-certified communities generally have strong community leadership from a person or persons who care deeply about program results.

The literature on leadership in schools is relevant to the study of leadership in this context; it is rich in theories and strategies on how to coordinate and motivate local government and community actors, and it demonstrates the importance of strong leadership. Such leadership is widely recognized for its importance in getting groups of people to work toward common objectives and implement common plans (Purkey and Smith, 1983; Heck et al., 1990; Hallinger et al., 1996). Generally a school principal fulfills this role, but the necessary leadership can also be provided by other administrators or groups of teachers (Purkey and Smith, 1983).

7.1.2 Community Size

The interviews revealed that the process of obtaining Blue Flag certification is more difficult in larger cities. Classic transaction cost theory (Williamson, 1981) predicts that the more agents are involved, the less benefits each individual receives from working together, and the harder it is to achieve common goals. Also consistent with this theory, smaller towns with more homogeneous populations, more people who know each other,
and fewer foreigners often find it easier to coordinate public activities. The transaction costs of organization are typically lower and it can be easier to internalize benefits (with less free riding) in such circumstances. For example, according to interviewees in regions with only one hotel or country club, it is easier to internalize the benefits of the Blue Flag certification, and there are lower transaction costs, making it easier in some ways for these areas to proceed with obtaining Blue Flag certification.

Communities with more “fuzzy boundaries,” on the other hand, with no clearly defined geographic and/or community limits, find achieving Blue Flag certification more difficult, interviewees report, because responsibilities and benefits are diffused among more people and organizations whose community membership is not clear or well-defined. This is consistent with the free-rider problem, in which, for example, hotels at greater distances from the broadly defined community may want to obtain benefits without incurring high costs.

7.1.3 Community Organization

It is no coincidence that the Blue Flag program has been so successful in Costa Rica of all the countries in Latin America, as Costa Rica has the longest democratic tradition in Latin America and also has other important, related social capital advantages.

Van Kooten et al. (2005) conducted research globally to explain factors that promote initiation of private regulatory environmental systems to govern forests. After examining data for 117 countries, they found that economic factors are significant in explaining the likelihood that a certain country’s forest management practices would be certified. They showed that the economic institutions of the country, the social context, and
citizens’ perceived abilities to influence the political process were also important in this regard. Interestingly, if women have little voice in civil society, this is a key factor that diminishes the likelihood that firms and forest owners will try to certify their forest activities.

What Van Kooten et al. (2005) find is consistent with one of the reasons mentioned for the success of some communities in achieving Blue Flag certification: the social capital of the community. For example, locations that were already better-organized as communities before they started their Blue Flag committees recognized that organization as a key advantage, according to interviewees.

7.1.4 Blue Flag Area Clusters

Blue Flag-certified locations are often close to each other. One factor mentioned in interviews to explain this phenomenon is the regional role of key leaders involved with the Blue Flag program. These are typically people heavily involved in the certification process of a community (usually the community in which they work) and who later pushed for certification in a nearby, second community (often the community in which they reside). These geographic clusters not only share people with program know-how but often also compete for tourists and tend to mimic each other in other ways.

7.1.5 Importance of Complementary Activities and Resources

Complementary activities that make Blue Flag certification more clearly profitable for companies or beneficial for the community can be the spark necessary to initiate the Blue Flag certification process. The first time Playa Hermosa, for example, obtained Blue
Flag certification was just in time for the world surfing championship there, advertised as “primer mundial de surf en aguas limpias” (first world surfing championship in clean waters). This context may make Blue Flag certification a profitable marketing strategy. In two interviews, it was also mentioned that communities became particularly motivated by the Blue Flag program when it appeared to also provide a platform for communities to reduce dengue fever by becoming cleaner.

### 7.1.6 Business Political Strategies and Policy Demands

Cooperation by businesses with community Blue Flag certification initiatives cannot be taken for granted. In some cases, local governments and local businesses were actively opposed to the work of Blue Flag committees, seeing them as threats. Having the support of the community and the central government was crucial for the certification effort to continue. Eventually, these adversarial attitudes changed and, after some time, local governments and businesses typically became key actors supporting the committees, helping them with resources to achieve program goals. This is consistent with the stages in business strategies and environmental policy processes described by Rivera et al. (2009), which include 1. manipulation, 2. defiance, 3. avoidance, 4. compromise, 5. acquiescence, and finally 6. beyond compliance.

### 7.1.4 Children’s Role in Changing Adult Behavior

The education of children plays an unexpected role. Interviewees report that children who become aware of the importance of taking care of the environment in a community as part of Blue Flag program activities to achieve certification not only change
their own behavior, but influence that of their parents. According to interviewees, this becomes a key mechanism through which communities improve environmental performance and increase their likelihood of obtaining and maintaining Blue Flag certification.

7.2 CST Findings

7.2.1 Implicit Price Premium

In their cross-national study on corporate social responsibility practices, Maignan and Ralston (2002) found three key motivations for firms to act in a socially and environmentally responsible way. According to the study, firm managers value social responsibility as a source of work satisfaction and self-motivation; at the same time, corporate social responsibility practices are linked to better financial performance in the eyes of the managers. Finally, various stakeholders such as community groups, customers, and regulators influence firms, creating pressure to incorporate good social and environmental practices into their operations.

Consistent with findings in the ethical luxury consumption and complex goods literature (Ha-Brookshire and Norum, 2011; Bezençon and Blibi, 2010), price premiums are hidden in the price, i.e., not explicit. In interviews, hotel managers and owners explained their CST program participation first by highlighting how they personally value the environment and how the program is part of their corporate social responsibility activities. Only later did they state that CST certification also gives them access to environmentally aware tourist agencies, increases occupancy rates, diminishes fluctuations in their income and helps them motivate their employees. Managers and owners of hotels are explicitly incorporating the CST program into their marketing strategies because they
have realized that customers value the environment and they think the CST program can be an additional positive differentiating characteristic in terms of customer perception.

7.2.2 Environmental Performance Costs

Improving environmental performance is costly, especially in order to obtain a superior number of green leaves. To improve environmental performance, it is necessary to spend money on infrastructure, on hiring or dedicating personnel to manage CST-related activities, and on motivating current employees. All these costs were described by interviewees as necessary for CST certification.

7.3 Findings for Both Programs

7.3.1 CST and Blue Flag Programs Reduce Demand Fluctuations

Several scholars have investigated the relationship between corporate social performance (CSP) and financial performance (Orlitzky and Benjamin, 2001; Husted, 2005), where the main theoretical argument is that higher CSP lowers its financial risk.

This research does not aim to measure financial performance. However, some tendencies and observations related to financial performance can be distilled from the qualitative interviews. Interviewees believed that hotels with good environmental performance or located in communities with Blue Flag certification have less fluctuation in the numbers of tourists, particularly during periods of economic difficulty. That would mean that, besides a positive price effect, environmental certifications reduce income fluctuations.
7.3.2 Synergistic Effects of Incremental Certifications

Interviewees report that the community effort involved in obtaining Blue Flag certification is a valuable asset when seeking CST certification; similarly, the infrastructure development associated with CST is valuable in seeking Blue Flag certification. Once communities get involved in Blue Flag, they give more attention to environmental performance. After this process, a hotel in such a community is more likely to try to gain CST certification, and its staff will typically be more aware of the issues and problems in this area, and need less time to get involved. Similarly, know-how and infrastructure obtained by hotels as part of the CST certification process make hotels more likely to be useful participants in the Blue Flag certification process, interviewees report. In short, the process of obtaining one certification is complementary to the process of obtaining the other certification.

7.3.3 Blue Flag More Powerful in Symbols and Marketing

The more public Blue Flag program attracts more media coverage than does the hotel-focused CST program, as well as more involvement from public officials and other prominent individuals, so it tends to be more powerful in the public sphere in terms of symbols and marketing.
8. Discussion and Conclusions

8.1 Strategy Field and Public Policy Implications: The Big Picture

This dissertation was motivated by four factors. First, there is the ongoing grand debate around the real effects of measures and programs striving to provide “win-win” solutions, which (i) aim to be good for business, positively affecting firm bottom line, (ii) try to create more efficient regulation by diminishing bureaucratic hurdles, and (iii) may result in better products/services and better outcomes for the rest of the stakeholders. This research aspires to take a closer look at some mechanisms that have some of these characteristics.

It appears that voluntary environmental certification programs have the capacity to create industry standards that are more effective in some contexts, and have the capacity to improve environmental performance and establish a process that benefits a wide range of stakeholders – from business and policymakers to consumers and local communities (Font, 2002). Representing a middle ground between laissez-faire and intrusive government over-regulation, these voluntary environmental programs may help develop markets and become a highly effective policy instrument, but only if they provide economic benefits for participating firms (Rivera, 2002). In terms of win-win solutions, I find quantitative and qualitative evidence that voluntary environmental certification programs appear to be associated with better financial performance.

More specifically, tourists who stay in the hotels receive a service characterized by additional environmental value; the hotels obtain a price premium if they achieve excellent environmental performance; policymakers get better environmental compliance at minimal
costs for bureaucracy; and, finally, local communities enjoy cleaner and eco-friendly habitats and a sustainable tourism industry. Therefore, further research aimed at analyzing the successful implementation of environmental certification programs holds potential for improving environmental regulation and firm environmental performance in the developing world.

The second impetus for this research is the role that a sustainable tourism and hotel industry plays in preserving the traditional way of life, particularly with regard to economic development of rural and coastal communities outside of big cities. Environmentally conscious tourism creates new opportunities for employment (Croes, 2003) and alleviates economically enforced migration to urban centers. Furthermore, eco-tourism may have an important social impact, making it possible for various social groups such as women or ethnic minorities to make a living in a familiar environment, by applying traditional crafts and skills. In this respect, Costa Rica has demonstrated one of the most successful examples among developing countries in creating a successful, environmentally-oriented tourism industry and making it one of the pillars of the national economy. The tourism industry in Costa Rica is currently responsible for 11.7 percent of the country’s direct and indirect employment (Travel and Tourism Competitiveness Report 2013, World Economic Forum), providing job opportunities for people within their native communities. Voluntary environmental certification programs such as Certification for Sustainable Tourism (CST) and the Blue Flag have emerged as part of Costa Rica’s tourism industry, contributing to its growing socioeconomic impact. Thus, understanding the economic mechanisms behind these environmental programs may hold significant value for other nations, in Latin
America and beyond, which strive to stimulate economic growth and spur social development through tourism.

The third factor that has inspired this research is an attempt to interpret the phenomenon of *price premium* as a relatively new engine of economic activity. Expanding the traditional view of market competition through lower production costs or entrance into new markets, the concept of *price premium* has shifted the focus to quality, reliability and responsibility, which goes beyond just products/services and encompasses an entire production chain. In the environmental context, a conscious choice to pay a price premium for goods or services that are more benign for the environment has been shown to be a consistent pattern of consumer behavior (Kotchen and Moore, 2007). The new way to create a competitive advantage and obtain a price premium is to establish a relationship of trust with customers – in other words, build and sustain a consistent environmental reputation (Miles and Covin, 2000). How does a firm establish its reputation? What are the signaling mechanisms that enable a firm to demonstrate its values and commitment, and how can other market stakeholders reinforce this process? In this research, I explore these matters by uncovering the links among environmental performance, environmental reputation, and financial performance. The evidence shows that, when businesses, government, and local communities join forces to build environmental reputation, they create synergies that benefit all and translate into better economic outcomes. This dissertation quantitatively measures the effects of such joint efforts and their interactions, contributing to understanding the environmentally conscious reputation.

Last but not least, this dissertation was motivated by an interest in exploring symbiotic relationships between companies and the communities which house them.
Instead of focusing on firm performance in isolation from the environment where they operate, this research examines the mutual influences of local businesses and their “natural habitat” – communities where firms are located. Without diminishing the importance of the environmental legal framework and market regulations, I propose that local communities and their environmental characteristics, as well as proximity of a firm to a community with certain environmental characteristics, may affect and even determine the success or failure of a company.

The idea of the interconnectedness of a firm and its home community is truly central to this study, representing its most novel and important aspect. While the effects of firm environmental performance, compliance, disclosure, and reputation on firm success have been a subject of scholarly examination for decades, the potential implications of the firm-community synergistic relationship in the environmental domain is yet to be explored.

### 8.2 From Firm-Centric View to Firm-Community Perspective

Academic inquiry into whether better environmental performance – relative to other firms in the market – is related to higher prices has largely focused on the firm itself and various aspects of its performance. This study is an endeavor to demonstrate that environmental performance of a community may constitute a competitive advantage for firms operating within this community.

Questions concerning the role and influence of a local community, as a distinct stakeholder group, on firm environmental performance have actuated ample research in academia. Various scenarios and models have been tested in order to understand the characteristics and the nature of community impact on firm environmental activities or lack
thereof. For example, Kassinis and Vafeas (2006) find a strong positive relationship between environmental compliance pressures imposed by local communities and environmental performance of plants/factories. In his article on competitiveness factors of travel destinations, Hassan (2000) concludes that commitment to the environment directly affects quality of life of local communities, and therefore determines the level of host community support, resulting in competitive advantage for a tourist destination.

In the paradigm described above, the local community is always seen as a factor imposing, instigating, policing or in other ways affecting firm environmental performance. This research, however, offers a different perspective, looking at the environmental performance of a community as an attribute or characteristic that may influence the prices of firm products or services.

While firm environmental performance and community environmental performance have been examined separately from different angles, there does not appear to have been any empirical examination of whether or how these two variables interact, and what kind of joint effects they produce on the price of firm services or products. With the model developed in this study, I contribute to resource-based view theory by explicitly establishing how and when the environmental performance of a firm and the environmental performance of a community act as complements and substitutes with regard to price premium.

8.3 What Kind of Environmental Performance is Associated with a Price Premium?

Over the last three decades, environmental issues have risen to the top of the global agenda. “Eco-friendly,” “sustainability,” and “green” have become buzz words, ubiquitous
in politics, marketing, academia, and other spheres of life. Numerous types of environmental labeling, environmental reporting, eco-certifications, etc. have emerged, making it difficult for consumers to distinguish between initiatives that add value and those that use the “green hype” to their advantage (Dahl, 2010). Such over-abundance of environmental messaging has produced a certain skepticism among consumers, as well as given life to new terms such as “greenwashing” – the difference between a firm’s actual environmental performance and its public communications around environmental stewardship.

Exploring this socioeconomic process, Peattie and Crane (2005) identify misconceived strategies in green marketing that have hampered sustainable market development and led to certain distortions in consumer perception of environmental activities. Furthermore, Crane (2000) describes a phenomenon of consumer backlash against green marketing which occurred in the mid-1990s. Overall, consumers around the world, and particularly in developed markets, have grown tired of too much eco-labeling, posing a new challenge for firms that wish to communicate their commitment to environmental sustainability.

Flooding the markets with eco-labeling and environmental certifications indeed has affected consumer perception and to some degree diminished the credibility of green initiatives. That being said, the omnipresence of environmental marketing has also had a positive effect on consumers, teaching them to navigate among multiple eco-labels and identify those which provide better quality assurance. Nilsson et al. (2004) determine the traits and characteristics that make environmental labeling/certification credible in the eyes of consumers, analyzing 58 eco-labels present in European markets. Their findings suggest
that only a combination of several factors, such as ownership, stakeholder dialogue, traceability, and transparency, produce credibility in environmental labeling/certification initiatives. In other words, consumers today better understand firm environmental performance and expect excellent environmental performance from firms, as well as clear and consistent communication about it.

The findings of this research are consistent with the framework described above. Analysis of voluntary environmental certification for hotels and coastal communities in Costa Rica, and the effects they jointly produce on the price of services of the local hotels, provide insights into consumer perceptions of environmental certification as an attribute that adds value to a product/service. To establish this connection, I briefly summarize the results of the quantitative part of the dissertation.

For the hotels that are not located in proximity to a Blue Flag certified beach: (i) when hotels exhibit a basic level of environmental performance (corresponding to one “green leaf” within the CST certification program), it does not have a significant effect on the price. This means that just the fact of participating in the CST program is not related to a price premium. However, (ii) in cases when hotels demonstrate good or superior environmental performance (two-three or four-five “green leaves,” respectively, in the CST program), we observe a statistically significant positive effect on prices, showing that consumers place differentiation value on good and/or superior environmental performance. The average price increase associated with good/superior environmental performance is about 20 percent (compared to the price of a non-CST certified hotel that is not located near a Blue Flag beach).
These findings are in accord with the conclusion that consumers have become more sophisticated, and expect basic environmental performance as a default situation, not associating extra value with this level of environmental performance. In the context of Costa Rica, the quality of environmental education and the expectations of consumers – i.e., tourists – may be even higher, because choosing a well-known, eco-friendly destination may be associated with self-selection among tourists. For example, Khan (2003) concludes that “ecotourists tend to expect businesses to be environmentally friendly and prefer … physical facilities that were environmentally appropriate and equipment that minimizes environmental degradation.” It would be reasonable to assume that many tourists visiting Costa Rica have the same or a similar degree of environmental education and preferences; therefore, they would generally exhibit higher expectations for hotels. Such sophisticated consumers would only pay a price premium for good or superior environmental performance, considering just basic environmental performance not noteworthy.

To continue with the quantitative results, for the hotels that are located within 15 kilometers of a Blue Flag certified beach, the following holds: (i) hotels that do not participate in the CST program still enjoy a statistically significant positive effect on prices due to proximity to a Blue Flag certified beach; (ii) for hotels that demonstrate a basic or good level of environmental performance (one or two-three green leaves, respectively), we observe a statistically significant positive effect on price of the same magnitude as for the hotels not participating in the CST program; (iii) finally, the hotels that demonstrate superior environmental performance (four-five green leaves) appear to achieve the highest
price premium of about 70 percent (compared to the price of a non-CST certified hotel that is not located near a Blue Flag beach).

These findings reaffirm both the consumer perception perspective and the resource-based view of the joint effects of the two environmental certifications. First, the highest price hike is associated with a combination of superior environmental performance (four-five green leaves) and the presence of the Blue Flag community certification. Such a combination, in RBV terms, is truly hard to achieve and difficult to imitate as it depends on concerted efforts of multiple stakeholders, and thus constitutes a unique competitive advantage. The combination of superior environmental performance of a hotel and a community establishes very high credibility for tourists, connecting the hotel’s services to a number of qualities such as ownership, stakeholder dialogue, traceability, and transparency that, according to Nilsson et al. (2004), are connected to consumer trust.

8.4 Qualitative Research: Motivation for Obtaining Environmental Certifications

Contrary to commodity goods, which are often standard and compete in the market only through price, hotel services encompass multiple characteristics and attributes, such as room size, location, number of hotel stars, etc. Therefore, it would be a mistake to think of the voluntary environmental certifications in the same way as products such as fair trade coffee or other eco-certified commodities. The environmental performance of a hotel appears to have a more complex effect on overall hotel performance, according to the assessment of voluntary environmental certification programs by managers and owners of Costa Rican hotels.

While the quantitative part of this research has established a statistically significant relationship between the price of hotel services and the presence of voluntary
environmental certification, qualitative results appear to be more focused on the moral and social aspects of hotel environmental activities. Specifically, in the series of interviews conducted with hotel managers and owners, the latter never directly mention the monetary benefits or other effects of firm bottom line associated with environmental certification. In their answers, the hotel managers and owners instead talk about the non-fiscal gains of participating in environmental programs: doing good for the community and the environment; motivating employees; satisfaction and increased sense of achievement from doing the “right thing;” etc.

It is difficult to conclude whether the respondents are actually not cognizant of the connection between obtaining a price premium and environmental certification, or they consciously avoid making this connection explicit so that their efforts on the environmental front do not appear to be motivated by profits. The apparent unimportance of profitability in managers’ comments may be explained through the lens of social psychology; social norms and modern cultural discourse deem pro-environmental behavior desirable and positive (Kollmuss and Agyeman, 2010), therefore making respondents cite environmental consciousness as their key motivation.

This mechanism of attributing certain environmental actions or decisions to purely altruistic motivations may represent the other side of the process that produces the attitude-action gap (Blake, 1999). On the one hand, people claim to be dedicated to supporting the environment, but do not always transform these claims into action; on the other hand, when they actually do take action, such as obtaining environmental certification, they tend to overestimate their own altruistic motives and dismiss possible motivations other than eco-consciousness.
The outcomes of qualitative interviews also are consistent with the ethical luxury consumption model (Davies et al., 2012), which describes “consumers’ propensity to consider ethics” as “significantly lower in luxury purchases when compared to commoditized purchases.” Because tourism hotel service is closer to luxury goods than to commodities in its characteristics and consumption patterns, it is reasonable to assume that environmental achievement cannot be a part of hotels’ explicit marketing strategy, and therefore hotel managers and owners do not explicitly bring up monetary benefits when talking about the motivation for obtaining environmental certification.

Although the qualitative interviews with the managers and owners of hotels in Costa Rica have not established explicit links between environmental certification and hotel prices, they have yielded a number of noteworthy reflections related to various gains associated with participating in voluntary environmental certification programs like CST and the Blue Flag. The majority of the respondents noted that, thanks to environmental certification, the occupancy rates in their respective hotels have increased while the variance in occupancy rates has decreased. This finding – if it holds when tested in a quantitative research setting – means that better environmental performance can improve overall performance of a firm and its total revenue, making it less prone to market fluctuations.

8.5 Qualitative Research: Findings and Reflections beyond Key Model and Hypotheses

One of the ideas that kept coming up during this research is the role of strong leadership, community connections, and other factors in the implementation and success
of the voluntary environmental certification programs. For example, to obtain the Blue Flag certification, a concerted action of the entire community is needed: firms, local government, the population of the community, those working in the local tourism industry, and even tourists have to participate. In this context, transaction costs may be high, while the risk of free riding increases significantly.

When addressing the collective action problem, strong leadership is essential. Both my observations and the aggregated results of the qualitative interviews assert that the presence of motivated people, who are passionate about the Blue Flag program and willing to dedicate their time to uniting fellow citizens, may be the factor that distinguishes successful communities from the rest. If seen through the lens of the theoretical framework that describes what constitutes a competitive advantage (McWilliams et al., 2006), leadership is one of the innate features of environmental performance, which makes it both “difficult to imitate” and “hard to achieve.”

Another interesting finding that emerged in the qualitative research is the role that the younger generations, particularly children, play in promoting and sustaining the Blue Flag certification. Through its educational component, the Blue Flag program reaches out to children, explaining the benefits of improved environmental performance for the environment and for the community. As a result, the young members of a community become strong advocates of environmental certification, encouraging their parents to participate and contribute to the cause. This conclusion may have direct implications for environmental public policy design, presenting a powerful channel to transform the environmental behavior of communities. The phenomenon of children’s participation in shaping and implementing environmental initiatives has been exhaustively described by
Hart (2013), and qualitative assessment of the Blue Flag program has reaffirmed some of his findings, for example, the community building process and environmental education being natural extensions of one another.

In addition to the above, the hotels tend to reaffirm the positive perception of their own participation in the environmental certification initiatives through visual representation of the certification on the hotel premises and around. This is consistent with the fundamental findings about the role of symbolism and rituals in marketing (Leigh and Gabel, 1992). The visual presentation of the information on environmental programs seems to be serving dual objectives: communicating the environmental commitment of a business or a community to customers, and boosting the morale of hotel employees and managers through making their efforts visible and recognized.

8.6 Limitations of the Study and Avenues for Future Research

There are some limitations pertaining to the data set and, consequently, to the results and findings of this research. One of them is the time period covered by the data set: due to limited information availability, quantitative analysis is based on the data panel spanning 2001 to 2008. Given the rapid development of the Costa Rican tourism industry over the past few years, as well as fast-advancing technology that makes information more readily available to customers, tourists may be more aware of the voluntary environmental certification programs now than five years ago or earlier. With this in mind, I would expect to see even more salient effects and relationships than described in this dissertation, if the data set were expanded to include more recent data.
Another possible limitation to fully analyzing the effects of the environmental certifications on firm performance is the lack of information about occupancy rates in the hotels in Costa Rica. Many of the hotels do not keep consistent track of this component of their performance; furthermore, if such data were to be collected, it would inevitably bear a bias toward bigger hotels, which can afford more advanced management technology. This data, along with information about the actual costs for the hotels associated with obtaining and sustaining the environmental certification (which also is not always accessible), would allow researchers to assess the cost-benefit ratio and profitability of certifications for business rather than just the price premium.

Another limitation of this study has to do with the lack of information about costs associated with the adoption of voluntary environmental standards in general and participating in the Blue Flag and CST programs in Costa Rica in particular. This data is hard to obtain as most hotels and communities, which currently hold voluntary environmental certifications or were certified at some point, do not track in a systematic manner their expenditures related to acquiring and sustaining “green” certifications. Both in the process of collecting quantitative data for this research and during the qualitative interviews with the hotel managers and owners, the issues of capital expenditures and adoption costs for the Blue Flag and CST programs remained a “grey area”: it seems these costs are not being tracked neither at the national or sub-national level, nor at the firm level.

Nonetheless, such data would be very helpful to better estimate the economic benefits of voluntary environmental programs for firms and communities. For instance, as obtaining certification is proportionally more costly for small businesses (Gustafsson et al., 2001), it is plausible to assume that bigger hotels have lower costs of adoption of voluntary
environmental standards “per room” and “per client” than their small and medium counterparts, and thus can derive greater economic benefits from participating in voluntary environmental initiatives. This, in theory, may imply that environmental certifications affect the profitability and economic performance of hotels of different sizes differently.

Voluntary environmental programs used as the empirical basis for this research mainly focus on environmental aspects of firm and community performance, such as waste recycling, use of degradable materials, energy conservation, water quality, etc. However, both the Blue Flag and CST certifications include some non-environmental requirements related to social sustainability.

More specifically, the Blue Flag program requires that certified beach communities have certain safety and accessibility measures in place, such as lifeguards on duty, safety equipment, and wheelchair access. In case of CST program, the participating hotels are expected to promote local traditions and customs, traditional food and national handicrafts, and provide its clients with the opportunity to engage with the communal development initiatives.

While this research aims at assessing the price premium associated with the environmental performance of firms and communities, these additional sustainability characteristics might also influence their economic performance, especially from the point of view of reputational theory. Could customers be inclined to pay a price premium for hotels’ holistic sustainability performance and not just environmental performance? Quite possibly – yes. While the “weight” of the non-environmental standards in both voluntary certifications featured in this study is minor, it is important to take them into account. That
being said, it is very hard to distinguish the effects associated with these “extra” sustainability criteria from those related to purely environmental criteria.

As for limitations related to the empirical data, initially the set collected for this study included over 3,500 hotel-year observations and covered all hotel and lodging businesses officially registered in Costa Rica. After reviewing the characteristics of the data with respect to missing parameters such as price information for specific years, availability of double room service, etc., the data set was narrowed down to 2,607 hotel-year observations, which still covers roughly 75% of all the Costa Rican hotels. Although this reduced the amount of data available for analysis, the remaining data was not biased, and still represents the larger longitudinal dataset than any previous study on the subject.

Finally, this research has a limitation related to controlling for self-selection bias among the beach communities participating in the Blue Flag program. For of the CST program, certified hotels were contrasted with a control group of hotels with similar characteristics, which do not hold the certification. However, for the Blue Flag program applying the same methodology (propensity score matching) to control for self-selection bias would significantly reduce the sample for the final estimation of the interaction effects between firm and community certifications. Given that for a community, which is comprised of multiple stakeholders and groups, participation in an environmental program means a collective effort, the probability of self-selection is lower than for hotels. With this in mind, for this study I made the decision to control for the self-selection bias for hotels only.
Future research can build on the findings of this dissertation by quantitatively testing some of the results of its qualitative portion, using panel data methodologies. For instance, questions that merit further examination may include:

- Does the combination of excellent firm environmental performance and community environmental performance (measured by environmental certification or otherwise) increase the occupancy rate and overall revenue?

- What are the costs that firms and communities bear to obtain voluntary environmental certification? What is the cost-benefit ratio for participating in environmental programs that provide certification?

- Does a concentration of environmentally certified hotels positively affect tourist inflow within their respective host communities, and under what conditions?

- Does the presence of environmentally certified hotels and/or environmental certification of a community decrease fluctuations in tourist inflow?

Peiró-Signes et al. (2014: 2) are examining the differences in productivity and economic performance between the U.S. hotels located in touristic clusters, and those that are not. Through the theoretical lens of the cluster theory, a geographical concentration of interrelated firms, or cluster, is viewed as a complex model driven by mutual influences, synergies, competition, and collaboration, which result in better economic outcomes for the firms. In line with the ideas motivating this research, mutual influences of a firm and community environmental certifications on prices can be seen as an interaction within a touristic cluster, which is comprised by firms, communities, and other interrelated actors. In this light, future research could answer the question whether hotels located in an area with a high concentration of touristic businesses enjoy greater economic benefits related to
the environmental certifications. Another question that could be investigated is whether environmental certification of communities within touristic clusters has a stronger moderation effect on firm prices.

According to Russo and Fouts (1997), “environmental performance and economic performance are positively linked” and “industry growth moderates the relationship.” Price premium can be considered one of the factors predicting economic performance, as it constitutes a competitive advantage for firms. Therefore, applying the framework from the Russo-Fouts study, we may conclude that the findings described in this dissertation are highly dependent on the industry’s growth.

Indeed, the Costa Rican tourism industry has been growing rapidly during the time period covered by this research, surpassing the growth rates of most other travel destinations in Latin America; for example, in 2007, the country enjoyed a 14.8 percent increase in the number of incoming tourists (Costa Rica Tourism Board). Consequently, the scale of the effect of community and firm environmental performance on price premium may be strongly moderated by the accelerated industry expansion. Thus, potential research questions arise:

- Would the complementary/substitution effects of firm and community environmental performance on price hold under conditions of moderate, zero, or negative industry growth?

- Does community environmental performance produce a statistically significant effect on price under conditions of moderate, zero, or negative industry growth?

Overall, this dissertation is an attempt for the first time to explore complex links among community environmental performance, firm environmental performance, and
price of firm services. While the idea and its execution have their limitations, I believe that this study represents a new multi-dimensional perspective about the tourism market, and some theoretical and practical contributions to the fields of business strategy, public policy, and environmental economics. To this end, this study may represent the tip of an emerging iceberg of research, which merits further academic inquiry.
9. References


10. Appendix:
The Hedonic Prices Model

To show the formal model, I decided to follow the equations of Kuminoff et al. (2010) to characterize a hedonic model of hotel room pricing. The price of the good or service offered by the firm, \( P \), can be characterized as a function of the environmental performance of the firm, \( g \), and other attributes considered in a vector, \( X \). Then, the hedonic price function would be

\[
P = P(g, X)
\]  

(1)

The customer would incorporate the hedonic price function by maximizing his utility, \( U \), choosing a combination of a quantity of the composite numeraire good, \( b \), and a good or service offered by the firm with the mix of attributes (environmental performance and other attributes) that he prefers, given his preferences, \( \alpha \), and income, \( y \).

\[
\max U(b, g, X; \alpha) \text{ subject to } y = b + P(g, X)
\]  

(2)

where the first order condition for \( g \) is:

\[
\frac{\partial P(g, X)}{\partial g} = \frac{\partial U}{\partial g} \frac{\partial U}{\partial b}
\]  

(3)
Equation (3) shows that, to maximize (2), tourists will choose a good or service with the level of environmental performance at which the marginal price of environmental performance equals the marginal willingness to pay for it.

To model the supply, the cost \((C)\) can be characterized as a function of the environmental performance of the firm, \(g\); the other attributes considered in a vector, \(X\); and a vector of parameters describing the costs faced by the firm, \(\beta\):

\[
\max \pi = P (g, X) - C (g, X, \beta) \tag{4}
\]

To maximize (4), each firm chooses the combination of \(g\) and \(X\), given the costs faced by the firm \((\beta)\), where the first order condition for \(g\) is:

\[
\frac{\partial P(g,X)}{\partial g} = \frac{\partial C(g,X;\beta)}{\partial g} \tag{5}
\]

Equation (5) shows that, to maximize (4), firms will choose a level of environmental performance at which the marginal price of environmental performance equals the marginal cost of environmental performance for the firm. Then, in equilibrium, we will observe:

\[
\frac{\partial U/\partial g}{\partial U/\partial b} = \frac{\partial C(g,X;\beta)}{\partial g} \tag{6}
\]
where the intrinsic price of the environmental performance is equal to its marginal value for the customers and also equal to the marginal costs of the firms.