GLOBAL MANAGEMENT

Strategy, Challenges, and Uncertainties

Contributors

Marcos Álvarez-Díaz
Angel Bujosa-Bestard
Antoni Costa-Costa
Tsuen-Ho Hsu
Daniel Palacios Marqués
María Teresa Palmer-Tous
Frank F. C. Pan
Lynnette D. Purda
Antoni Riera-Font
Jaume Rosselló-Nadal
Fernando J. Garrigós Simón
Chung-Sok Suh
Catalina Torres-Figuerola
José David Vicente-Lorente
Yue Wang
Qi Xu
Yanmei Zhang
José Ángel Zúñiga-Vicente

Alejandro L. Domínguez
Editor

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GLOBAL MANAGEMENT: STRATEGY, CHALLENGES, AND UNCERTAINTIES

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ALEJANDRO L. DOMÍNGUEZ
EDITOR

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PREFACE

Management comprises directing and controlling a group of one or more people or entities for the purpose of coordinating and harmonizing that group towards accomplishing a goal. Management often encompasses the deployment and manipulation of human resources, financial resources, technological resources, and natural resources. This book deals with management problems within a global context and presents the latest research in this growing field.

Chapter 1 - In this chapter, the authors review the extensive literature on strategic change across two opposing theoretical perspectives: the adaptation and ecological perspectives. After emphasizing the main theoretical similarities and differences between both views by underlinning the most important antecedents and the major outcomes behind strategic change considered by each theoretical approach, the authors focus on the analysis of a representative number of quantitative and longitudinal empirical studies. This analysis allows the authors to see the main methods that have frequently been used to explore the antecedents and outcomes of strategic change over the last three decades and, thus, to objectively evaluate the actual degree of divergence and/or similarity existing among all the empirical studies considered. The authors conclude the chapter by making some suggestions for future research on strategic change.

Chapter 2 - Firms seek to survive along with the spanning globalization of the international economy have more opportunities and needs to carry on the cooperation at various levels with external organizations. Joint venture is among the most familiar one in external cooperative configurations. Unfortunately, few if any studies had attempted to include customer as part of primary consideration in partner selection since 1970s. This research attempts to point the negligence and assure the important effects of such factors in partner selection.

Samples are purposely taken from international joint ventures with various nature of industry that established and operated in Taiwan. Using questionnaire as instrument, this research have successfully collected 321 valid responses with CEO, functional managers individually answer different portions of the questionnaire. Data is then analyzed with SPSS package including descriptive statistics, cross-tab analysis, as well as multiple regressions.

Major findings of this research include identifying and confirming the existence of customer related factors and its importance in the model of joint venture performance. Partner related factor is the most powerful predictors among all partner selection factors in predicting joint venture performance, and the customer related factor appears as the second. Task related

factor seems irrelevant for the respondents of this research. The key to become a market-driven management is selecting partner with customer related factors. There are several academic and managerial implications associated with the research finding.

Chapter 3 - The aim of this article is to show that, although criticized from new managerial perspectives, Porter and Industrial Organization schemes continue to be essential to the understanding of enterprise competitiveness, in the era of knowledge, and could be connected to the knowledge-based-view. In this vein, the authors' study analyzes Porter and Industrial Organization, and the Resource-Based and Knowledge-Based perspectives to show the importance of these schemes.

In addition, by means of a Delphi study using international experts, and a sample of 189 hospitality firms, the authors' study tries to show and analyze whether, how and why managers have different knowledge of quality of perception of the different environmental competitive forces identified by Porter in the post-Internet context.

Following the application of structural equations models, the managers analyzed in the authors' study hold different quality of perceptions of the various forces. This demonstrates the importance the structural environment has in conforming managerial knowledge or perception, one of the most important resources highlighted in new Resource-Based, and Knowledge Management literature.

Chapter 4 - Over the last years, most of studies concerning the tourism sector have focused on its positive impacts on economic growth. However, tourist activities also have the potential to cause negative effects on the natural environment of tourism destinations. Hence, there exists a divergence between the social and private costs of tourism related firms that leads to inefficient levels of production affecting both the costs of other companies and the satisfaction of tourists and residents. In this context, there is a need for the design of environmental policy tools oriented to changing the behavior of social agents in an attempt to correct tourism negative externalities. However, three kinds of uncertainty around the implementation of policy tools make their design a difficult task. First, the different potential effects of the high array of alternative environmental policy tools lead to instrumental uncertainty. Second, economic uncertainty emerges when governments can not know the compliance costs of affected firms. Third, there exists environmental uncertainty related to the timing and magnitude of thresholds of sustainability and possible irreversibilities. In this context, a well-designed environmental policy will require a simultaneous study of these three types of uncertainty to achieve environmental friendly goals in tourism destinations.

Chapter 5 - As global financial markets become increasingly integrated, so too do the financial institutions that operate within them. The international expansion of US-based credit rating agencies provides one such example. The most prominent of these agencies have expanded to operate in a wide-range of developed and emerging market economies and their opinions influence international investors and firms looking to raise debt either at home or abroad.

Expanding into international markets is not without its challenges, perhaps the most significant of which is to ensure that some degree of global consistency exists across ratings while incorporating country-specific features that influence credit risk. Using a unique database of Moody's ratings from six different countries, the author models the agency's rating assignment decision and document the extent to which the model applies to firms from different countries. The author finds that significant cross-country differences exist and that a single model depicting rating assignments does not accurately reflect the actual ratings

assigned in some countries. The chapter concludes with a discussion of why these differences may occur and the resulting implications for managers of international firms.

Chapter 6 - The rapid expansion of international tourism has motivated a growing interest in forecasting studies. The developments in tourism forecasting methodologies fall into several streams among which the computational methods seem to be capable of beating the traditional ones. This study reviews the principal applications in tourism demand forecasting of different techniques based on Computer Sciences and underlines inappropriate methodological procedures carried out in previous research. Furthermore, it also suggests potential lines of future research such as the use of new forecasting methods (Evolutionary Neural Networks and Data-Fusion) or the possible existence of chaotic dynamics in tourist time series.

Chapter 7 - This paper explores cultural interpretation in transnational encounters. It treats Chinese MBA students as non-western research subjects, and seeks to dispel plausible misconceptions about them. As such, what sometimes appears to be puzzling Chinese behaviour begins to make sense when interpretations are grounded in Chinese intellectual traditions. The empirical material is based on interviews with MBA students. The paper's contribution to the debate on the future of MBA programmes is twofold: critiques of mainstream thought are necessary but insufficient for overcoming asymmetry in transnational encounters. There is a need for work on the conditions for cross-cultural dialogue. It is suggested that an ethical consideration is integral to such conditions. In this paper, the Chinese students are no mere dispensable backdrop to the writing but inscribed in their terms. It is hoped that a positive message is brought to cross-cultural exchange to the extent that this paper serves as one step to overcome asymmetry in understanding. (155)

Chapter 8 - Dunning's ownership-location-internalization (OLI) paradigm is one of the earliest and most influential models that explain the phenomenon of foreign direct investment (FDI). However, partly due to its heavy focus on ownership advantages to the neglect of location advantage and partly because of the ignorance of the heterogeneous strategic motivations of FDI, the paradigm failed to explain many examples of upstream FDI entering the US and EU (initially from Japan and later from Asian newly industrialising economies) without substantial ownership advantages compared to the incumbent firms. This chapter aims to explain these seeming anomalies by developing a conceptual framework that extends the OLI model to link ownership advantages, location advantages and firm strategies together. In such a framework, ownership advantages are seen as a pre-condition as well as a product of FDI. By incorporating firm strategies as the fourth condition of FDI, our framework proposes that it is the *ex ante* firm strategies that lead to the *ex post* different configuration of ownership and location advantages. The framework helps the authors to understand that it is the match between the heterogeneous strategic motives of firms and the location-specific advantages that explains many upstream Asian FDI entering the US and EU.

Chapter 9 - The protection and conservation of fragile ecosystems led, years ago, to the creation of the first national parks. The management of these areas had to do with conserving natural habitats, regulating natural hazards (droughts, floods, fire, etc.), reinforcing natural barriers against soil erosion, carrying out biological research, etc. Human activity in and around a national park was required to be minimal and unobtrusive. Recent years have seen an increasing demand for outdoor recreation in general and an interest in wildlife in particular, mainly caused by rising incomes (at least in developed countries), falling prices (e.g. cheaper air travel) and a higher public awareness of nature conservation among other

factors. This new situation, characterized by a growth in the number of visitors to national parks, has created a new set of problems for their management (congestion, wildlife disturbances and ecodamage). In this context, there is one question about tourist recreation in national parks that makes it an even more interesting problem: What are the national parks for? Tourist recreation brings in revenue which may be important for a park's survival but in turn has serious implications (loss of biodiversity, degradation of habitats, etc.). The problem is that there is no market signal of these externalities, which could act as a constraint on economic activity in and around the park. To help guide decision making on the variety of available management options, improved valuation is needed. The plan of the paper is as follows. First, the authors analyze the various threats arise from human activity in and around the national parks. Secondly, the authors examine the use of a number of different non-market valuation techniques for the appraisal of both conservation and economic development projects affecting the national parks. Finally, according to the findings, the authors indicate future issues that need further exploration in this field.

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Chapter 1

RESEARCH ON THE ANTECEDENTS AND OUTCOMES OF STRATEGIC CHANGE: PAST, PRESENT AND FUTURE CHALLENGES

José David Vicente-Lorente [*]
Universidad de Salamanca
Facultad de Economía y Empresa
Departamento de Administración y Economía de la Empresa
Campus «Miguel de Unamuno», 37007 Salamanca, Spain
José Ángel Zúñiga-Vicente [†]
Universidad Rey Juan Carlos
Facultad de Ciencias Jurídicas y Sociales
Departamento de Economía de la Empresa (Adm., Dir., y Org.)
Pº. de Artilleros, s/n, Campus de Vicálvaro, 28032 Madrid, Spain

ABSTRACT

In this chapter, we review the extensive literature on strategic change across two opposing theoretical perspectives: the adaptation and ecological perspectives. After emphasizing the main theoretical similarities and differences between both views by underlinning the most important antecedents and the major outcomes behind strategic change considered by each theoretical approach, we focus on the analysis of a representative number of quantitative and longitudinal empirical studies. This analysis allows us to see the main methods that have frequently been used to explore the antecedents and outcomes of strategic change over the last three decades and, thus, to objectively evaluate the actual degree of divergence and/or similarity existing among all the empirical studies considered. We conclude the chapter by making some suggestions for future research on strategic change.

[*] Tel: +34 923 294400-Ext. 3502; Fax: +34 923 294715; E-mail: josvic@usal.es
[†] Address for correspondence. Tel: +34 91 4888048; Fax: +34 91 4887749; E-mail: joseangel.zuniga@urjc.es

INTRODUCTION

During the last three decades most industries in the economy have been undergoing fundamental changes in their environmental conditions. Continuous and profound changes are restructuring each of theses industries, relocating their boundaries, and, most importantly, consistently changing the bases of competition. These environmental changes include, for example, the globalization of markets which has been motivated among other things by the Internet revolution as well as by major technological advances and deregulation processes experienced in most of these industries. These changes have produced an environment for today's managers that some scholars have portrayed as 'hypercompetitive' (Ilinitch, D'Aveni and Lewin, 1996).

As a direct result of these environmental revolutions a large number of firms are disappearing, while other firms are emerging. Firms' managers are coping as best they can with the effects of such environmental revolutions by engaging in continuous change processes of strategic behavior. In this context, however, as suggested by Ilinitch et al., (1996: 211) most managers are restructuring their firms with no clear idea of the specific environmental and organizational factors that can really initiate and inhibit strategic change and its effects on organizational outcomes.

In our view, in this new competitive arena, knowledge of the potential antecedents and outcomes of strategic change seems today more needed than ever to help firm managers in their decision-makings. Nevertheless, understanding of what the main antecedents and outcomes of strategic change really may be is still at a primitive level because research findings on strategic change have not evolved into a coherent body of knowledge (Dass, 2000; Ginsberg, 1988; Rajagopalan and Spreitzer, 1996; Van de Ven and Scott, 1995). Specifically, it can be noted that after more than three decades of continuous research on these questions, the findings that have emerged from a large body of theoretical and empirical studies produced by a variety of researchers are contradictory, and both questions ―what type of factors can be considered as constraining or promoting factors behind strategic change and what performance outcomes can be derived from engaging in a strategic change process― remain open to discussion.

The results on both questions are sometimes completely different, depending on the theoretical position (e.g. adaptation or ecological perspective) and method adopted by each researcher (in terms of study time-periods, sample of study, definitions and measures of key constructs, cross-sectional *vs.* longitudinal analysis, type of statistical model applied, etc.). Thus, with respect to the antecedents of strategic change, it is not clear that widespread premises, such as the theoretical assumption that firms tend to change their strategies in response to dramatic changes in their environmental conditions are supported by empirical evidence. It is also theoretically and empirically questionable whether top managers (for example, firms' CEOs) play a key role when deciding whether to initiate strategic changes in the firms they are managing. The theoretical quandary of whether firm size, age, structural complexity, past performance or prior strategy can be considered as a source of inertia or a source of strategic flexibility also remains unanswered. Likewise, regarding the consequences of strategic change, the theoretical assertation of whether strategic change is damaging or beneficial to the firm is a debated subject.

In line with previous researchers, we recognize that the continued accumulation of contradictory findings currently adds little value to researchers' understanding of the strategic change phenomenon (Rajagopalan and Spreitzer, 1996: 49). With this fundamental idea in mind, the main purpose of this paper is to review a significant part of prior literature on strategic change from a theoretical and empirical standpoint. Thus, we seek to provide a shared understanding and proof of the scope and different theoretical assumptions and empirical results found in the research on the antecedents and outcomes of strategic change. In this endeavor, we begin our study by recognizing the need to clarify the key construct within this research stream: the concept of strategic change. We then review the extensive literature on strategic change across two opposing theoretical perspectives: the adaptation and ecological perspectives. We will stress the main similarities and differences between both approaches by underlining the main inhibiting and promoting factors and the major outcomes behind strategic change considered by each theoretical approach. Next, we review a representative number of quantitative and longitudinal empirical studies. This review will allows us to see the main methods that have usually been used to explore the antecedents and outcomes of strategic change over the last three decades and, thus, to objectively evaluate the actual degree of divergence and/or similarity existing among all the studies considered. Nevertheless, it is important to clarify here that we will focus on those antecedents and organizational outcomes that have previously been examined in several studies, so that comparisons among different studies can be made. Moreover, we will basically focus on those variables examined in the literature on strategic change that are already well established in conceptual and empirical research. Finally, we conclude by making some suggestions for future research on strategic change.

STRATEGIC CHANGE: MEANING AND MEASURE

The term 'strategic change' has frequently been subject of some controversy since it has been used to refer both to the importance of the change that can occur in a firm and changes in a firm's strategy (Ginsberg, 1988: 560). However, it can be argued that most of recent research on strategic change has usually used this term to refer to changes in strategy[1].

In addition, it is also interesting to highlight that changes in strategy have usually been described by researchers both in terms of content and process (Amburgey, Kelly and Barnett, 1993; Ginsberg, 1988; Meyer, Brooks and Goes, 1990; Rajagopalan and Spreitzer, 1996; Zajac and Shortell, 1989). In examining strategic change as a change in strategy content, researchers have basically focused on the antecedents and outcomes of strategic change, using large samples of firms and statistical analysis. Alternatively, researchers describing strategic change as a change in the strategy-making process have focused on the role of organizational leaders, utilizing in-depth qualitative empirical studies spanning several years (Rajagopalan and Spreitzer, 1996: 48). In the respect, we totally agree with Ginsberg (1988: 565) and many other authors that qualitative empirical studies that examine changes in strategy over long time periods (such as case studies) provide a major, indeed necessary, contribution to theory development. However, we do not consider case studies in our review of empirical research

[1] Therefore, we will use in this study both terms, 'strategic change' and 'changes in strategy', as interchangeable ones.

on the strategic change phenomenon since this may largely hinder comparability across different studies.

On the other hand, it is also important to underline that in discussing strategic change as a change in a firm's strategy content most researchers carrying out quantitative empirical studies have focused their attention on shifts at both the business- and corporate-levels. It is nevertheless true that changes in strategy can occur at the collective level as well (Fombrun, 1993; Rajagopalan and Spreitzer, 1996). Generally, authors focusing on changes in business-level strategy usually define strategic changes as alterations in competitive decisions within specific product/market domains —for example, alterations in price, production costs,or quality associated with a particular product or service (Fombrun, 1993: 159-160; Ginsberg, 1988: 560; Rajagopalan and Spreitzer, 1996: 50; Rumelt, 1974). Meanwhile, authors focusing on changes in corporate-level strategy address the diversity of business under the corporate umbrella and, hence, define strategic change as a realignment of firms' selection of different product/market segments and allocations among them (Ansoff, 1965; Fombrun, 1993: 159-160; Ginsberg, 1988: 560; Rajagopalan and Spreitzer, 1996: 50). Finally, those focusing on collective-level changes tend to explore the relative merits of forming relationships with competitors, suppliers or clients (Fombrun, 1993: 159-160; Rajagopalan and Spreitzer, 1996: 50).

Although strategy has tipically been conceptualized dynamically (i.e. as involving decision making and alignment over time), little empirical research was initially done examining and modeling strategy as a dynamic process (Freeman and Boeker, 1984: 74). In fact, most researchers basically relied on cross-sectional studies and, hence, static analysis to test their theoretical frameworks. However, this situation has substantially changed in recent years. As we note below, nowadays, most researchers performing empirical studies on strategic change are particularly interested in assessing the strategic behavior of firms over time, thus relying on longitudinal studies and dynamic analysis. In the particular case of these quantitative and longitudinal empirical studies, this dynamic objective is frequently reached by resorting to different operational measures that also help reserchers to evaluate a firm's strategy during particular periods of time (Rajagopalan and Spreitzer, 1996). Accordingly, it can be seen that in some empirical studies, researchers use measures that reflect the likelihood of changing a firm's strategy over time (i.e. whether there is a specific strategy change between two specific time periods). In other empirical studies, authors resort to measures that reflect the direction of change in a firm's strategy over time (e.g. prospector to analyzer, cost leadership to differentiation, related diversification to unrelated diversification). Finally, other researchers are more confident of measures that reflect the magnitude or degree of change in a firm's strategy over time (e.g. amount of diversity in the corporate portfolio).

However, independently of the type of operational measure of strategic change used by each researcher, it can be asserted that in modeling and studying strategic change, theoretical and empirical research has focused on three key questions: (1) can firms readily change their strategies? (2) what type of factors positively or negatively may influence the occurrence of strategic changes in firms? and (3) what are the main organizational outcomes that can be derived from these strategic changes? In the following section, we will see that the response to each of these questions will depend on the theoretical view being adopted by researcher.

MAIN THEORETICAL PERSPECTIVES ON STRATEGIC CHANGE

Over the past three decades, research on strategic change has revolved around two widely divergent and mutually exclusive theoretical views: the organizational adaptation perspective and the ecological approach. Researchers in the first view have usually adopted a quite optimistic position on the strategic change phenomenon while ecologists have tended to adopt a more pessimistic position on the occurrence of the same phenomenon. However, it is important to recognize at this point that authors from both perspectives share a common objective. Overall, one could say that they are especially interested in exploring the major factors for and against strategic change and predicting specific relationships between changes in strategy and different indicators of organizational outcomes.

The Organizational Adaptation Perspective

Historically, the organizational adaptation perspective has been the dominant view in the study of organizational change in general, and strategic change in particular (Singh, House and Tucker, 1986). In fact, prior to the late 1970s, almost all researchers examined strategic change under the common belief that top managers scanned the relevant environmental conditions, undertook organizational changes or formulated strategic responses to environmental changes and attempted to adapt to changing environmental conditions. On the whole, from this perspective managers are considered as performing proactively since their acts are viewed as energizing forces that help to shape the firm. Furthermore, these organizational or strategic changes are considered as an essential condition to ensure the performance and organizational survival of firms over time (Andrews, 1971; Bourgeois, 1984; Child, 1972; Singh et al., 1986; Thompson, 1967)[2].

There are a significant number of theoretical approaches that have traditionally shared these key assumptions with some nuances. This is, for example, the case of traditional strategic management (Andrews, 1971; Ansoff, 1965; Chandler, 1962; Porter, 1980, 1985), the contingency approach (Lawrence and Lorsch, 1967; Thompson, 1967), the resource dependence theory (Aldrich and Pfeffer, 1976; Pfeffer and Salancik, 1978), the institutional theory (DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Zucker, 1989), the theory of organizational learning (Lant and Mezias, 1992; Levinthal and March, 1981; March, 1991; Simon, 1991), and more recently the resource-based view of the firm (Barney, 1991; Grant, 1991; Peteraf, 1993; Wernerfelt, 1984, 1989) and the dynamic capabilities approach (Teece and Pisano, 1994; Teece et al., 1990, 1997). In this paper, we mainly focus on two specific

[2] However, in line with Boeker (1989: 490), it is also important to outline that strategy, from the adaptation view, can sometimes be characterized as relatively inertial and, hence, firms can be constrained in their ability to adapt their strategies to new environmental conditions. This occurs under the following three conditions: (a) when organizations exhibit 'strategic momentum' (see, for example, Amburgey et al., 1993; Kelly and Amburgey, 1991; Miller and Friesen, 1984; Quinn, 1980); (b) when there are high 'mobility barriers' within an industry (see, for example, Hatten and Hatten, 1987; Porter, 1980); and (c) when the access to 'strategic factor markets' is precluded or very costly and, therefore, firms need to accumulate those strategic resources internally by means of large and/or long term investments (see, for example, Barney, 1986; Teece, Pisano and Shuen, 1997).

approaches: traditional strategic management and the dynamic capabilities approach[3]. Precisely, the authors from these two approaches give a preferential treatment to the study of strategy and strategic change.

Traditional Strategic Management

The central tenet of traditional strategic management is that strategic change is considered as a frequent event and, what is more, it happens in a relatively quick and flexible way. Firms must maintain a proper alignment with their institutional and industrial environments. In other words, it is usually assumed that as institutional and industry environments change, so too should a firm's strategy (Smith and Grimm, 1987; Zajac and Shortell, 1989). But while some authors emphasize the relevance of the institutional environment (see, for example, Chandler, 1962; Ansoff, 1965 or Andrews, 1971), other authors underline the significance of certain factors related to the industry context (see, for example, Porter, 1980, 1985). Furthermore, most theorists agree in recognizing that with environmental changes, firms that do not change their traditional strategies will be out of alignment with their new environmental conditions, and as a result, one could expect organizational outcomes to suffer. Strategic changes symbolize action in this context, and it is therefore reasonable to expect that firms taking action will out-perform those that do not when the environmental conditions substantially change (Smith and Grimm, 1987: 366). In other words, according to this approach firms change their strategies mainly to improve their performance outcomes. Thus, a positive relationship can be expected between the change in a firm's strategy and its short-term performance and likelihood of survival over time.

Most of the theoretical discussion about the influence of institutional environmental factors on strategic change has focused on the potential effect of the deregulation process occurring in a large number of industries. The basic premise here is that the occurrence of a deregulation process in every industry will usually lead firms to change their traditional strategies. On the other hand, theorists interested in examining the influence of industry factors have identified economic concentration and density (i.e. the number of competitors in a specific market) as having a critical influence on the ability of firms to change their traditional strategies. Following the lead of some economists (e.g. Bain, 1959; Mason, 1957), the primary assumption with respect to the role played by concentration is that in very fragmented industries or in industries in which several firms are more or less the same size, rivalry is much more intense and, consequently, the chances of strategic change is greater (Porter, 1980). Regarding density, the critical premise is that the entry of new competitors in an industry tends to place strong pressure on the existing incumbents to change their traditional strategies (Oster, 1999: 32).

Regardless of the different role assigned to environmental factors, almost all theorists of this approach agree that strategic change is only possible when a firm's chief executive officer (CEO) —or top management team (TMT)— recognizes that these environmental

[3] This approach can somehow be considered as a dynamic and processual extension of the resource-based view of the firm. In fact, it can be said that the origins of this new approach underlie such a view, to a great extent, as Teece et al., (1997) recognize. It is for this reason that in this study we will only focus our attention on stressing the main assumptions maintained by the authors of this approach on the strategic change phenomenon.

factors have changed substantially. More specifically, in their opinion, it is practically impossible to understand strategy and strategic change without considering certain managerial characteristics of the decision-makers. Two of the most widely discussed characteristics affecting the occurrence of strategic change in firms are the CEO succession event and CEO tenure.

The replacement of the current CEO is usually considered by theorists as a symbol of organizational renewal (Finkelstein and Hambrick, 1996; Pfeffer and Salancik, 1978), since it is assumed that the CEO succession process unfreezes norms and, hence, provides an excellent opportunity for existing power relationships to be altered, for new strategic perspectives to be introduced, and for strategic change to take place (Boeker, 1997; Virany, Tushman and Romanelli, 1992; Zajac, Kraatz and Bresser, 2000). Nonetheless, it is also argued that long-tenured CEOs can become both an important facilitating and inhibiting force of changes in a firm's strategy in highly turbulent environments. This assumption rests on the supposition that tenure in a firm can differently affects top managers' cognitions and experiences (e.g. Boeker, 1997; Grimm and Smith, 1991; Hambrick, Geletkanycz and Fredrickson, 1993; Katz, 1982).

The Dynamic Capabilities Approach

This approach which emerged during the nineties (Teece and Pisano, 1994; Teece et al., 1990, 1997) as a dynamic and processual extension of the resource-based view of the firm can be characterized as providing a more realistic overview of the strategic change phenomenon than the traditional strategic management approach. One reason for this is that theorists from this approach suggest that, apart from environmental factors and managerial characteristics outlined by traditional strategic management, there is also a series of internal factors (resources, but mainly capabilities or competencies) which can play a fundamental role as potential promoting or inhibiting forces of strategic change.

One important difference between the traditional strategic management and dynamic capabilities approaches is that while researchers in the first approach tend to see strategic change occurring with relative facility, theorists in the second approach see strategic change as being difficult and costly and generally occurring incrementally (Teece et al., 1997: 529). Specifically, from this approach it is reckoned that undertaking relevant structural and strategic structural changes can be seriously constrained because of the 'path-dependent' process of resources and capabilities creation and deployment. In this sense, it is assumed that a firm's strategy is usually rooted in certain resources, competencies and capabilities which must be internally built and, as a last resort, may turn into sources of change and rigidity in firms (Helfat, 1998; Leonard-Barton, 1992; Teece et al., 1997). However, it is usually assumed that the costs and limitations coupled with strategic change do not preclude successful adaptation when adopting best practices through a constant surveillance of different market segments (i.e. new environmental conditions). This should necessarily force internal adjustments to quickly accomplish strategic reconfiguration and transformation ahead of the competition (Teece et al., 1997: 521). Essentially, this approach views the environment as a trigger of strategic change but also as a selection device that precludes the survival of organizations lacking the required resources, capabilities or competencies to face the new environmental conditions (Teece et al., 1990: 18).

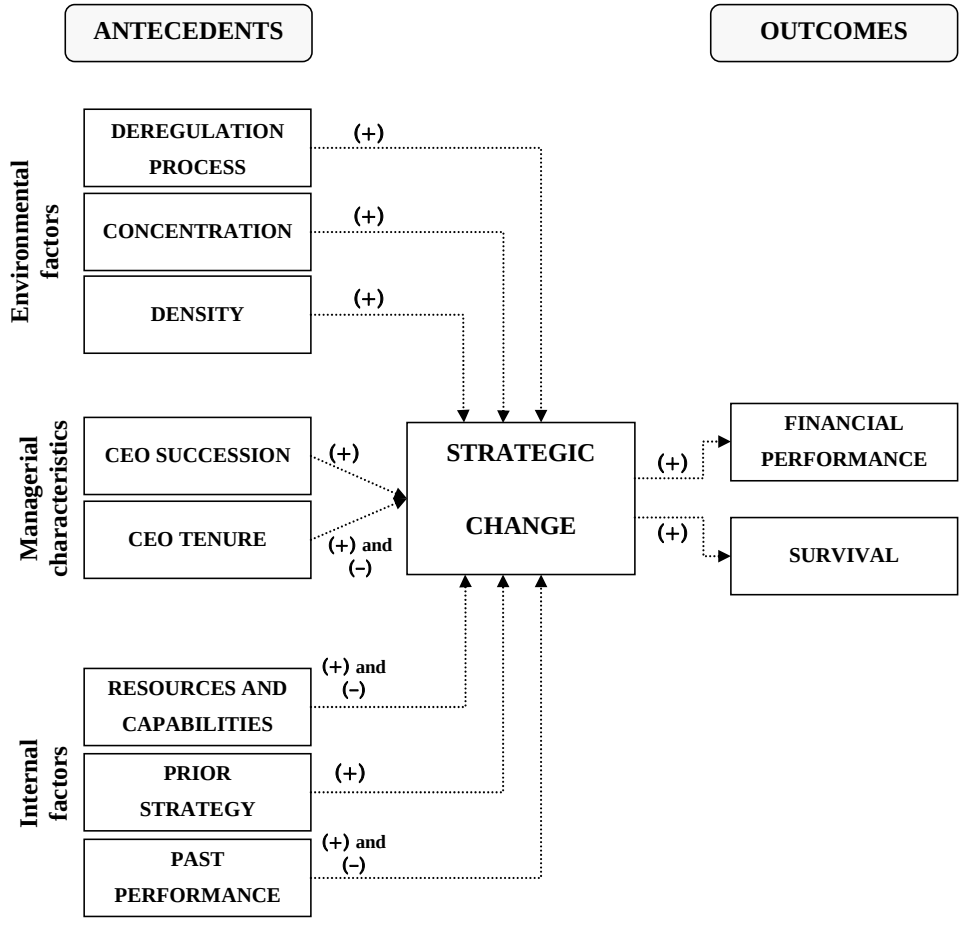

Figure 1. A Basic View of some Antecedents and Outcomes of Strategic Change according to the Traditional Strategic Management and Dynamic Capabilities Approaches

Another fundamental assumption of this approach is that the future behavior of a firm can be expressed as a function of its past and current behavior. The notion of 'path dependencies' involved in this approach means recognizing that 'history matters' (Teece, Rumelt, Dosi and Winter, 1994: 17; Teece et al., 1997: 522). As a last resort, this means that the range of markets and products that most managers can effectively understand may be outstandingly restricted. Firms usually tend to be coherent in their strategic behavior over time "to the extent that their constituent businesses are related to one another" (Teece et al., 1994: 2). In other words, according to this approach it is expected that when a firm decides to change its strategy the new strategy is going to be related in some aspects to the traditional one. Therefore, in this context, it is logical to think that the prior or initial strategy of a firm may be an element that must also play a very important role in the subsequent strategic change process.

Figure 1 displays a basic view of the relationships between strategic change and some of the main antecedents and outcomes considered from traditional strategic management and dynamic capabilities approaches. Signs in parentheses in Figure 1 show the kind of relationship (positive and/or negative) that there is between different antecedents and

outcomes and strategic change according to the theoretical assumptions from both approaches. Thus, in line with these theoretical assumptions, Figure 1 illustrates that certain environmental factors (in our case, deregulation, concentration and density) should be positively associated with the occurrence of changes in a firm's strategy –corporate, competitive or collective-level strategy. Likewise, the CEO succession event (managerial characteristics) should be positively associated with the occurrence of such changes. However, CEO tenure may be both positively and negatively associated with strategic change. Similarly, resources and capabilities (internal factors) may be positively and/or negatively associated with strategic change because, as we noted above, some resources and capabilities may be the source of strategic rigidity while others may be a source of flexibility. On the other hand, the prior or initial strategy and past performance of a firm should be positively associated with strategic change. Finally, this figure shows that the effect of changes in a firm's strategy on short-term financial performance and the probability of organizational survival should be positive.

It can be noted that we have included in Figure 1 past performance (see internal factors) as a potential antecedent of strategic change. In fact, it is important to recognize that past performance has frequently been considered as a major explanatory variable in most models of organizational learning (Lant and Mezias, 1992; Lant, Milliken and Batra, 1992; Levinthal and March, 1981) and, by extension, in many models of organizational change associated with the adaptation perspective.

Two opposing views have arisen to predict the likely strategic actions of poor performing firms (Ketchen and Palmer, 1999: 686): the so-called behavioral theory of the firm and the threat-rigidity perspective. According to the first view, it is claimed that past performance provides feedback about the relative effectiveness of a firm's prior strategy (Lant et al., 1992: 589). From this standpoint, it is usually put forward that a sustained period of poor performance is one of the most important factors promoting the need to make changes in a firm's strategic behavior (Tushman and Romanelli 1985). Thus, firms that have performed poorly in the past are more likely to change their strategies than firms that have experienced a period of success with their prior strategies (Fombrun and Ginsberg, 1990; Ginsberg, 1988; Ketchen and Palmer, 1999: 686; Lant et al., 1992: 589). In contrast, the second view suggests that poor performers are less likely than other firms to alter their existing strategies. Instead of tying their hopes for a turnaround to unfamiliar strategies, "managers will opt for a continued reliance on existing [strategies] that allows organizational members to continue using institutionalized routines" (Ketchen and Palmer, 1999: 687). In light of both theoretical views, it can be expected that past performance may empirically be both positively and negatively related to strategic change.

The Ecological Perspective

This new approach appeared at the end of the seventies as a reaction to the excessively optimistic view of organizational and strategic change according to the adaptation perspective in general and traditional strategic management approach in particular (Aldrich, 1979; Carroll, 1984; Hannan and Freeman, 1977).

The first decade of ecological theory (from the end of the 1970s to almost the end of the 1980s) was empirically dominated by the study of life events associated with populations of

firms (i.e. the study of organizational births and deaths). During this period ecologist researchers assumed in most of their empirical studies that change occurred primarily in a population of firms through the foundings and failures of organizations (Amburgey and Rao, 1996; Carroll, 1988; Kelly and Amburgey, 1991). Therefore, the main unit of analysis, at this moment, was the population of firms rather than individual organizations. As Amburgey and Rao (1996: 1266) recognize, "Organizational-level change was, at [this] time, beyond the frontier of ecological theory".

However, the proposal of the structural inertia model by Hannan and Freeman in 1984 substantially shifted this initial focus of the ecological perspective as it allowed for the exploration of change in single organizations. Specifically, from the end of the 1980s until the present most ecologist researchers have considered that changes made by individual firms are as important as organizational foundings and failures processes for a more accurate understanding of organizational change (Baum, 1996; Baum and Amburgey, 2002; Kelly and Amburgey, 1991: 592; Singh, Tucker and Meinhard, 1991; Tucker, Singh and Meinhard, 1990). As occurred in the adaptation view, the firm now became the relevant unit of analysis when studying any type of organizational change. Therefore, organizational ecologists started to examine the assumptions of the structural inertia model, the influence of certain environmental and organizational factors on rates of change in individual organizations, and the adaptiveness (in terms of survival consequences) of different kind of organizational changes (Baum, 1996: 99). Accordingly, it can be argued that this new model explicitly provides a response to the three main questions addressed in this study.

In the structural inertia model, Hannan and Freeman suggest that strategy must be considered as a 'core feature' of a firm (1984: 156) and a basic tenet of their model is that inertial pressures tend to prevent most firms from making radical changes in their strategies and structures over time[4]. More specifically, ecologists see the strategy as fixed at its inception and as relatively unchanging over time (Freeman and Boeker, 1984: 71). Furthermore, once it is fixed no further scope is left for organizational leaders (Robbins, 1990). In this context, the managerial role is usually described as inactive or, at most, symbolic (Pfeffer and Salancik, 1978: 263). Top managers usually face a wide variety of external and internal constraints (i.e. inertial forces) which often limit their ability to make changes in a firm's strategy over time. However, this is not to say that the ecological perspective assumes that organizational leaders or top managers do not ever matter, or that they can never modify a firm's strategy. By definition, one point in the organizational life that involves making strategic decisions is the time of founding. Obviously, it is recognized that organizational leaders or entrepreneurs go through a strategic exercise when they decide to start a new business (Freeman and Boeker, 1984: 79).

The claim that strategy is subjected to important inertial forces does not mean, however, that it never changes. Firm managers can also sometimes attempt to perform strategic changes after organizational founding in order to maintain a suitable fit with their environments. But

[4] Hannan and Freeman (1984) distinguish two sets of organizational features: 'core' and 'peripheral' features. The 'core features' are: (1) its *stated goals*; (2) *forms of authority*; (3) *core technology*; and (4) *market strategy*. In their opinion, these four core features stand in a rough hierarchy, with stated goals usually subject to the strongest constraints and market strategy, the weakest. Thus, they argue that the likelihood of change declines as one proceeds up the hierarchy (1984: 156). On the other hand, they include in the 'peripheral features' the *administrative structure* of a firm. Core features tend to exhibit in general greater inertia than peripheral features (Baum and Amburgey, 2002: 309; Hannan and Freeman, 1984: 157; Kelly and Amburgey, 1991: 594).

insofar as the speed of strategic change is usually lower than the rate at which environmental conditions change the firm is exposed to a greatly increased risk of death during the change process (Amburgey et al., 1993; Hannan and Freeman, 1984, 1989; Haveman, 1992). According to structural inertia theory, any core change (as, for example, a change in strategy) is hazardous. Specifically, from this approach it is posited that core change may destroy or renders obsolete established routines, disrupts exchange relations among different firm stakeholders, compel firms to divert resources from operating to reorganizing and undermine firm legitimacy, at least temporarily, by reducing the efficiency of organizational operations. This may render organizational performance less reliable and accountable and thereby hurt survival chances, at least in the short run (Baum and Amburgey, 2002: 310; Hannan and Freeman, 1984, 1989; Haveman, 1992: 48)[5].

Despite the inherent riskiness of initiating a core change like a shift in a firm's strategy such a step is sometimes necessary and occasionally beneficial when some dramatic or sudden transformations occurs in the environmental conditions, such as for instance, a liberalization process in a particular industry (Baum and Amburgey, 2002; Haveman, 1992; Haveman, Russo and Meyer, 2001). Ecologists have also identified density and economic concentration as having a critical influence on the probability of change in a firm's strategy. Generally, it is assumed that high density levels in an industry tend to exacerbate competitive rivalry between populations of firms that, on the other hand, are dependent on limited resources. Further, rising levels of density and competition often increase strategic differentiation between competing firms (Hannan and Freeman, 1989). As regards industry concentration, it is usually argued that firms find it more difficult to expand their products and services (i.e. change their traditional strategies) in a market that is highly concentrated and where a few firms have a high market share than they do in markets that are highly fragmented (Boeker, 1991: 619).

According to the structural inertia model inertia and, hence, the probability of change in core features (as, for example, changes in a firm's strategy) is not only associated to certain environmental factors but it also can vary with certain organizational factors such as age, size and level of structural complexity. Generally, in this model, age, size and structural complexity are associated with resistance to change (Hannan and Freeman, 1984, 1989).

Because older organizations have had more time to formalize more thoroughly their internal relationships, to standardize their routines (Stinchcombe, 1965), and to institutionalize leadership and power distributions (Pfeffer and Salancik, 1978), as well as to develop rich networks of dependencies and commitments with other powerful social actors, it is expected that the reproducibility of structure and, thus, strategic inertia will increase monotonically with age (Ginsberg and Buchholtz, 1990: 451; Hannan and Freeman, 1984: 157). Thus, older firms are usually more limited in their ability to adapt their competitive strategies to changing environmental demands than younger ones. This is known as the *rigidity of aging hypothesis.*

Moreover, as firms grow (i.e. increase in size) they tend to be more bureaucratic than smaller ones; the more bureaucratic organizations emphasize predictability, formalized roles, and control systems and their behavior becomes highly predictable, rigid and inflexible

[5] However, although the structural inertia model views strategic change as disruptive in the short run, it may be, ultimately, beneficial if firms manage to overcome the hazards associated with the initial disruption (Baum, 1996: 101).

(Baum, 1996: 100; Haveman, 1993: 24). Large firms, as they are less dependent on their environments may also be buffered from the need of change (Baum and Amburgey, 2002: 309; Haveman, 1993: 25). This is known as the *rigidity of size hypothesis*.

On the other hand, it can be noted that as firms grow they also tend to increase their structural complexity or "the patterns of links among subunits" (Hannan and Freeman, 1984: 162). From an organizational standpoint it is argued that once a complex organization has embarked, for example, on a strategic change process, it tends to be exposed to a longer period of reorganization than a simpler organization attempting similar changes. In this context, it is predicted that high complexity increases the probability of failure (Hannan and Freeman, 1984: 162). Furthermore, it can be also asserted that organizations structurally more complex may find it more difficult to implement changes in strategy because it is expected that coordination costs rise geometrically as the number of subunits increases (Gresov, Haveman and Oliva, 1993: 197). Following the same terminology, we call this the *rigidity of organizational complexity hypothesis*.

Alternatively, it has also recently been assumed by some researchers that older, larger and more complex organizations may find it easier to change. As Boeker points out, "To the extent that environmental changes are temporal, the age of a firm offers some indication of the amount of environmental variation it may have experienced. Older organizations will have had more time and thus will have faced more pressure to deviate from a strategy adopted early" (1989: 497) and they may, therefore, be more likely to adapt their strategies to the demand of a constantly changing environment (Carroll, 1983). This is the *flexibility of aging hypothesis*. On the other hand, it is also argued that larger organizations are also more likely to adopt any kind of innovation or change. Moreover, these organizations have more slack resources which can facilitate experimentation with such innovations or changes (Haveman, 1993: 25). This is the *flexibility of size hypothesis*. Insofar as larger organizations are also more complex it can be posited that the probability of attempting strategic changes will increase with structural complexity. Precisely, the ambiguous effect of complexity on the probability of core changes is recognized by Hannan and Freeman (1984: 162) when they hold that "we are not yet ready to make any claims about the effect of complexity on rates of organizational transformation". We call this the *flexibility of complexity hypothesis*.

Finally, although not included in the structural inertia model, as suggested by Baum and Amburgey (2002: 309) "a complete understanding of organizational change requires consideration of organizations' change histories", because as they go on to say (2002: 309) "The more experienced an organization becomes with a particular change, the more likely it is to repeat it". In this sense, it is generally argued that when a firm repeats changes that they have experienced in the past, its change process is said to exhibit 'organizational momentum'[6] (Amburgey et al., 1993; Baum, 1996: 102-103; Baum and Amburgey, 2002: 309; Kelly and Amburgey, 1991: 596; Miller and Friesen, 1984: 28). In this context, Kelly and Amburgey (1991: 566) state that "a way to test for momentum is to include in an analysis an organization's history of changes by type, counting the cumulative number of each type of change experienced by each organization. If change processes exhibit momentum, the

[6] To say that a firm exhibits 'organizational momentum' is somehow similar to saying that this firm is consistent when deciding where to change its strategy in the future. From this standpoint, there are many theoretical similarities between the concept of 'corporate coherence' set out in the dynamic capabilities approach and the concept of 'organizational momentum' proposed by ecologists.

cumulative number of prior changes of a given type should have a positive effect on the probability of a change of the same type".

Figure 2 provides a basic view of the relationships between strategic change and some of the main antecedents and outcomes considered from the ecological approach. Signs in parentheses in Figure 2 show the kind of relationship (positive and/or negative) that there is between different antecedents and strategic change, as well as between one fundamental indicator of organizational outcomes (likelihood of survival) and strategic change according to the theoretical assumptions of this approach.

As illustrated in Figure 1, Figure 2 also highlight that certain environmental factors (deregulation, concentration and density) should be positively associated with the likelihood of strategic change. It is also shown that some organizational factors (size, age and complexity) should be both positively and negatively associated with the likelihood of strategic change. On the other hand, the effect of prior changes of a given strategy has a positive effect on the likelihood of strategic change. Finally, this figure reveals that the effect of changes in a firm's strategy on the probability of organizational survival is negative.

REVIEW OF THE EMPIRICAL RESEARCH ON STRATEGIC CHANGE

In this section of the paper, we review the contributions of a representative number of empirical quantitative and longitudinal studies that have employed statistical analysis to estimate and evaluate models of changes in strategy. Our interest here is in seeing to what extent these empirical studies have provided support for the adaptation and ecological perspectives' key theoretical predictions. The sample of studies examined were drawn from a survey of articles and references on strategic change-related topics that have appeared in top-tiers management journals over the past twenty or thirty years. Our sample consists of 57 different empirical studies; 34 of these 57 studies are only interested in examining the main antecedents of strategic change while 10 of the 57 are especially interested in evaluating the consequences of strategic change. However, it is interesting to note that there are 12 studies that simultaneously focus their attention on the analysis of the antecedents and consequences of strategic change.

We start off by examining empirical studies that have shown interest in testing the specific influence of environmental factors, managerial characteristics, and organizational and internal factors on strategic change. Table 1 provides a detailed list of these studies. This table summarizes information on the following relevant aspects of each study: authors and date of publication, sample and period of study, method of study, operational measures of strategic change (in terms of likelihood, direction and/or magnitude of change in a firm's strategy), the main explanatory variables of strategic change considered according to Figures 1 and 2[7], and key findings (i.e. the positive or negative and significant effect of different explanatory variables on strategic change).

[7] For this study, we include in the category of explanatory variables of strategic change both the independent and control variables (c.v.) considered by each of the empirical studies reviewed.

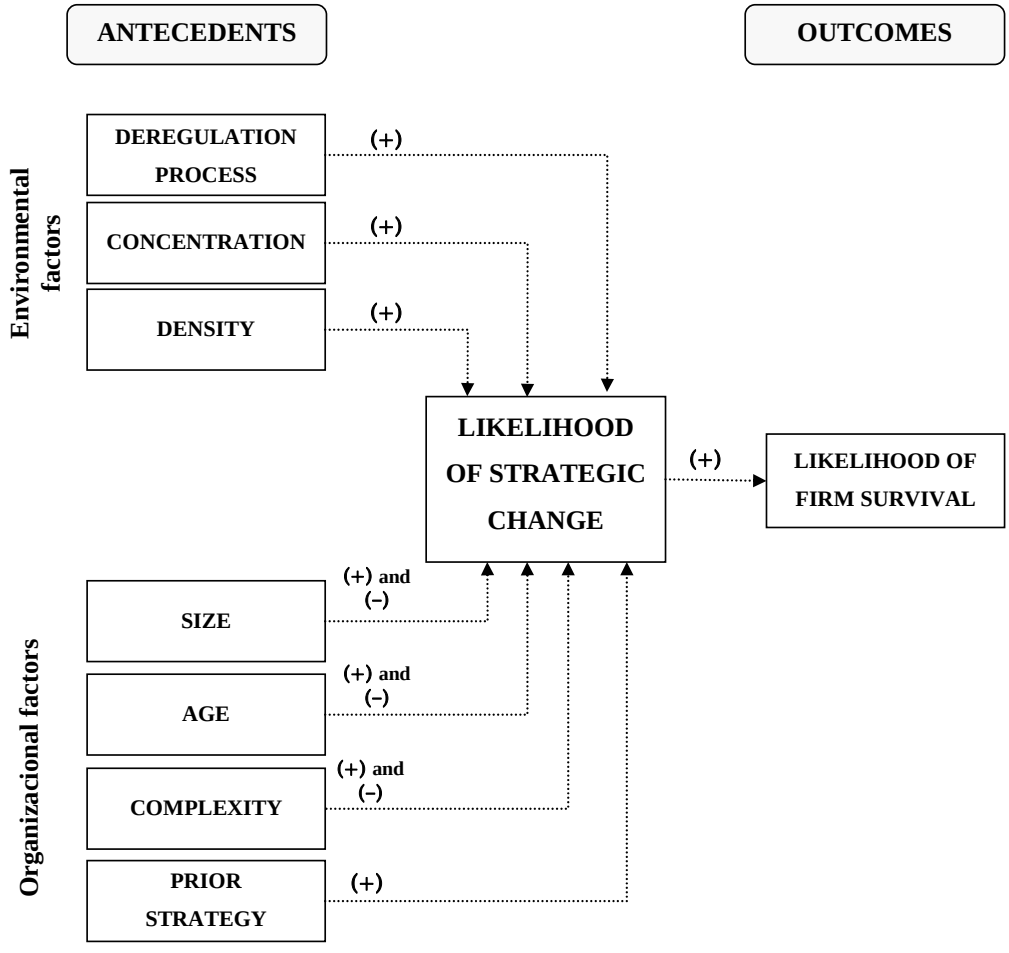

Figure 2. A Basic View of some Antecedents and Outcomes of Strategic Change according to the Ecological Approach.

The Effect of Environmental Factors on Changes in a Firm's Strategy

Deregulation

As shown in Table 1, findings regarding the effect of several factors linked to the external environment generally appear fragmented and somewhat contradictory. On the one hand, some studies find general support for the contention that firms tend to change their corporate or competitive strategies in response to major environmental shifts brought about by such forces as deregulation and that the impact of such shifts influences changes in these strategies in a non-random way. Thus, for example, Smith and Grimm (1987) and Zajac and Shortell (1989) find that changes in regulation appear to be positively associated with changes in the direction of competitive strategy over time. In this same line, Ginsberg and Buchholtz (1990) and Ginsberg and Baum (1990) suggest that a deregulation process tends to act as an important promoting factor of changes in the probability of a firm's corporate strategy.

Meanwhile, other studies find weak or modest support for the positive influence of deregulation on the probability of changes in a firm's corporate strategy (e.g. Tucker et al., 1990; Wholey and Burns, 1993 or Aldrich et al., 1994).

On the other hand, there are many other studies that find minimal support or mixed findings with respect to the relationship between deregulation and strategic change. Thus, while Kelly and Amburgey (1991) find a negative relationship between deregulation and the probability of changes in a firm's corporate and business strategy, the existence of both a positive and a negative impact of deregulation on the magnitude or probability of changes in a firm's corporate or business strategy is suggested by the following studies: Baum (1990), Goodstein and Boeker (1991), Amburgey et al., (1993), Haveman (1993), Baum and Korn (1994), Haveman et al., (2001) and Zuñiga-Vicente et al., (2005).

Similar contradictory results are also found when other environmental variables linked to the institutional environment are considered in the study (see, for example, Baum 1990; Delacroix and Swaminathan, 1991; Lant et al., 1992; Amburgey et al., 1993; Hambrick et al., 1993; Miller, 1993; Barker and Duhaime, 1997; Stoeberl et al., 1998; Zajac et al., 2000; Kraatz and Zajac, 2001 or Wetsphal and Fredrickson, 2001).

Density and Industry Concentration

The influence of density has also received differential support. Only three studies of Table 1 seem to provide consistent support for the positive effect of density on strategic change (e.g. Mitchell, 1989; Zajac et al., 2000 and Zúñiga-Vicente et al., 2005). There are five studies that provide partial or weak support for this positive relationship (e.g. Ginsberg and Buchhlotz, 1990; Tucker et al., 1990; Delacroix and Swaminathan, 1991; Wholey and Burns, 1993 and Baum and Korn, 1996). Moreover, two studies simultaneously find a positive and negative and significant relationship between both variables (e.g. Amburgey et al.,1993 and Kraatz and Zajac, 2001). On the other hand, two studies find that density may negatively affect both the magnitude and probability of strategic change (e.g. Haveman, 1993 and Ruef, 1997). Finally, three studies conclude that density does not significantly affect the occurrence of changes in a firm's strategy (e.g. Zajac and Shortell, 1989; Aldrich et al., 1994 and Stoeberl et al., 1998).

There were also contradictory findings for the effect of market concentration or competitiveness on strategic change. Three studies seem to provide partial support for the existence of a positive effect (e.g. Tucker et al., 1990; Wholey and Burns, 1993; Baum and Korn, 1996). On the other hand, four studies highlight that such effect is negative (e.g. Montgomery and Hariharan, 1991; Miller and Ming-Jer, 1994; Silverman, 1999 and Zúñiga-Vicente et al., 2005). In addition, one study concludes that this effect is not significant (e.g. Goodstein and Boeker, 1991).

The Effect of Managerial Characteristics on Changes in a Firm's Strategy

CEO Succession

As shown in Table 1, findings regarding the effect of CEO succession on strategic change are usually more consistent. We have identified 10 studies interested in assessing this effect. According to most of the studies examined, CEO succession is positively related to changes

in corporate and business-level strategies (e.g. Goodstein and Boeker, 1991; Lant et al., 1992; Wiersema, 1992; Miller, 1993; Barker and Duhaime, 1997; Westphal and Fredrickson, 2001 and Zúñiga-Vicente et al., 2005). There are only three studies that do not find significant effects (e.g. Osborn et al., 1981; Boeker, 1997 and Sakano and Lewin, 1999) and one study concludes that the positive or negative influence of CEO succession on a firm's domain expansion depends, to a great extent, on the industry considered (e.g. Haveman et al., 2001).

CEO Tenure

With respect to the CEO tenure, the findings of four studies interested in examining its direct effect on strategic change are more diverse. Only one study finds that CEO tenure positively affects the likelihood of changes in business-level strategies (e.g. Zúñiga-Vicente et al., 2005). Two studies find that firms with longer CEO tenure are less likely to change their corporate-level strategies (e.g. Boeker, 1989, 1997). Finally, one study finds that the effect of CEO tenure on strategic change is irrelevant (Hambrick et al., 1993).

The Effect of Internal and Organizational Factors on Changes in a Firm's Strategy

Resources and Competencies

As shown in Table 2, there are 11 studies interested in assessing the role played by certain resources and capabilities or competencies on the strategic change process. In general, according to the logic of the resource-based view and the dynamic capabilities approach, most of these studies have found that resources and core capabilities or competencies usually play a critical role in the strategic change process of a firm's corporate strategy, with some resources and capabilities promoting the strategic change process and others inhibiting it (e.g. Chatterjee and Wernerfelt, 1991; Kraatz and Zajac, 2001; Mitchell, 1989; Montgomery and Hariharan, 1991; Silverman, 1999; Teece *et al.* 1994 or Zajac et al., 2000). However, it is also interesting to underline that there are some studies that do not find significant effects of certain resources (as for instance, specialized, human resource availability or physical resources) on changes in a firm's corporate or business level strategy (e.g. Mitchell, 1989, Zajac and Shortell, 1989 or Chatterjee and Wernerfelt, 1991).

Past Performance

Traditionally, researchers have been very concerned with knowledge of the potential effect of past performance on strategic change. As shown in Table 1, 19 studies out of 46 are interested in assessing this effect. The findings are mixed. Most researchers have found that overall poorly performing firms are more likely to engage in more change in their corporate or business-level strategies than their stronger rivals (e.g. Oster, 1982; Boeker, 1989; Lant et al., 1992; Miller and Ming-Jer,1994; Barker and Duhaime, 1997; Boeker, 1997; Ketchen and Palmer, 1999 or MacDonald and Westphal, 2003), thereby providing support for the so-called behavioral theory of the firm. However, other researchers have found that poor performers are less likely than other firms to alter their existing corporate and business-level strategies, thereby providing support for the so-called threat-rigidity perspective (e.g. Baum, 1990; Fombrun and Ginsberg, 1990; Goodstein and Boeker, 1990; Hambrick et al., 1993; Baum and

Korn, 1996; Zajac et al., 2000). On the other hand, one study finds support for both theoretical perspectives (e.g. Haveman, 1993) and some studies find no significant effects of past performance (e.g. Grimm et al., 1993; Miller, 1993; Haveman et al., 2001 or Westphal and Fredrickson, 2001).

Prior Strategy

Researchers have also been very interested in examining the potential effect of prior or initial strategy on subsequent changes in the likelihood and magnitude of corporate and business-level strategies, as shown in Table 1. There are 19 studies that include this variable in their analysis. It is interesting to stress that consistent findings are found in studies examining the impact of prior or initial strategy on strategic change. Most studies find general support for the 'coherence' or 'momentum' theoretical arguments included in the adaptation and ecological perspectives, respectively (e.g. Zajac and Shortell, 1989; Delacroix and Swaminathan, 1991; Kelly and Amburgey, 1991; Amburgey et al., 1993; Grimm et al., 1993; Wholey and Burns, 1993; Amburgey and Dancin, 1994; Ginsberg and Baum, 1994; Miller and Ming-Jer, 1994; Stoeberl et al., 1998; Dass, 2000 or Haveman et al., 2001). Only 3 out of 19 studies find that prior strategy negatively affected subsequent change (e.g. Haveman, 1993; Kraatz and Zajac, 2001 and Washington and Ventresca, 2005). Finally, six studies do not find significant effects (e.g. Mitchell, 1989; Chatterjee and Wernerfelt, 1991; Aldrich et al., 1994; Amburgey and Dancin, 1994; Baum and Korn, 1996 and Zajac et al., 2000).

Size

The potential impact of this variable on strategic change has been examined as independent or control variable in most of studies appearing in Table 1. It can be seen in this Table that findings on firm size are very ambiguous. In many studies, size and positive effects on the changes in corporate and business-level strategies are found (e.g. Baum, 1990; Chatterjee and Wernerfelt, 1991; Haveman, 1993; Zajac and Kraatz, 1993; Miller and Ming-Jer, 1994; Barker and Duhaime, 1997; Boeker, 1997; Silverman, 1999; Dass, 2000; Zajac et al., 2000; McDonald and Westphal, 2003; Washington and Ventresca, 2005). Thus, all these studies provide some support for the theoretical arguments behind the flexibility of size hypothesis. However, in many other studies, size has negative effects (e.g. Mitchell, 1989; Fombrun and Ginsberg, 1990; Delacroix and Swaminathan, 1991; Grimm et al., 1993; Ruef, 1997; Stoberl et al., 1998; Ketchen and Palmer, 1999; Zúñiga-Vicente et al., 2005). These studies provide support for the theoretical arguments related to the rigidity of size hypothesis. It is interesting to note that there are also some study that find support for both hypotheses (e.g. Baum and Korn, 1996). Still another very significant number of researchers finds no effects or weak effects at either the corporate or business-levels (e.g. Ginsberg and Buchhloltz, 1990; Tucker et al., 1990; Kelly and Amburgey, 1991; Wholey and Burns, 1993; Gresov et al., 1993; Aldrich et al., 1994; Amburgey and Dancin, 1994 or Haveman et al., 2001).

Table 1. Selected studies on the antecedents of strategic change

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Osborn, Jauch, Martin and Glueck (1981)	Several industries (313 large firms)	1930-1974 (USA)	Discriminant Analysis	- Corporate-level strategy (Glueck's typology) - Changes in magnitude (Scores)	- CEO successsion	Overall, results show that CEO succession is not significanrly related with changes in strategy.
Oster (1982)	19 industries of consumer goods	1971-1977 (USA)	OLS and GLS Regression Analysis	- Business-level strategy (Product strategy using advertising data) - Changes in magnitude (Mobility index: Movement across strategic groups)	- Past performance - Prior strategy (past advertising)	While the incidence of strategy change or mobility is reasonably low in all industries, there is variation across industries. The more important past advertising is relative to current advertising, the lower the mobility rate. Conversely, if current advertising is important relative to past efforts, intergroup mobility is higher. In some cases (low advertisers), few firms faced with a fall in profits change to a high advertising strategy while in other cases (high advertisers), the fall in profits induced a significant fall in advertising.
Smith and Grimm (1987)	Railroad sector (27 railroads)	1979-1983 (USA)	Cluster Analysis and Frequency Analysis	- Business-level strategy (Five dimensions: service quality, marketing focus, pricing, organizational innovativeness and product dependability) - Changes in direction (Changes across strategic groups)	- Deregulation	15 firms out of 27 (56%) changed their strategies in response to environmental deregulation (+).

Table 1. Selected studies on the antecedents of strategic change (Continued)

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Boeker (1989)	Semicondutor Producers (51 firms)	1977-1984 (USA)	Hierarchical Regression Anlaysis	- Business-level strategy (First-mover, Low-cost producer, Second-mover, and Niche strategy) - Changes in degree (Degree of change in strategy from founding: Difference scores)	- Initial strategy - Past performance - Organizational age - Entrepreneur's tenure	The coefficient on dominant initial strategy is negative in three of the four models. Firm performance is significant and negative in two of the four models. In all four models older organizations demostrate more change. Minimal support for the effect of entrepreneur's tenure on strategic change.
Mitchell (1989)	Diagnostic Imaging industry (436 firms)	1958-1988 (USA)	Logistic Analysis	- Corporate-level strategy (Entry into an emerging subfield) - Changes in probability (Entry probability)	- Specialized assets - Number of firms - Size - Prior experience	Each measure of specialized assets have a positive sign. Entry probability significantly fall as the number of potential rivals rose. The larger a firm, the less likely it is to enter a new subfield. The effect of prior experience is not significant.
Zajac and Shortell (1989)	Health Care industry (570 hospitals)	1983/84-1985/86	Frequency Analysis and Discriminant Analysis	- Business-level strategy (Miles and Snow (1978) categorization) - Changes in type or direction	- Regulation - Prior strategy - Number of firms (c.v) - Human resource availability (c.v)	55 percent of firms change their generic strategies in response to environmental deregulation (+). Strong support for prior strategy (+). The effect of number of firms and human resource availability is not significant.
Baum (1990)	Metro Toronto Day Care Centers (588 centers)	1971-1987 (Canada)	Time Event History Analysis	- Corporate-level strategy (Specialists –Generalists) - Changes in type (Rate of instantaneous transitions)	- Environmental changes - Age - Size - Prior organizational performance	Mixed significant effects of environmental variables (+ and -). Strong support for the fluidity of aging hipothesis (+). Some support for the fluidity of size hypothesis (+) and past performance (+).

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Fombrun and Ginsberg (1990)	10 two-digit sectors (352 firms)	1977-1984 (USA)	Multiple Regression Analysis	- Corporate-level strategy (corporate aggressiveness) - Changes in magnitude	- Sector volatility - Past performance - Size	Sector volatility and prior performance act as significant triggers in prompting changes in corporate agressiveness that depart from the trend line. Strong support for the rigidity size hypothesis (-).
Ginsberg and Buchholtz (1990)	Non-profit Health Maintenance Organization industry (167 HMOs)	1983-1987 (USA)	Accelerated Event-Time Analysis	- Corporate-level strategy (HMOs' conversion from nonprofit to for-profit status) - Change in probability (Conversion/response time)	- Deregulation - Market saturation - Age - Size	Deregulation act as an important promoting force of strategic change (+). Weak support for market saturation (+). Strong support for the rigidity aging hypothesis (+). Size does not significantly influence conversion time.
Tucker, Singh and Meinhard (1990)	Voluntary Social Service Organizations (389 VSSOs)	1970-1982 (Canada)	Frequency Analysis and Multiple-spell Gompertz Analysis	- Corporate-level strategy (Service area, goal, and client changes and changes in conditions of service) - Change in probability (Rates of instantaneous transition)	- Deregulation - Density - Concentration - Size	43 (11.1%) organizations experinced changes in service area, 64 in goals (17.5%), 8 (2.1%) in client groups and 15 (3.9%) in conditions of service. Minimal support for deregulation, density and concentration (+). The effect of size is not significant in any type of change.
Chatterjee and Wernerfelt (1991)	Several industries (118 firms)	1981-1985 (USA)	Hierarchical Regression Analysis	- Corporate-level strategy (Diversification index) - Change in the degree of diversification between two points in time, 1981 and 1985	- Physical resources - Intangible assets - Financial resources - Size (c.v.) - Level of previous diversification (c.v.)	The coefficient on physical resources is not significant. The coefficients on intangible assets are negative and significant. The coefficients on financial resources have the predicted signs (+ and -). Size has a positive and significant sign. The coefficient on level of previous diversification is not significant

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Delacroix and Swaminathan (1991)	California Wine industry (919 wineries)	1946-1984 (USA)	Time Event History Analysis	- Corporate-level strategy (Diversification and Vertical Integration strategies: Brand-portfolio change; product-line change and land change) - Change in the probability (Rates of instantaneous transition)	- Environmental variation variables - Number of firms - Size - Age - Number of preceding changes of the same type	Mixed results for the effects of environmental variation variables (+ and -). Weak support for number of firms (+). Strong support for the rigidity of size hypothesis (-) and some support for the rigidity of age hypothesis (-). The number of preceding changes of the same type has a positive and significant effect in all models of change considered.
Goodstein and Boeker (1991)	Hospital industry in California (327 hospitals)	1980-1986 (USA)	Weighted Generalized Least-Squares Analysis	- Corporate-level strategy (Services additions and service divestitures) - Change in magnitude (Changes in the breadth of products or services a firm offers)	- Regulatory change - Market competition - CEO change - Performance change	Regulatory change significantly reduced divestitures (-) but did not have a significant effect on additions. Changes in market competition do not significantly affect strategic change. Weak support for the effect of CEO change in models of service additions and general support in models of service divestitures (+). The effect of performance changes is positive and significant on service additions but not on divestitures.
Kelly and Amburgey (1991)	Certificated Air Carrier industry (136 firms)	1962-1985 (USA)	Time Event History Analysis (Multivariate point-process Analysis)	- Corporate and business-level strategy (Specialists-Generalists) - Probability of change (Marginal intensity function)	- Industry deregulation - Age - Size - Cumulative changes	The coefficient of industry deregulation was negative and significant for five of the eight models of change considered. The rigidity of aging hypothesis receives support for four of the eight models of change. Weak support for the rigidity of sizing hypothesis. Strong support for the idea of momentum in strategic change.

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Montgomery and Hariharan (1991)	258 industries (366 firms)	1973-1977 (USA)	Logit Regression Analysis	- Corporate-level strategy (Diversification strategy) - Probability of change (Probability that a firm enters a new market or industry)	- Concentration - Firm specific variables (Growth in the firm's sales; Firm selling intensity; R&D intensity; Firm capital intensity; Breadth of a firm's resource base)	The coefficient of concentration is negative and significant. The coeficcients of firm specific variables are positive and significant. This means that a firm's competencies and intangible assets in marketing and R&D are very important indicators of which firms enter new markets. The breadth of a firm'extant resource base was the strongest predictor of diversified expansion.
Lant, Milliken and Batra (1992)	Furniture industry (40 firms) and Computer Software industry (40 firms)	1984-1986 (USA)	Frequency Analysis and Poisson Regression Analysis	- Business-level strategy (Four dimensions: business strategy, organizational structure, power distribution and control systems) - Change in probability (Change over a 2-year time period)	- Environmental awareness - CEO succession - Past performance	49 firms (71%) were classified as converging and 20 (29%) were classified as reorienting. The coefficient of environmental awareness is positive and significant in both industries. In the software industry, the coefficient of CEO turnover is positive and significant. In the furniture industry, it is positive but not significant. The coefficient on past performance is negative and significant in both industries.
Wiersema (1992)	Population of 1000 largest manufacturing firms in 1981 (146 multi-business firms)	1977-1981 (Firms from several countries)	Difference of Means Analysis	- Corporate-level strategy (Diversification strategy) - Change in magnitude (Change percentage in the firm's specialization ratio over five years)	- CEO succession - Internal *vs.* external executive succession	Firms without succession events do not differ statistically in the extent of strategic change pre- and post-succession. Firms with succession events experience significantly more strategic change post-succession than pre-succession. Firms with external succession experience greater shifts in corporate strategy post-succession than firm with internal executive succession.

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Amburgey, Kelly and Barnett (1993)	Population of Newspapers (1011 newspapers)	1771-1963 (Finland)	Time Event-History Analysis	- Business-level strategy (Changes in the frequency of publication) - Change in probability (Rate of instantaneous transition)	- Four variables of institutional environmental (c.v) - Local and Nonlocal Density (c.v) - Age - Prior change (Cumulative frequency change)	The coefficients of two institutional environmental variables are positive and significant, and two others are negative and significant. The coefficient of local density is positive and significant. The coefficient of nonlocal is negative and significant. Strong support for the rigidity of aging hypothesis. Changes of frequency exhibit repetitive momentum. The coefficient for the cumulative count of frequency change is positive and significant.
Gresov, Haveman and Oliva (1993)	California Savings and Loan industry (459 firms)	1977-1987 (USA)	Cusp Catastrophe Mindustry Model	- Business-level strategy (Competitive aggressiveness) - Change in magnitude (Changes in the construct of competitive strategy aggressiveness)	- Density - Size - Age - Structural complexity	Industry density has a positive impact on the competitive pressure construct. Age has the greatest impact (+) on resistence to change. Organizational size has almost no impact , while structural complexity has a positive impact on resistence to change.
Grimm, Corsi and Smith (1993)	Less-than-truckload (LTL) Motor Carriers (96 firms)	1987-1987 (USA)	Cluster Analysis and Probit Regression Analysis	- Business-level strategy (Six dimensions: cost and price position, traffic and customer focus, productivity and service differentiation) - Probability of change (Change across time among strategic groups)	- Size - Type of initial strategy - Initial financial performance	The coefficient of size is negative and significant. The coefficient of initial strategy is positive and significant. Initial financial performance does not have a significant effect on change of strategy.

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Hambrick, Geletkaycz and Fredrickson (1993)	29 Primary industries (690 large firms)	1988-2000 (USA)	Multiple Regression Analysis	- Corporate and business-level strategy (Two sets of items. Strategy commitment to the status quo: Strategy CSQ) -Change in magnitude (Average differences between ratings of current an ideal strategies)	- Expected environmental change (c.v.) - Current performance - Organizational and industry executive tenure	Expected environmental change is not significantly associated with Strategy CSQ. Current performance is positively and significantly associated with Strategy CSQ. The coefficient of organizational tenure is not significant. The coefficient of industry tenure is positive and significant.
Haveman (1993)	California Savings and Loan industry (308 thrifts)	1977-1986 (USA)	Linear Partial-Adjusment Analysis	- Corporate-level strategy (Diversification strategy) - Change in magnitude (Change in the amount of assets invested in seven nontraditional markets)	- Size - Regulatory changes (c.v.) - Density (c.v.) - Age (c.v.) - Financial performance (c.v.) - Level and type of diversification (c.v.)	The parameter estimate for the linear term of size is positive and significant in all models (14), indicating strong support for the fluidity of size hypothesis. The effect for the quadratic term is negative and significant in 5 models and positive and significant in 1 model. The effect of regulatory changes is weakly significant (+ and -). The effect of density is negative and significand in 8 out of 14 models. The effect of age is not significant. The effect of financial performance is positive-negative and significant. The parameter estimate for level and type of diversific. is negative and significant in 7 models.

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Miller (1993)	Several mature industries (36 medium and large-sized firms)	Not specified (Mostly USA firms)	Factor Analysis and Multiple Regression Analysis	- Corporate-level strategy (Three dimensions: competitive aggressiveness, intended rationality and integration) - Change in magnitude (Absolute change in the level of competitive aggressiveness)	- CEO succession - Change in uncertainty (c.v.) - Change in hostility (c.v.) - Past performance - Age	Succession was positively and significantly associated with the level of change for the competitive aggressiveness. The effect of change in uncertainty is positive and significant but the effect of change in hostility is not significant. The effects of past performance and age are not significant.
Wholey and Burns (1993)	Health Maintainance Organizations industry	1981-1989 (USA)	Frequency Analysis and Multivariate Analysis of Transitions (Log-logistic Analysis)	- Corporate-level strategy (Four forms of HMOs: Staff, Group, IPA and Network) - Probability of change (Transitions between HMO Forms: Rates of instantaneous change)	- Density - Federal qualification - Market competitiveness - Age (c.v.) - Size - Was destination type before (c.v.). Momentum	Only 4.35 percent of all possible transictions occurred. Density has a convex relationship in one out of 6 models considered (partial support). Federal Qualification and market competitiveness positively and significantly affect to one and two transition models, respectively. Partial support for the rigidity of aging transition (two models). The effect of size is not significant. The idea of momentum exhibits positive and significant effects across all transitions.
Wiersema and Bantel (1993)	Several industries (85 firms from the largest Fortune firms)	1980-1983	Hierarchical Regression Analysis and Path Analysis	- Corporate-level strategy (Diversification strategy) - Change in magnitude (Entropy index: Change in the firm's diversification strategy)	Three environmental variables: - Instability - Munificence - Complexity	Environmental instability and munificence have a significant positive relationship with strategic change. Environmental complexity is not significantly associated with strategic change.

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Zajac and Kraatz (1993)	Higher Education industry (631 liberal arts colleges)	1971-1986 (USA)	Descriptive Analysis and Time Event History Analysis	- Corporate-level strategy (Addition of business and graduate programs and change from a single sex to coed. institution for the first time) - Probability of change (Three discrete 'risk sets')	- Environmental changes - Financial resources - Reputation - Size - Age	A significant number of colleges engaged in each of major restructuring events. Strategic change occurs often in response to environmental changes. Liberal arts colleges with lower financial endowments, higher debt are generally more likely to undergo restructuring. Colleges with reputations for premiun quality are significantly less likely to undergo restructuring. Strong support for the fluidity of size hypothesis.Support for the rigidity and fluidity of age hypothesis.
Aldrich, Zimmer, Staber and Beggs (1994)	Complete listing of all Trade Associations	1900-1982 (USA)	Time Event History Analysis	- Corporate-level strategy (Transformation: change in a firm's goals and activity domain) - Probability of change (Rate of instantan.change)	- Political events - Density - Size - Age - Previous changes (momentum)	Political events play a modest role (+) on the probability of transformation. The effects for the remaining explanatory variables (density, size, age and previous transformations) are not significant.
Amburgey and Dancin (1994)	Several industries (262 large mining and manufacturing firms	1949-1977	Multivariate Point Process Analysis	- Corporate-level strategy (Product-market diversification: specialization and relatedness ratios) - Probability of change (Rate of instantan. change)	- Industry variables (c.v.) - Prior diversifying changes (c.v.) - Current level of diversific.(c.v.) - Size (c.v.)	In general, the effect of industry variables is positively and negatively associated with the rate of diversifying changes. The effects of prior diversifying changes and size are not significant. The effect of current level diversification is negative and significant.

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Ginsberg and Baum (1994)	Bank Holdings companies (42 banks)	1956-1988 (USA)	Time Event History Analysis	- Corporate-level strategy (Related and unrelated acquisitions to the core business) - Probability of change (Rates of occurrence of both types of acquisitions)	- Legislative events (c.v.) - Prior related and unrelated acquisitions - Age	The legislative period variables positively and significantly influenced rates of acquisition activity. Rates of related and unrelated acquisition are each positively and significantly related to the number of prior acquisitions of the same type. Age is not significantly associated with unrelated acquisitions. Older bank holding firms exhibit lower and significant rates of related acquisition (Support for the rigidity of age hypothesis).
Miller and Ming-Jer (1994)	Airline industry (32 domestic airlines)	1979-1986 (USA)	Multiple Regression Analysis	- Business-level strategy (Competitive inertia: various types of market-oriented actions; tactical and strategic actions) - Change in magnitude (Changes in activity index)	- Pas performance - Breadth of competitive experience - Market diversity - Size - Age	Good past performance is followed by significant levels of inertia (in both types of actions). Competitive experience is negatively and significantly associated with inertia in tactical decisions but not with inertia in strategic actions. Market diversity is negatively and significantly associated with competitive inertia. There is a negative and significant relationship between size and competitive inertia (especially strategic actions) and between age and inertia (all actions).
Baum and Korn (1996)	California Commuter Airline industry (40 airlines)	1979-1984 (USA)	Time Event History Analysis (Multivariate Point-Process Analysis)	- Business-level strategy (Market domain change: Route entry and exit) -Probability of change (Rates of instantan. change)	- Market density - Market concentration - Size (c.v.) - Age (c.v.) - Past performance (c.v.) - Prior entry and exit activity (c.v.)	Significant and positive linear and negative squared estimates for the specifications of market density in Route entry and exit. The estimates for concentration are positive and significant for Route entry but not for Route exit. Route entry rates significantly increase as airlines aged but decrease as they grow in size. Age and size affected rates of route exit oppositely (- and +). In contrast to repetitive momentum arguments a firm's prior number of entries and exits do not significantly increase its rate of current actions of the same type. Past performance is only positively and significantly associated with route entry rates

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Barker and Duhaime (1997)	Several industries (38 manufacturing firms)	1974-1988 (USA)	OLS Regression Analysis	- Corporate and business-level strategy (Domain-changing actions and change in competitive decisions at the product-market level) - Change in magnitude (Indices measuring the extent of strategic change)	- External industry events - Firm Decline (Past performance) - CEO replacement - Size - Level of firm resources (financial resources)	Firms suffering deep declines likely have a greater need for strategic change (-). Favorable industry events greatly and significantly reduced some firms' need for strategic change. CEO replacements seem to spur increased levels of strategic change. The accumulation of debt (e.g. slack financial resource depletion) significantly reduces the capability of a firm's managers to change the firm's strategy. Firm size is positively and significantly associated with a greater extent of strategic change.
Boeker (1997)	California Semiconductor industry (67 producers)	1978-1992 (USA)	Two-stage Generalized-least-squares Analysis	- Corporate-level strategy (Diversification strategy) - Change in magnitude (Entropy index: Absolute percentage of annual change in degree of diversification)	- CEO succession - CEO tenure - Past performance - Environ. munificence (c.v.) - Size (c.v.) - Age (c.v.)	CEO succession and age have not a significant relationship with strategic change. CEO tenure and past performance all have a negative and significant relationship with strategic change. Larger firms are more likely to initiate strategic change (support for the fluidity of size hypothesis).
Ruef (1997)	California Hospitals industry (617 hospitals)	1980-1990 (USA)	Two-Stage Least-Squares Analysis	- Corporate-level strategy (Service portfolios and market differentiation within the social production space) -Change in magnitude (Difference scores)	- Regulatory changes - Density - Size - Age	The regulation appears to have significantly complicated adaptive efforts by hospitals (-). Density negatively and significantly affects the ability of firms to differentiate themselves over time (-). Larger firms are less able to successfully modify their service porfolios (support forthe rigidity of size hypothesis). Older firms have significantly less likelihood of achieving adaptive market differentiation than their younger counterparts (support for the rigidity of age hypothesis).

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Stoeberl, Parker and Seong-Jong (1998)	Missouri Winery industry (9 to 33 wineries per year or 278 to 347 firm years)	1973-1990 (USA)	Time Event History Analysis	- Corporate-level strategy (Diversification and Vertical Integration strategies: Brand-portfolio change; product-line change and land change) - Change in the probability (Rates of instantaneous transition)	- Environmental variation variables (amplitude, frequency and uncertainty) - Number of firms - Size - Age - Number of preceding changes of the same type	Brand portfolio change models show that two variables are significant: size (-), number of prior changes . Product-line change models have four significant variables: size (-), number of prior changes (+) and amplitude (+). Land ownership change models do not have any significant variable. Support for the rigidity of size hypothesis in two models of change. The number of firms is not signficant in any change model.
Ketchen and Palmer (1999)	Health Care industry (66 hospitals)	1986-1990 (USA)	Multiple Regression Analysis	- Corporate-level strategy (Domain change: Changes in the profile of services offered by each firm) - Change in magnitude (Weighting scheme)	- Past performance - Size (c.v.)	Poor performing hospitals are more likely to enact strategic change than their stronger rivals (+). The parameter estimate for size is negative and significant for deletion of services. Some support for the rigidity of size hypothesis.
Silverman (1999)	Several industries (412 manufacturing firms)	1982-1985 (USA)	Logit Analysis	- Corporate-level strategy (Diversification strategy: changes in firm-level diversification) - Probability of change (Probability of entry into new markets or industries)	- Technological resources - Concentration (c.v.) - R&D intensity (c.v.) - Advertising intensity (c.v) - Size (c.v)	Firms are more likely to diversify in to those industries in which their existing technological resources are highly applicable (+). A firm is more likely to diversify into an industry the more applicable its technological resources are to that industry, relative to their applicability to other industries (+). The effect of concentration is negative and significant. The coefficients for R&D intensity, advertising intensity, and size are positive and significant.
Sakano and Lewin (1999)	Several industries (162 nonfinancial firms)	1988-1993 (JAPAN)	Cluster Analysis, Discriminant Analysis and Regression Analysis	- Corporate-level strategy (Diversification strategy: Changes in lines of business) - Change in magnitude (The percentage change in entropy masure)	- CEO succession - Successor type (Insider/Outsider)	Strategic change is not an important factor in Japanese organization adaptations. The conse-quences of CEO succession in Japan, in terms of strategic reorientation are not observable in the first two years following the succession of a new CEO: None of the succession variables have significant impacts on strategic restructuring.

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Dass (2000)	Several industries (555 firms)	1978-1990 (USA)	Hierarchical Regression Analysis using OLS	- Corporate-level strategy (Product diversity) - Change in magnitude (Entropy index: Degree of abrupt change in total product diversity)	- Size - Initial product diversity - Organizational slack (c.v.)	Support for the fluidity of size hypothesis. Data supported linear positive and significant effects of iniatial product diversity. (Strong support for the complex effects of size and initial product diversity). Organizational slack is not found to be statistically significant.
Zajac, Kraatz and Bresser (2000)	Savings and Loan institutions (4000 observations)	1980-1988 (USA)	Time Series Regression Analysis (Generalized Least-Squares Regression Analysis)	- Business-level strategy (Residential mortgage lending) - Change in magnitude (Change in residential mortgage lending from year to year)	- Competencies and resources advantages - Environmental factors - Density/Local competition(c.v.) - Past performance (declining net worth) - Size (c.v.) - Prior level of residential mortgage lending (c.v.) - Prior change in residential mortgage lending (c.v.)	Results revels that S&Ls are more likely to decrease significantly their reliance on residential mortgage lending when they face: a high cost of funds (-), a heavy dependence on borrowed funds (-), poor returns on their mortgage portfolio (+), heavy reliance on fixed-rate mortgages (-), declining net worth (-), local competition (+) and an environment of high interest rates (-). The coefficient for size is positive and significant (Support for the fluidity of size hypothesis). The effect of prior level of residential mortgage lending is significant (-) but not the effect of prior change in residential mortgage lending.

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Haveman, Russo and Meyer (2001)	California Hospitals (119 hospitals) and Savings and Loan Associations (216 thrifts)	1978-1991 (hospitals) 1977-1986 (thrifts) (USA)	Pooled Time Series Regression Analysis (OLS and Generalized Least Squares Regression Analysis)	- Corporate-level strategy (Domain expansion. Hospitals: Overall scope of operations. S&Ls: Overall scope of operations and activity in new lines of business) - Change in magnitude (One-year change in scope of operations)	- Regulatory punctuations CEO succession (c.v.) - Prior-Year Domain Expansion: Momentum (c.v.) - Size (c.v.) - Age (c.v.) - Prior performance (c.v.)	Hospitals: The estimate on the regulatory variable is negative and significant. This means that hospitals contracted their domains immediately after the regulatory punctuation. CEO succession significantly dampened domain expansion. The estimates on the prior-year domain expansion and size indicators are positive and significant (Support for the momentum idea and the fluidity of size hypothesis). Savings & Loans: The regulatory punctuation indicator has only a positive and significant effect in the activity in new lines of business model. The effect of prior-year CEO succession is only positively and significantly associated with change in overall scope of operations. Age has a positive and significant relationship with new business activities. The effects of size and prior performance are not significant.
Kraatz and Zajac (2001)	Higher Education industry: Liberal Arts Colleges (422 colleges)	1971-1986 (USA)	Pooled Time Series Regression Analyisis – OLS and Generalized Least-Squares (random effects) Regression Analysis)	- Corporate-leves strategy (Domain change: from liberal-arts degree to non-liberal-arts degree) - Change in magnitude (Change in proportion of nonliberal arts degrees from 1971 to 1986)	- Resources and competences (repute-tion, external support relationships, human resources, financial assets, experience and student ability) - Initial and prior position in nonliberal arts degree (c.v.) - Local density (c.v.) - Environmental indicators	In general, the effects emerging from all models of change considered provide relatively little support for the ‘resource as facilitators’ view, but substantial evidence in support of the other views, each of which predict a negative a significant relationship between resource endowments and strategic change. The estimate on prior position variable is negative and significant. The coefficient for initial position is significant (+ and -). The estimates on environmental indicators are not significant. The effect of local density is significant (+ and -)..

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Westphal and Fredrickson (2001)	Several industries (406 industrial and services firms)	1984-1996 (USA)	Time Event History Analysis (Heckman Selection Analysis)	- Corporate-level strategy (Change in product market diversification and geographic diversification) - Change in magnitude (Entropy index and composite measure)	- New CEO experience - Prior strategy at focal firm (c.v.) - Environmental instability (c.v.) - Firm performance - Size	Findings appear to suggest that new CEOs initiate strategic changes according with their experience (New CEO experience is positively and significantly related to strategic change for both dimensions of diversification). The coefficient of firm performance is not significantly associated with both dimensions of diversification. Strong support for the fluidity of size hypothesis (+). The coefficients for prior strategy environmental instability are positively and significantly related to both dimensions of diversification (+).
McDonald and Westphal (2003)	Several industries (241 larger industrial and service firms)	1999-2001 (USA)	OLS Regression Analysis	- Corporate-level strategy (Product market and geographic diversification) - Change in magnitude (Entropy measure and composite measure)	- CEO advice seeking - Prior performance (c.v.) - Size (c.v.)	Low firm is positively and significantly associated with subsequent change in product market diversification (but not associated with change in geographic diversification). The coefficient for size is positiviley and significantly related to both kinds of diversification (Support for the rigidity of size hypothesis).

Table 1. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Explanatory variables of strategic change	Key findings
Washington and Ventresca (2004)	Higher Education industry (553 colleges and universities)	1874-1995 (USA)	Logistic Regression Analysis	-Corporate-level strategy (Domain change: incorporation of a new activity or sport program: basketball, Hockey and Lacrosee) - Probability of change (Probability of a new activity incorporation)	- Cumulative prior incorporations of a strategy (Momentum in basketball) - Size (c.v.) - Age (c.v.) - Financial resources (c.v.)	Basketball: School having higher enrollments (larger) and that are older are more likely to incorporate basketball (Positive effects of both control variables). Support for the fluidity of age and size hypothesis (both signs are +). The value for prior incorporation of basketball is negative and significant. The effect of age is not significant. Hockey: The effects of age and financial resources are not significant. Support for the fluidity of size hypothesis (+). Lacrosse: The age of the scholl and endowment are positive and significant while size are not.
Zúñiga-Vicente, Fuente-Sabaté and Suárez-González (2005)	Spanish Banking industry (134 banks)	1983-1997 (SPAIN)	Logistic Regression Analysis	- Business-level strategy (Identification of strategic groups) - Change in probability (Change across strategic groups over time)	- Deregulation events - Density - Industry concentration - CEO succession - CEO tenure - Age - Size - Structural complexity	The cumulative percentage of banks undergoing strategic changes is about 90 percent. The main facilititating factors behind strategic change have been linked to certain factors in the external context (deregulation events and density) and in the internal context (CEO succession and tenure). Other factors from the external context (other deregulation events and concentration) and from the internal context (size) act as potential forces inhibiting the strategic change process. Age and complexity are not significantly related to strategic change.

Table 2. Selected studies on strategic change and organizational outcomes

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Operational measure of organizational outcomes	Key findings
Singh, House and Tucker (1986)	Population of Voluntary Social Service Organizations (389 VSSOs)	1970-1982 (Canada)	Gompertz model	- Corporate-level strategy (Service area change)	- Death rate (Hazard function)	Service area change has a significant positive effect on the death rate.
Smith and Grimm (1987)	Railroad sector (27 railroads)	1979-1983 (USA)	Cluster Analysis and Analysis of Variance	- Business-level strategy (Five dimensions: service quality, marketing focus, pricing, organizational innovativeness and product dependability)	- Financial performance (return on investment, return on total capitalization and returnon equity)	Firms which change their strategy out-perform those that do not change.
Hambrick and D'Aveni (1988)	Several industries (1988)	1972-1982 (USA)	Logistic Analysis	- Corporate-level strategy (Changes in domain activity)	- Organizational survival	Extreme strategic behavior (i.e. inertia or excesive change) are negatively and significantly associated with the likelihood of organizational survival.
Zajac and Shortell (1989)	Health care industry (570 hospitals)	1983/84-1985/86	Regression Analysis	- Business-level strategy (Miles and Snow (1978) categorization)	- Financial performance (Profitability differences)	No significant difference in profitability was found between organizations that changed strategies versus those that did not.

Chatterjee and Wernerfelt (1991)	Several industries (118 firms)	1981-1985 (USA)	Hierarchical Regression Analysis	- Corporate-level strategy (Diversification index)	- Financial performance (Return on assets)	Overall, the performance subsamples considered suggest that performance is not a function of diversification strategy
Delacroix and Swaminathan (1991)	California Wine industry (919 wineries)	1946-1984 (USA)	Time Event History Analysis	- Corporate-level strategy (Diversification and Vertical Integration strategies: Brand and product increase and decrease events and land acquisition and divestment events)	- Probability of disbading or failure (Hazard function)	None of the six categories of organizational change has a positive effect on the probability of disbanding, either in the short term or in the long run.
Kelly and Amburgey (1991)	Certificated Air Carrier industry (136 firms)	1962-1985 (USA)	Time Event History Analysis (Multivariate point-process Analysis)	- Corporate and Business-level strategy (Specialism-Generalism)	- Probability of failure (Hazard function)	None of the changes in strategic orientation have significant effects on the probability of failure.
Haveman (1992)	California Savings and Loan industry (308 thrifts)	1977-1987 (USA)	Regression Analysis on pooled cross-sectional and time-series data and Time Event-History Analysis	- Corporate-level strategy (Diversification strategy. Change in eight markets)	- Financial performance (Net worth and net income) - Probability of Failure (Hazard function)	Six out of eight types of change improve net worth and seven types of change improve net income. Three change variables have statistically significant (negative) impacts on the failure rate.
Amburgey, Kelly and Barnett (1993)	Population of Newspapers (1011 newspapers)	1771-1963 (Finland)	Time Event-History Analysis	- Business-level strategy (Changes in the frequency of publication)	-Probability of failure (Hazard function)	Newspapers with at least one change of frequency have a lower risk of failure than those with none.

Table 2. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Operational measure of organizational outcomes	Key findings
Zajac and Kraatz (1993)	Higher Education industry (631 liberal arts colleges)	1971-1986 (USA)	Pooled cross-sectional Time Series Regression Analysis and Time Event History Analysis	- Corporate-level strategy (Addition of business and graduate programs and change from a single sex to coed. institution for the first time).	- Financial performance (Percentage change in enrollment and Change in operating marging). - Probability of failure (Hazard function)	Strategic change is positively related to financial performance. The fact that not a single college died subsequent to strategic change suggests that each of the three modes of restructuring was a survival-enhancing response to a changing environment.
Miller and Ming-Jer (1994)	Airline Industry (32 domestic airlines)	1979-1986 (USA)	Multiple Regression Analysis	- Business-level strategy (Competitive inertia: various types of market-oriented actions; tactical and strategic actions).	- Financial performance (Operating revenue)	In the short term competitive inertia in strategic actions is positively and significantly associated with superior financial performance. This relationship did not hold for tactical actions.
Sheppard (1994)	Several industries (280 firms)	1980-1987 (USA)	Logit Analysis	- Corporate-level strategy (Diversification strategy) - Business-level strategy - Collective-level strategy - Financial strategy	- Probability of survival (Bankrupt)	Changes in corporate-level strategy are not significantly related to survival. However, changes in business-level strategy can be both positively and negatively related to survival. Models almost no evidence to support a relationship between survival and collective-level strategies. There is a significant positive relationship between financial strategy and survival.

Tushman and Rosenkopf (1996)	Cement industry (291 firms)	1900-1986 (USA)	Pooled Time Series (GLS) Regression Analysis	- Corporate-level strategy (Adding cement types and brands, adding cement plants, and7or distribution centers)	- Financial performance (Return on assets)	The performance consequences of strategic change is contingent on organization context
Ruef (1997)	California Hospitals industry (617 hospitals)	1980-1990 (USA)	Time Event History Analysis	- Corporate-level strategy (Service Portfolios and market differentiation within the social production space)	- Probability of survival (Hospital exits: Cox model)	The number of services changes and market differentiation have a significant positive impact on the danger of organiztional mortality.
Stoeberl, Parker and Seong-Jong (1998)	Missouri Winery industry (9 to 33 wineries per year or 278 to 347 firm years)	1973-1990 (USA)	Time Event History Analysis	- Corporate-level strategy (Diversification and Vertical Integration strategies: Brand and product increase and decrease events and land acquisition and divestment events)	- Probability of disbading or failure (Hazard function)	None of the six change variables are significantly related to organizational failure.
Parnell (1998)	Department Stores industry (110 firms)	1991-1994 (USA)	Means Difference Analysis	- Business-level strategy (Generic strategy: Miles and Snow's (1978) typology	- Financial performance (Return on assets and revenue growth)	Those business changing strategies between 1992 and 1993 are outperformed in terms of ROA in 1993 and 1994, and in terms of revenue growth between 1992 and 1993. Hence, strategic change is no more likely to improve performance than strategic consistency.

Table 2. Continued

Reference	Sample of study	Period	Method of study	Operational measure of strategy	Operational measure of organizational outcomes	Key findings
Greve (1999)	Radio Broadcasting industry (160 US radio markets and 2490 stations)	1984-1992 (USA)	Partial Adjustment Model	- Corporate-level strategy (Format change: Innovative change, Satellite change and other format change)	- Financial performance (Market share)	Results show that satellite change and other format change have negative coefficients, suggesting that changes can reduce performance, but this is moderated by size and performance before the change, so change can be beneficial for low-performing firms but may be harmful for large and successful firms.
Henderson (2000)	Personal Computer industry (649 firms)	1975-1992 (USA)	Partial Adjustment Model and Discrete-Time and Continuous-Time Event History Analysis	- Corporate-level strategy (Technology strategy)	- Financial performance (Rate of sales growth) - Probability of failure (Hazard function)	The coefficient of changed strategy is significant and positive in the Sales Growth Rates Model and significant and negative in the Failure Rates Models.
Wheelock and Wilson (2000)	Banking industry (4022 banks)	1984-1993 (USA)	Competing-risk Hazard Analysis	- Business-level strategy (Asset quality)	- Probability of failure (Time to failure hazard function)	Failure probability is significantly and positively related to increase in most of variables representative of a bank' business-level strategy.
Zajac, Kraatz and Bresser (2000)	Savings and Loan institutions (4000 observations)	1980-1988 (USA)	Time Series Regression Analysis (Generalized Least-Squares Regression	- Business-level strategy (Residential mortgage lending)	- Financial performance (Return on assets) - Probability of organizational failure (discrete time model)	Results highlights that strategic change is significantly and positively associated with financial performance and, ultimately, organizational survival. However, firms that changed more or changed less than their model

			Analysis) and Time Event History Analysis			prescribed might experience significant and negative performance consequences.
Haveman, Russo and Meyer (2001)	California Hospitals (119 hospitals) and Savings and Loan Associations (216 thrifts)	1978-1991 (hospitals) 1977-1986 (thrifts) (USA)	Pooled Time Series Regression Analysis (OLS and GLS Regression Analysis)	- Corporate-level strategy (Domain expansion. Hospitals: Overall scope of operations. S&Ls: Overall scope of operations and activity in new lines of business)	- Financial performance (Return on sales)	Hospitals: The coefficient on post-punctuaction domain change is weakly significant and positive. Thrifts: Domain expansion following the regulatory punctuation have a significant and positive coefficient.
Kraatz and Zajac (2001)	Higher Education industry: Liberal Arts Colleges (422 colleges)	1971-1986 (USA)	Pooled Time Series Regression Analyisis – OLS and GLS (random effects) Regression Analysis. And Time Event History Events	- Corporate-leves strategy (Domain change: from liberal-arts degree to non-liberal-arts degree)	- Financial performance (Enrollment changes) -Probability of enrollment decline	Results consistently show that greater movement into non-liberal-arts fields have a strong, positive effect on enrollment. Similarly, increasing non-liberal-arts offerings have a strong and negative effect on the likelihood of enrollment decline.
Zúñiga-Vicente and Vicente-Lorente (2006)	Spanish Banking industry (134 banks)	1983-1997 (Spain)	Probit Regression Analisis with random effects	- Business-level strategy (Identification of Strategic Groups)	- Probability of survival (Organizational extinction)	The results confirm the positive and significant effect of strategic moves (or strategic change) on the likelihood of organizational survival, in line with the conclusions of the adaptive perspective.

Age

The potential effect of age on strategic change has been examined as independent or control variable in 19 studies. Table 1 shows that similar contradictory results are also evident for firm age. In many of these studies age is positively related to changes in a firm's corporate and business strategy, providing support for the theoretical arguments included in the fluidity of age hypothesis (e.g. Boeker, 1989; Baum, 1990; Haveman et al., 2001; Washington and Ventresca, 2005). However, in other studies age has a negative effect, providing support for the theoretical arguments associated with the rigidity of age hypothesis (e.g. Ginsberg and Buchhlotz, 1990; Delacroix and Swaminathan, 1991; Kelly and Amburgey, 1991; Amburgey et al., 1993; Gresov et al., 1993; Ginsberg and Baum, 1994; Ruef, 1997). There are also some studies that provide support for both hypotheses (e.g., Zajac and Kraatz, 1993; Baum and Korn, 1996). Finally, there is a significant number of studies that do not find significant effects at either the corporate or business-levels (e.g. Haveman, 1993; Miller, 1993; Aldrich et al., 1994; Miller and Ming-Jer, 1994; Boeker, 1997; Stoeberl et al., 1998 and Zúñiga-Vicente et al., 2005).

Structural Complexity

Only two quantitative studies out of the 46 appearing in Table 1 provide empirical evidence about the relationship between structural complexity and strategic change. Gresov et al., (1993) find that structural complexity has a positive impact on resistance to changing the business-level strategy of the population of savings and loans institutions considered. However, Zúñiga-Vicente et al., (2005) do not find in their study of the Spanish banking industry that structural complexity exerts a significant influence on the probability of performing changes in business-level strategies.

Effects of Changes in Strategy on Performance Outcomes

Table 2 presents findings of empirical studies investigating the performance outcomes of strategic change. This table summarizes information on the following relevant aspects of each study reviewed: authors and date of publication, sample and period of study, method of study, operational measures of strategic change and organizational outcomes (in terms of financial performance and organizational survival) and key findings (i.e. the positive or negative and significant effect of strategic change on organizational outcomes).

Generally, it can be argued that studies performed from the adaptation perspective tend to define a firm's success in terms of operating margins, growth and profitability —i.e. in terms of financial performance. More specifically, these studies frequently use different accounting measures to examine organizational performance. In contrast, ecological theorists usually define a firm's success in terms of organizational survival[1]. Nonetheless, it is important to recognize that survival is an overarching goal of every organization and, hence, it can be considered as a variable of major theoretical importance in the adaptation perspective as well.

[1] It is interesting to note that in the ecological perspective is observed a high degree of convergence on the use of a particular statistical technique —the so-called 'hazard function' or rate models (Amburgey and Rao, 1996: 1267)— when their authors assess both the main determinants of the propensity to change 'core' and 'pheripheral' organizational features and the dynamics effects of such changes on the survival prospects of any type of organization.

Table 2 shows that, in general, findings of the reviewed studies do not appear to support any generalizable conclusions regarding the influence of changes in corporate and/or business-level strategies on organizational performance. From this standpoint, we can conclude that empirical evidence on whether strategic change is associated with subsequent improvements or decreases in financial performance and organizational survival is currently far from being conclusive.

According to the findings of Table 2, it can be argued that the proposition upheld from the adaptation perspective that changes in a firm's strategy in response to changing environmental conditions will, *ceteris paribus*, lead to performance improvements is supported for a large number of studies. In some studies, strategic change enhanced financial performance (e.g. Smith and Grimm, 1987; Haveman et al., 2001 or Kraatz and Zajac, 2001) or the likelihood of organizational survival (e.g. Amburgey et al., 1993; Wheelock and Wilson, 2000 or Zúñiga-Vicente and Vicente-Lorente, 2006). In other studies, similar strategic changes are simulatenously associated with enhanced financial performance and the likelihood of organizational survival (e.g. Haveman, 1992; Zajac and Kraatz, 1993; Zajac et al., 2000 or Henderson, 2001).

However, findings of Table 2 also illustrates that the proposition upheld from the ecological perspective that strategic change may be dysfunctional by increasing the rate of organizational failure is also supported for some studies. In some studies, strategic change reduces financial performance (e.g. Miller and Ming-Jer, 1994; Parnell, 1998 and Greve, 1999) or increases the rate of organizational failure (e.g. Singh et al., 1986 and Ruef, 1997).

Yet in another set of studies, mixed relationships —i.e. studies where such relationship can be positive under specific environmental conditions but it can also be negative in other ones— are found between changes in strategy and financial performance (e.g. Tushman and Rosenkopf, 1996) or between strategic change and organizational survival (e.g. Hambrick and D'Aveni, 1988 and Sheppard, 1994). Finally, there are also a significant number of studies that do not find either positive or negative relationships between changes in a firm's strategy and financial performance (e.g. Zajac and Shortell, 1989 or Chatterjee and Wernerfelt, 1991) or the probability of organizational survival (e.g. Delacroix and Swaminathan, 1991; Kelly and Amburgey, 1991 and Stoeberl et al., 1998).

CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Strategic change has been a dominant theme in the business and academic fields during the last three decades and it is highly likely to be so into the next decades. As a diret result of the continuous and profound changes that are occurring in the environmental conditions, many firms may be forced to alter their competitive, corporate or collective strategies. As a last resort, such changes in strategy may be essential for improving financial performance over time and, thus, organizational survival.

In this competitive arena of continuous and profound environmental changes scholars and managers have become more and more interested in understanding the forces (factors) that enable or disable changes in strategy over time as well as the potential short term and long run performance outcomes of these changes. However, as argued by Ginsberg (1988) and many other researchers, because of their tendency to use, in many cases, fuzzy definitions and

inadequate methodologies, empirical studies on the antecedents and outcomes of strategic change have not provided practitioners and scholars with a set of well-tested theories yet.

Several theoretical and methodological reasons are usually used to explain the ambiguous results found in most empirical studies carried out up to the present (Ginsberg, 1988; Lewin and Volberda, 1999; Rajagopalan and Spreitzer, 1996). Theoretically, a primary reason is based on "the extent to which researchers adopt an adaptive or ecological view of strategic change" (Boeker, 1997: 152). As noted above, the assumptions of each perspective in relation to the two fundamental questions examined in our study (main antecedents and outcomes of strategic change) are quite different. In this sense, it is interesting to note that although there are still many studies that continue viewing both theoretical perspectives as mutually exclusive when explaining each of these questions, there are also many theoretical studies and more and more empirical studies that recognize the need to consider both perspectives as complementary and interrelated processes of change.

Clearly, our study corroborates that the available empirical evidence is currently inconclusive and contradictory in its support for one of the above perspectives (adaptive versus ecological) as opposed to the other. Yet, most importantly, our study also reveals that the empirical evidence is contradictory in its support for the theoretical arguments linked to each individual perspective. Several methodological reasons may account for these contradictory findings.

Firstly, it is interesting to note that mainly strategic change but also performance outcomes are conceptualized and operationalized very differently across studies. In this context, it would be very interesting that future research use definitions and measures of key constructs (as, for example, strategic change and performance outcomes) that are relevant to similar types or populations of firms. In addition, it could be also very interesting to carry out similar empirical studies in other institutional contexts for the same types or populations of firms and during similar periods of time to test whether contradictory findings are maintained. Tables 1 and 2 illustrate that most studies have been carried out in a specific institutional context, namely, the United States and during specific periods of time.

Secondly, it can be observed that there is a great divergence in statistical analysis used to test the subsequent theoretical frameworks. Obviously, this fact may be motivated, for instance, by the type of variables used in each study and the sample size. Nonetheless, it would be desirable in future studies on strategic change to attempt to use statistical analysis that facilitate, to a greater extent, to make comparisons across different studies.

Furthermore, as a direct result of the theoretical and empirical controversy that have traditionally characterized research on strategic change, we also recognize that it would be very interesting that future empirical studies simultaneously examine, on the one hand, both external and internal sources of strategic change and inertia and, on the other hand, both the beneficial or harmful effects of strategic change on organizational outcomes. In our view, the diametric model proposed by Zajac and Kraatz (1993), which is based on the formulation of competitive hypotheses, through the consideration of alternative theoretical arguments, can be especially suitable to study in depth these fundamental issues. Accordingly, future research on strategic change could outstandingly benefit of this model to test what theoretical arguments are more valid.

On the other hand, in spite of the fact that many researchers are currently relying on longitudinal analysis to examine the outcomes of strategic change, they ultimately examine some variables (as, for example, financial performance) utilizing cross-sectional data. As

suggested by Ginsberg (1988) and Rajagopalan and Spreitzer (1996: 55), "performance changes stemming from current changes in strategy may exhibit lagged effects, which can be captured only if data are collected over long time periods". It would be very interesting to dynamically evaluate both strategy and the different variables considered in each study.

Finally, with respect to this latter point, it is also important to recognize that the main assumption of most empirical studies presented in Tables 1 and 2 is that firms can change their strategies over time. However, these studies simultaneosuly assume that the effect of different explanatory variables considered in the subsequent analysis remains stable over time. In this context, it would be very interesting to test to what extent it is reasonable to assume that the effect of different antecedents and organizational outcomes of strategic change remains stable over time under rapidly changing environmental conditions.

It is clear that a negative answer to this question should have very important implications for research on strategic change. The rejection of the structural stability of different models of strategic change would answer some questions and raise new ones. In our view, the fact that empirical models can exhibit time-varying coefficients would be enough to justify the ambiguous results found in the empirical literature. A recent study by Vicente-Lorente and Zúñiga-Vicente (2006) provides preliminary empirical evidence on this fundamental issue.

The fact that alternative theories may exhibit a 'context-dependent' rather than an 'absolute' or 'comparative' validity, would provide a new look at the conflicting results found in prior quantitative and longitudinal research. Profound environmental shifts can affect the regular pattern of firm responses *within the same population as time goes on,* enhancing the role of some factors and inhibiting the impact of other ones. Undoubtedly, the analysis of these structural breakdowns could help researchers to understand the controversial evidence on the explanatory factors of strategic change. This fact sheds new light on previous evidence but also suggests that caution should be taken in future research since some characteristics of empirical settings can make structural breakdowns more likely. In particular, lengthy longitudinal data samples and contexts of high turbulence (in terms of complexity and scope of environmental changes) could be viewed as privileged arenas for testing predictions on strategic change, but both conditions could also increase the risk of structural breakdowns. Thus, researchers facing this kind of empirical designs should be especially concerned on testing the structural stability of the general models used in their empirical studies.

As a last resort, we believe that testing the structural stability of explanatory models of strategic change could also lead to theory development. Theories on strategic change are usually characterized by a 'theory-specific' set of proxies (i.e. explanatory factors) that are presumed to exhibit a general and sustained ability to explain the phenomenon under study: the strategic change. Thus, the rejection of the structural stability of the effect of potential explanatory factors of strategic change should open a new theoretical front line in the search for consistent explanations to this fact.

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Chapter 2

PARTNER SELECTION FACTORS AND VENTURES PERFORMANCES OF INTERNATIONAL JOINT VENTURES IN TAIWAN

Frank F. C. Pan*
Healthcare Administration Dept., Tajen University
20, Wei-Hsin Road, Yenpu, Pingtung, Taiwan
Tsuen-Ho Hsu†
Marketing and Distribution Management,
National Kaohsiung First University of Science and Technology, Taiwan

ABSTRACT

Firms seek to survive along with the spanning globalization of the international economy have more opportunities and needs to carry on the cooperation at various levels with external organizations. Joint venture is among the most familiar one in external cooperative configurations. Unfortunately, few if any studies had attempted to include customer as part of primary consideration in partner selection since 1970s. This research attempts to point the negligence and assure the important effects of such factors in partner selection.

Samples are purposely taken from international joint ventures with various nature of industry that established and operated in Taiwan. Using questionnaire as instrument, this research have successfully collected 321 valid responses with CEO, functional managers individually answer different portions of the questionnaire. Data is then analyzed with SPSS package including descriptive statistics, cross-tab analysis, as well as multiple regressions.

Major findings of this research include identifying and confirming the existence of customer related factors and its importance in the model of joint venture performance.

* Email: frankpan@mail.tajen.edu.tw
† thhsu@ccms.nkfust.edu.tw

Partner related factor is the most powerful predictors among all partner selection factors in predicting joint venture performance, and the customer related factor appears as the second. Task related factor seems irrelevant for the respondents of this research. The key to become a market-driven management is selecting partner with customer related factors. There are several academic and managerial implications associated with the research finding.

Keywords: International Joint Venture, Partner selection factors, Market orientation, Taiwan, Knowledge-based view, Customer capital

1. INTRODUCTION

Resource-based theories scholars advocate that rationale behind firms collaborating with external organizations is to seek complementary resources and capabilities that currently absent in its resource stock for competition (e.g. Wernerfelt, 1995; Eisenhardt & Martin , 2000 etc.). Compare to resource internality, leveraging such external resources is preferable in terms of cost-effectiveness (Hagedoorn & Schakenraad, 1994; Coviello & Munro, 1997). Contrast to foreign direct investment, collaboration is particularly a preferred alternative in the globalizing environment and especially for small and medium size enterprises (Acs, Morck, Shaver & Yeung, 1997; Eden, Levitas & Martinez, 1997).

International joint ventures provides multinational enterprises (MNE) opportunities to gain local expertise and market access as well as local knowledge in a relative lower costs (Makino & Delios, 1996), thus has become one of major strategic alternatives for international expansion (Contractor & Lorange, 1988; Osland & Cavusgil, 1996; Hennart & Reddy, 1997). Selecting cooperating partner is one of critical issues associated with international joint venture in both academician studies and practitioner cases (Buono, 1997; Cavusgil & Evirgen, 1997; Glaister & Buckley, 1997; Fey & Beamish, 2000). Studies generally agreed that proper venturing partner is the key to the success of cross-border venture (Littler & Leverick, 1995; Dacin, Hitt & Levitas, 1997), and formal and rigorous partner selection has positive effects in finding appropriate partner as well as better performance (Njissen, Douglas & Galis, 1999).

Extant studies on the consideration factors associate with partner selection roughly have two broad scopes, of which generally follow the Geringer's categorization. One focus on criteria that relate with potential partners' capabilities or complement ability, for example, strategic fit (Lasserre, 1984; Harrigan, 1988) for value creation that unable to achieve by conventional trading (Beamish, 1987; Kanter, 1994) for mutual benefit (Brouthers, Brouthers & Wilkinson, 1995). These factors are partner related factors (PRF) for they concern more on what partner's characteristics could be beneficial to the ventures. Another focus on specific capabilities and competences that required for particular tasks the MNE seeks in that market, as earlier studies mostly follow. Fro example, specific local asset (Tomlinson, 1970), complementary technology and marketing system (Adler & Hlavacek, 1976), financial related factors (Luo, 1998), human and physical asset resources (Hitt, Levitas, Arregle & Borza, 2000), and other resources that contributable to the specific ventures (Awadzi, 1987). These are task related factors (TRF) for they concern mainly on partner's capabilities toward certain tasks (Geringer, 1991; Arino & Abramov, 1997; Al-Khalifa & Peterson, 1998).

Customer is increasing important to MNE in that numerous calls to include this into management studies (Brief & Bazerman, 2003), and practically numerous industrial cases have experienced fail or loss because of ignoring this vital element (Deloitte Haskins & Sells International, 1989; Stickler, 2001). In the other hand, marketing scholars have also evidenced strong linkages between market oriented operation and market performance (Slater & Narver, 1994a; Slater & Narver, 1994b; Kohli, Jaworski & Kumar, 1993; Pelham, 1997; Hurley & Hult, 1998; Cano, Carrillat & Jaramillo, 2004; Kirca et al., 2005). Ironically, few studies place customer as primary consideration in the studies on international cooperative activities. Taking the works collected in the Social Science Citation Index (SSCI) as example. There are 28 articles or less than 2 % of 1,528 works on alliance or cooperation between years of 1999 and 2003 had included customer or consumer as part of their work (Pan, 2004a). This reveals that past studies had substantially ignore the importance of customers in the international cooperation, thus leave the role customers play as a puzzle in the studies on MNE's international venturing (Pan, 2004b).

Knowledge-based view advocates that human, structural, and customer capital are the three core resources firms needed for mission accomplishment (Petrash, 1996). Past studies on partner selection have extensively explored the first two groups. Base on the customer-based knowledge perspective, this research attempts to reveal the importance of customer factors in the partner selection by exploring its effects on joint venture performance. Research is conducted in Taiwan, in which has attracted tremendous foreign investments from the TRIAD (Ohmae, 1985) in the past decades.

2. LITERATURE REVIEW AND HYPOTHESES

The literature involved with this research includes theories used for, past studies in the partner selection, as well as customer-based knowledge. We discuss them in later sections along with several hypotheses.

2.1. Theories in Partner Selection

Although no single theory is able to fully interpreting this complicated partner selection issue (Varis & Conn, 2002), we may categorize these attempts into two distinctive scopes as economic rationality and social perspectives. Theories used include transactional cost theory, resource-based view, organizational learning perspective, and resource dependency theory. We further explore the knowledge-based view, of which result in our major argument for customer related factors in partner selection

2.1.1. Economic Rationality and Social Perspectives

Transaction cost theory advocates that firm is directly resulting from asset specificity (Williamson, 1975; 1979). The economic rationality confines the decisions associated with asset internalizations (Hoskisson, Eden, Lau & Wright, 2000) or externalizations (i.e. cooperatives including joint ventures) by assessing the level of transactional costs (Coase, 1937). Transactional cost theory emphasizes solely on the cost, ignores the value creation that

one of the major outcomes joint venture aim to achieve (Alexander & Young, 1996; Lin, 2006).

Resource-based theories suggest firms possessing tangible and intangible resources (Wernerfelt, 1995) to build core competences through fostering sustainable and hardly copiable capbilities (Barney, 1991). Linking external organizations for those heterogeneous resources (Eisenhardt & Martin, 2000) to stay compettiive becomes primary rationale behind partner selection. Thus, partner selection criteria vary along with different environment associated with specific tasks. Heterogeneous resources needed are context-specific for joint-ventured firm, whereas venture partners should be united prior to contextual difficulties of such venture appears. Accumulation and integration of customer-related knowledge is the most notably heterogeneous resources for MNE in host country (Tanriverdi & Venkatraman, 2005). Firms that not include by planned such custoemr-based knowledge as part of slection critieria may expose themselves to the risks of losing local customer acceptance (Jaworski, Kohli & Sahay, 2000; Harris & Cai, 2002). This means complentarity of physical and human resources might be useful to shorten the list of partner candidates, yet it is not sufficient as partner selection criteria (Lyles & Salk, 1996; Gibbert, Leibold & Probst, 2002).

Organizational learning perspective proposes single loop learning within roganization and double loop learning from including external organizations for valuable knowledge for directing high performance operation (Argyris, 1977 ; Powell, Koput & Smith-Doerr, 1996). Key to this perspective is the organization's learning capability or readiness toward new knowledge that partners brought to the ventures (Shenkar & Li, 1999 ; Parise & Henderson, 2001). In the other hand, outcomes of learning are largely depending on knowledge givers' 'learnability' (Brush & Licata, 1983; Turbin, 1993). Codifiable or explicit knowledge could be easily trasnferred and learned between partners, yet customer knowledge that pertians to consumer behaviors such as personal relationship, reputation, experience that are context-specific is not (Ruigrok & Wagner 2003; Uhlenbruck, Meyer & Hitt, 2003). Unfortunately, knowledge on how customer will react and behave in particular scenarios is nothing but vital to the success of almost all cross-cultural ventures (Rodriguez, Perez & del Val, 2003), particullarly for those cases that involve local markets. Lacking focus on customer knowledge prevents the learning perspective from proper interpreting partner selection. Besides, the level of knowledge seekers' learning capabilities as well as owner's learnability differentiates the outcomes of knowledge transfer in the learning perspective, of which can only be used to explain a firm's need of particular partner to learn not the criteria pertain to proper partner to cooperate.

Resource dependency theorists identified that organizations can survive becuase they are able to access and maintain linkages with needed resources from the network the organizations embedded (Pfeffer & Salancik, 1978). Continegnt to the context, management of the firm shall continuous modify decisions regarding potnetial parties to collaborate and commitment to such collaboration. This implicitly means the management is more concern on the enviornment monitoring (Pfeffer & Salancik, 1977). In the cases of global management, commitment to the parties is an integral part of the top management of the jointed venture business. Applying resource dependence theory in partner selection that is often required before cross-border joint venture is actually established may not be appropriate.

2.1.2. Knowledge-based View

Stems from resource–based view and organizational learning, knowledge-based viewed (KBV) suggests that amount of knowledge as well as capabilities in exploring and exploiting current and new knowledge jointly contribute to firm's comptitiveness by creating value for customers (Nonaka, 1994). Contrast to property-based resource, knowledge-based resource is more intagible and tacit in nature (Das & Teng, 2000), of which is unique and is highly isolated from competitor's imitating intent (Barney, 1991; Miller & Shamsie, 1996).

As important capital to firm, knowledge include resources of human, structual (Edvinsson & Sullivan, 1996), and customer (Stewart, 1998; Petrash, 1996; Edvinsson & Malone, 1997; Reid, Bussiere & Greenaway, 2001). Human capital refers to individual employee's techniques, experiences, routines, and instincts; whereas structural capital refers to those organization-based technologies, data, patents, innovations, and processes etc. Past studies on partner selection tend to limit thier concern on the need of these two kinds of capital. As a result, the literature categorized selection criteria as task and partner related factors, and ignored the customer related factors pertain to customer capital.

Petrash (1996) is one of the pioneer research that first reminds us our ignorance toward customers in knowledge studies, thoguh customer capital in this study is confined as perceived value after transaction (Petrash, 1996, p.366) and not other factors affecting such perception. As a matetr of fact, customer knowledge shall include those information that affecting or shaping customer's purchasing behaviors, of which hardly could obtain through market or market agency (i.e. advertising agencies). For MNE as an outsider of a market, best approach to be tuned with such information is to explore and exploit immensely within certain institution (Simonin, 1997; Parise & Henderson, 2001).

Few if nay studies on partner selection factors have involved market knowledge as part of selection criteria. Knowledge-based resources, as knowledge-based view advocated as the major source of competitiveness, include market knowledge in host country. Knowledge of this kind is generally the outcomes of market-based and marketing support resources, and is highly tacit and culture-specific. Knowledge-based view is one of the first thoeries identifies market and customer knowledge as independent and critical factors in helping company's comeptitive advantage. However, this theory focus only on customer perceived value in representing customer capital, and not extending to consumer-related market knowledge (Petrash, 1996). This is part of major reasons to explain why the importance of customer related factors was uncovered in past studies. This research advocates that customer-based knowledge asset shall include knowledge on customers' value perception as well as knolwedge regarding activties that produce such value perception.

2.2. Literature on IJV Partner Selection

Tomlinson (1970) is one of the leading studies that systematically research into the partner selection for international joint venture. Geringer (1991) summarizes studies after Tomlinson (1970) and simplifies the list of partner selection factor as partner related and task related factors. This categorization is then become main stream in discussing IJV partner selection process (Glaister & Buckley, 1997; Al-Khalifa & Peterson, 1998).

Literature on this important issue could be traced back to the studies of Tomlinson (1970) in India and Pakistan. This study concludes six major criteria associated with the subsidiary's

tasks and missions. Adler & Hlavacek (1976) suggests distribution system, technology improvement, or complementarity as additional criteria. The literature in 1980s and later focus on the benefit contribution of each partner could make to the joint venture as major attributes of an ideal partner. For example, complementary mission, resource capabilities, and other 'strategic fit' attribute (Lasserre, 1984; Harrigan, 1988; Brouthers et al., 1995). Majority of the literature agreed that a good joint venture would bring firms unique values that could not be achieved by individual firm alone (Beamish, 1987; Bleeke & Ernst, 1991; Dyer & Singy, 1998).

Evidences that past studies provided have directly or indirectly confirmed that proper (Devlin & Bleakley, 1988) partners who possessed strengths that complementary to firm's capabilities, especially to the core market or core techniques (Hoffmann & Schlosser, 2001), will significantly impact the performance of international joint ventures (Tomlinson, 1970; Cavusgil & Evirgen, 1997). A correct partner selection decision may not guarantee success (Inkpen & Ross, 2001), yet improper decision will jeopardize a venture (Deloitte Haskins & Sells International, 1989). Although making good decision on partner decision may not almighty, it is vital for venture success.

Joint venturing with external organizations to reach complementary resources means additional transactional costs and power sharing (Harrigan, 1988). As a result, firms need to offset or exceed such costs with benefits from joint venture (Beamish & Banks, 1987; Gulati & Singh, 1998). Although partners could contribute strengths in any stages of value chain, the ultimate goal of any value chain is to supply value to it's' customers (Porter, 1985). In sum, partners' potentiality of becoming venture partner will be judged by assessing its contribution to customer value instead of firm's value (Madhok & Tallman, 1998). This implicitly reveals that customer related factors should be sufficiently considered in selection decision.

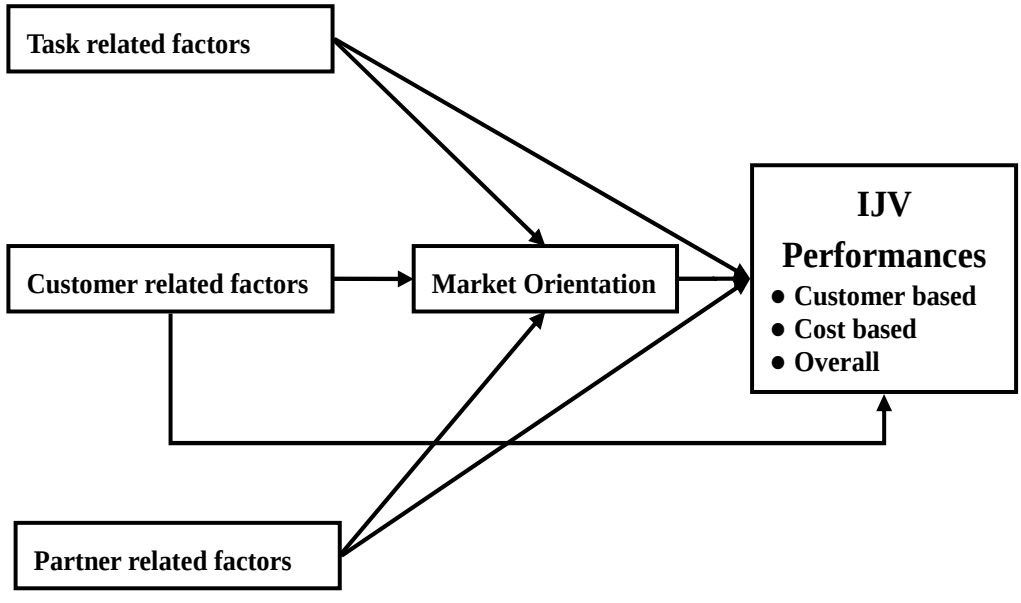

Figure 1. Conceptual framework for selection factors and IJV performances.

Partner related factors are organization-specific (Geringer, 1991; Al-Khalifa & Peterson, 1997; Varis & Conn, 2002). Selection criteria of this kind may contingent with organizational characteristics, cultures, and probably other emotional background. In the other hand, task related factors are task-specific. Criteria are more subjective and may contingent with emerging tasks and missions. It is thus possible to present a list of factors for an ideal partner, yet means nothing to either the academician or the practitioners (Geringer, 1991; Varis & Conn, 2002). By identifying the serious short of customer in the partner selection studies, we raise customer related factors as additional and critical factor beyond conventional partner and task factors. This is not to add the length of the list but to remind the importance of customer and to bridge the gap between current studies and reality this market–oriented or customer-centered age (Brief & Bazerman, 2003; Ricci, 2003; Kirca et al., 2005). We believe more attention on customer will bring international joint venture more successful in either jointed business or for parent firms. The conceptual framework is shown as figure 1.

2.3. Customer-based Knowledge

Creating customer value is essential for any organizational decision (Mascarenhas, Kesavan & Bernacchi, 2004).Ironically, customer acceptance to a partner to be joint-ventured for cetain business have few or never been assessed as a primary concern (Geringer, 1991; Glaister & Buckley, 1997). We highlight the importance of customer-based knowledge in business operations and argue how such knowledge could be used to help identifying a proper partner for customer values in subsequent sections of this paper.

Customer satisfaction generates company's profits (Blackwell, Milliard & Engel, 2006). As a customer-centric organization, firms will make endless efforts to explore, design, develop, and manufacture what customers need to produce profit by carefully detecting factors that attract or distract customers' preference (Esteban, Millan, Molina & Martin-Consuegra, 2002). Although technology convergence, income parity, and advertising converge have comprehensively adopted in attempt to unify consumer behavior (de Mooji & Hofstede, 2002), the ever increasing heterogeneous customers demands indeed place serious challenges to modern companies. For example, nationalism (Huddleson, Good & Stoel, 2001) or ethnocentrism (Shimp & Sharma, 1987; Durvasula, Andrews, & Netemeyer, 1997), and animosity, (Klein, Ettenson & Morris, 1998) within the national cultural context has manifested its impacts on the quality, image, and preference of imported products in varied way (Lastovica, Bettencourt, Hughner & Kuntze, 1999; Kaynak & Kara, 2002). Firms attempt to penetrate to a foreign market generally encounter dual difficulties. One is the difficulty in understanding the consumer behavior, of which is context-specific and hardly generalizable between distinctive cultures (Suh & Kwon, 2002; Laroche, Kalamas & Cleveland, 2005; Rawwas, 2001; Chung & Pysarchik, 2000; Reisinger & Turner, 1999; Wee, 1999; Wells, 1994; Money, Gilly & Graham, 1998; Slowikowski & Jarratt, 1997; Lee & Ulgado, 1997; Raajpoot, 2004). Another distinctive yet related problem is the need of uttilizing such knowledge into operational tactics. The literature in marketing and business has long been addressed similar findings. For example, living style (Kucukemiroglu, 1999), image pertains to particular countries and products (Pecotich & Rosenthal, 2001), preferred products and quality (Lee & Sirgy, 1999; Balabanis & Diamantopoulos, 2004), preferred pricing and channel (Piron, 2002), ways and procedures of determining satisfaction (O'Cass

& Lim, 2002), the extent of service quality (Huddleston et al., 2001), and many others. Strategic actions based on customer knowledge tend to stay fine tune with target customers, from which obtain good level of customer preference and satisfaction (Sheth, Sisodia & Sharma, 2000; Selden & MacMillan, 2006), and consequently contribute to organizational return (Cano et al., 2004; Lenskold, 2004; Kirca et al., 2005; Cross & Dixit, 2005).

Compare to tangible inputs, customer and consumer related elements are mostly intangible, tacit, frequently market-specific. Except codifiable customer information that could be obtained from the market, customer related knowledge is normally generated from purposefully interactions with rivalries and customers and thus highly possible to be unique and inimitable (Barney, 1991; Prahalad & Hamel, 1990). This means customer-based knowledge is extremely valuable input to the firm (Duncan & Moriarty, 1998). Lacking support by long-term customer relationship, venture parties' subjective considerations, such as cooperating intent, task complementarily, or partner characteristics can hardly sufficiently receive and properly transforming it into valuable knowledge (Wulf, Odekerken-Schroder & Iacobucci, 2001). Joint venturing with customer-oriented partners provides optimal alternative for MNE's entry difficulties.

In the international expansion studies, expanding through strategies of local adaptation or global standardization remains a debate for the former focus on meeting local customers' demand, whereas the latter concern more on the overall levels of cost. So-called 'GLOCAL' took the middle way by simultaneously performing strategically integrate global strategy as well as operationally response to specific local demands. In fact, 'GLOCAL' is more a slogan than a strategy or at least shall be confined in certain product lines since a workable strategy is that driving customers' acceptance or promoting customer's preference. Responding to customer's need remains the core to this strategy. This is particularly true in the ever-growing heterogeneous market segments in today's business environment where more and more cultural factors emerge to shape consumer behavior (Blackwell et al., 2006). Accordingly, aligning partners whose perception toward the venture were on task complementarity or on partner similarity would become challenge to both childrens and parents. Allying partners who effectively bridge the gap of tacit customer-based knowledge could be an optimal alternative for MNE. In sum, taking customer related factors into account of partner selection would be the key to the success of international joint venture (Sheth et al., 2000).

2.4. Hypotheses

2.4.1. Customer Related Factors and IJV Performance

Customer is the primary object of any sets of company activities. Companies obtain satisfactory return and subsequent sustainable competence by satisfying target customers' need from time to time (Levitt, 1960; Porter, 1980). No matter how MNE enter a market, perceived satisfaction of customers in the market will be decisive in surviving the MNE's venture in the market. MNEs enter a market under strategy of global integration are likely to take task as a primary consideration in partner decision in order to achieve parents' goals instead of the one for jointed business. This task-oriented joint venture is in fact the agent of parent firms, thus resources are likely to be directed for the principal's benefit. Taking task factors as single criterion for potential partner assessment will have few attraction to customers. In the other hand, determining a partner simply centered on such partner's

trustability and capability but not on its capabilities of satisfying expected customers will have no influence on customers' preference.

No matter what factors were applied to determine a partner, any cross-border joint venture needs to involve its target customers as major consideration for survival. This means customers will be eventually included in the new venture business. Taking customer related factors well in advance in the partner seeking stage may not only guarantee a market-oriented subsidiary but also a highly motivated team (Kirca et al., 2005). Team that collectively market-oriented will be more prone to customer demands, of which in turn attract preference and loyalty. We thus propose a positive correlation between customer-related factors and IJV performance.

H_1: As the task related factors and partner related factors remain the partner selection criteria, using customer related factors in selecting venture partner positively affects the performance of international joint venture.

2.4.2. Customer Related Factors and Market Orientation

Starting from resources available, firms' market development options may vary from totally non-market oriented to fully market-oriented (Day & Nedungadi, 1994). The literature suggests that market-oriented strategy that simultaneously caring competition and customers is superior to other approaches in terms of both customer-based and cost-based performances. Task related factors in the past studies implicitly require the partner to jointly accomplishing the parent's corporate goals. Parent firms' mission acts as the primary criteria in guiding partner seeking. As to, the literature alternatively prescribes the partner related factors as trustable and strategically 'fit' to corporate mission (Lasserre, 1984; Harrigan, 1988; Geringer, 1991; Barclay & Smith, 1997). Both of task and partner related factors underlying partner selection inevitably ignore the importance of customer factors, and thus the formed venture is unlikely to be market oriented but competition oriented or self-centered (Day & Nedungadi, 1994).

Complementary resources are unlimited, ranging from financial and production factors to market and channel factors (Geringer, 1991; Hitt et al., 2000; 2004; Gale & Luo, 2004). Taken 'foreignness' as the major shortage of MNE in a host market, most valuable resource it needs is that tacit information centered around target customers. Substantial distance from host market cultures prevent MNE from factually apprehending those behaviors that embedded in culture-specific contexts (McKercher, 2003). Obtaining such customer-based knowledge is unlikely to accomplish as those production factors, heterogeneous knowledge at this kind need long-term customer service experience (Eisenhardt & Martin, 2000; Wulf et al., 2001) or in this case allying with customer-oriented partners.

We may conclude at this point that adding customer related factors into partner decision beyond conventional PRF and TRF will have positive effects on venture's market-oriented potentials for the organization's resources could be integrated as a whole in response to customers' requirement as well as rivalries' actions.(Lorange & Roos, 1990). We therefore hypothesize the relationship between customer related factors and market orientation as follow.

H_2: As the task related factors and partner related factors remain the partner selection criteria of cross-border venture, selecting joint venture partner with customer related factors positively affect the extent of company's market orientation.

2.4.3. Market Orientation and IJV Performance

Market orientation at organizational level has been proved positively affect organizational performance, profit, revenue, and market share (Cano et al., 2004; Kirca et al., 2005). Market-oriented organizations receive superior image on customer perceived quality and satisfaction (Saxe & Weitz, 1982). In the other hand, market orientation also internally benefit the organization by increasing organizational commitment, employee's morality, job satisfaction, reducing role conflict (Siguaw, Brown & Widing, 1994; Kirca, Jayachandran & Bearden, 2005), of which in turn further facilitate a favorable loop of service profit chain (Lovelock, 2003). Evidences could be found across various industries and contexts. For example, in hospital business (Wrenn, 1997), hotel (Sargeant & Mohamad, 1999), educational services (Qureshi, 1993), and manufacturing (Kohli et al., 1993) are some of notable studies. In terms of other contextual factors, studies have addressed the scale of firms (Pelham, 1997), contexts of varied stages of value chain (Siguaw, Simpson & Baker, 1998), and further validated in cross-country study (Ward, Girardi & Lewandowska, 2006). All of these among others provide evidences for a positive linkage between firm's market orientation and performances. Moreover, evidence on the positive impacts of market orientation on employee's customer orientation attitude and behavior (Kirca et al., 2005) will further reaffirm the customer's favorable perception (Siguaw, et al, 1998).

There are debates regarding the linkage between market orientation and organizational performances, some criticize its' strength of the linkage and some conclude a negative or not significant relationship (Agarwal, Erramilli, & Dev, 2003; Au & Tse, 1995; Bhuian, 1997; Sandvik & Sandvik, 2003). Yet these inconsistent conclusions are found special not general cases (See detail in Nakata & Sivakumar, 2001). Like other companies that formed under foreign direct investment or wholly owned, companies by cross-border collaboration are the same in terms of striving for customer acceptance. We thus hypothesize the higher the market orientation of an international joint venture business will positively result in a better performance.

H_3: Performance of an international joint venture in host market positively correlates with the extent of market orientation of this venture business.

3. METHODS

3.1. Measurement

Likert scale is used to measure the respondents' perception toward each inquiry by providing '1' as not important, and '5' as very important.

Task related factors. *Task related factors*, as defined by Geringer (1991), are those technical or resource factors that are expected to be required for the accomplishment of particular task. Geringer (1991) interviewed corporate managers with a list of critical success factors that summarized from studies of Steiner (1968), Tomlinson (1970), Stopford & Wells (1972), Renforth (1974), Tomlinson & Thompson (1977), Beamish (1984), and conclude a fifteen items list named as task related factors. Studies conducted by Khan & Suh (2005) and Wang & Kess (2006) in the context of China provide that scale developed by Geringer (1991) is cross-culturally generalizable. Taiwan and China share same or similar culture heritage,

thus apply this scale in the context of same Chinese community would be appropriate. We deleted three items after the pilot test. Nine item were kept for use after exploratory factor analysis and expert validation with $\alpha = 0.9429$.

Partner related factors. Evidence shows that IJV performance directly links with partner related factor (Robson, 2002). Unfortunately, *partner related factors* were not like task factor that was well defined in Geringer (1991). From the transactional cost perspective, any partner that assumes lower uncertainty and costs would be an ideal partner (Beamish & Banks, 1987; Geringer & Hebert, 1989; Gulati & Singh, 1998; Madhok & Tallman, 1998). Local partner in host country could also be viewed as agent to the firm, thus criteria of determining a qualified agent, such as level of opportunism or trustable (Hoffmann & Schlosser, 2001) from this candidate's records are good indications for IJV partner. In order to create value that could not achieve by traditional transactions, factors related to potential partner may include operational efficiency and effectiveness, free of opportunism, trustable, and optimally is strategically fit or are resource complementary (Harrigan, 1988; Kanter, 1994; Littler & Leverick, 1995; Barclay & Smith, 1997; Douma, Bilderbeek, Idenburg, & Looise, 2000; Insch & Steensma, 2006). Six items retained for the partner related factors with $\alpha = 0.9145$.

Customer related factors. This factor group refers to customer's and competitor's factors that directly affect customers purchasing behavior in individual stage. Market knowledge composes market-based resources and marketing support resource (Hooley, Greenley, Cadogan & Fahy, 2005), also termed as market-based asset (MBA), of which directly result in firm's profitability (Srivastava, Shervani & Fahey, 1998). Customer related factors in this research include all that knowledge acquiring, interpreting, and integrating associated with customers and competitors. As a market-driven organization, firms shall be capable of market sensing, customer linking, channel bonding, and technology monitoring (Day, 1994). Channel bonding is task related, and customer bonding is customer related, whereas the rest are closely associated with competitors. We summarized literature and use a five item scale to capture the construct of customer related factor with $\alpha = 0.8773$. These are capabilities of acquiring customer knowledge toward product and services, acquiring competitors' information, and a structural information system that could be used to receive, analyze, and distribute customer-related information.

Market orientation. Although customer capital is the most important component of a firm's resource (Petrash, 1996), knowledge on rivalries is also critical for their actions may impose dual impacts on both restricting the firm's production outcomes and altering customer's behavior (Porter, 1980; Hunt & Morgan, 1995; Blackwell et al., 2006). All market orientation related scales substantially include both customer and competitor, i.e. MARKOR (Kohli et al., 1993), MKTOR (Narver & Slater, 1990), and the one proposed by Deshpande, Farley, & Webster (1993). Deshpande and colleagues modify MARKOR and MKTOR as a simplified version but involve all major considerations in the original scales. As industrial experts also suggest, we adopt DFW as measurement for market orientation. Alpha for market orientation is satisfactory at 0.8414.

Joint venture performance. Objectively or subjectively measures company performance make not much difference for these are closely associated. Studies on market orientation tend to measure the performance by customer loyalty, customer satisfaction, innovation, and product quality (Kirca et al., 2005). Customer satisfaction fosters customer's trust and commitment, of which in turn create a reliable long-term relationship and subsequently revenue growth (Morgan & Hunt, 1994). Customer loyalty increase repetitive purchasing,

reduce complain, lower operating and service costs, and accordingly enrich organizational performance (Szymanski & Henard, 2001). Other elements in this construct include customer rating that trying to capture customer's current image on the firm's product and service. This is expected to have positive relationship with market orientation (Day & Nedungadi, 1994). Relative cost and relative profit are another two inquiries to examine the outcomes of the firm's commitment to the customers. Relative profit is presented in reverse form that will need inverse coding later. Share of the market is used to identify the status of competition in the market. This construct has seven items with, $\alpha = 0.9293$.

Validity. Content validity is confirmed by two actions. Items of the questionnaire are all drawn from literature is the first to assure a content validity. We have also invited several international business as well as marketing scholars to review the draft, and then consult with industrial experts for the appropriateness of each question. The questionnaire has three language editions, Chinese, English, and Japanese. All three editions have been edited through back-translation procedures (Kerlinger & Lee, 2000). Construct validities, convergent and discriminant, are confirmed by examining the *p* value of pair correlations, in which correlations and *p* values of related items in the same construct are high and significant and those for different constructs are low or not significant.

Common method variance. To avoid common method variance (CMV) that is highly possible causing bias in research outcomes with incorrect correlation between independent and dependent variables. We invite CEO or high rank executive to answer the first part of questionnaire, the independent variables. Functional managers, as assigned or further invited by the CEO, answer the second part of questions, dependent and control variables. Since respondents to the questionnaire are different and answer in different places, data collected could be highly reliable that no CMV bias will appear.

3.2. Samples

Unit of analysis for this research is the joint venture company that established in Taiwan. Companies including both manufacturing and service sectors that at least 15% foreign capital and no single party owned 75% shares of equity. Samples are purposefully taken from several business groups. The first group is the companies in the synergy production system (*Keirestsu*), of which represents typical supply chain in Taiwan. Companies in the export processing zone are included in the second group of companies for these firms were expected to aim rather on foreign than local markets. Members of trading association in different regions are the third group, for these companies involved certain levels of import or export business. Traditional manufacturers across major industrial parks and service and retailing giants are the fourth and fifth groups.

4. RESULTS AND ANALYSES

We dispatched 500 questionnaires, and 353 are completed and collected. 32 questionnaires were ignored due to absence of information regarding dependent variable or other important parts. The overall response rate is high as 64.2%.

4.1. Sample Description

4.1.1. Descriptive Statistics

Data are first analyzed to obtain global features of the data. As shown in table 1, firms in the data are mostly established more than two years (80%), Japan and USA (include Canada) are two major home country of foreign investor, 80% of respondents perceived similar or few if any cultural distance between partners, service and retailing industries are the major contributors of data, who served varied customers.

Table 1 Descriptive statistics

History	N	%	Accu. %
< 1 year	56	17.45	18.69
2-3 years	86	26.79	45.48
4-5 years	115	35.83	80.06
> 5 years	64	19.94	100
Region			
Japan	130	40.5	40.5
N. America	95	29.6	70.09
W. Europe	47	14.64	84.74
Others	49	15.26	100
Cultural Distance			
Similar	132	41.12	41.12
Some	144	44.86	85.98
Large	45	14.02	100
Industry			
Service	153	47.66	47.66
Retailing	73	22.74	70.4
Manufacturing	88	27.41	97.82
Trading	7	2.18	100
Customers			
Industrial	65	20.25	20.25
Reseller	91	28.35	48.6
Consumer	119	37.07	85.67
Varied	46	14.33	100

Table 2 Cross-tabulation of nationality and industry

Region		1	2	3	4	Industry		1	2	3	4
Local	n	64	37	15	26	Local	n	74	38	30	
	M %	45.07	26.06	10.56	18.31		M %	52.11	26.76	21.13	
	R %	49.23	38.95	31.91	53.06		I %	48.37	52.05	34.09	
Export	n	36	33	17	18	Export	n	46	12	39	7
	M %	34.62	31.73	16.35	17.31		M %	44.23	11.54	37.5	6.73
	R %	27.69	34.74	36.17	36.73		I %	30.07	16.44	44.32	100
	n	11.21	10.28	5.3	5.61	Both	n	33	23	19	
Both	M %	30	25	15	5		M %	44	30.67	25.33	
	R %	40	33.33	20	6.67		I %	21.57	31.51	21.59	
x^2= 10.811,p=0.094						x^2=30.509, p=0.001					
TRF / Region		1	2	3	4	TRF/ Industry		1	2	3	4
High	n	33	20	16	4	High	n	46	16	10	1
	TRF %	25.38	21.05	34.04	8.16		TRF %	63.01	21.92	13.7	1.37
Middle	n	60	47	24	35	Middle	n	75	38	47	6
	TRF %	46.15	49.47	51.06	71.43		TRF %	45.18	22.89	28.31	3.61
Low	n	37	28	7	10	Low	n	32	19	31	
	TRF %	28.46	29.47	14.89	20.41		TRF %	39.02	23.17	37.8	
x^2=15.893, p=0.0015						x^2=16.998, p=0.009					

PRF	1	2	3	4	PRF/	1	2	3	4	PRF	1
High	n	35	14	12	11	High	n	46	17	High	n
	TRF %	26.92	14.74	25.53	22.45		PRF %	63.89	23.61		TRF
Middle	n	69	60	25	22	Middle	n	78	43	Middle	n
	TRF %	53.08	63.16	53.19	44.9		PRF %	44.32	24.43	29.55	1.7
Low	n	26	21	10	16	Low	n	29	13	31	
	TRF %	20	22.11	21.28	32.65		PRF %	39.73	17.81	42.47	
x^2=8.665, p=0.193						x^2=29.246, p=0.001					
CRF/ Region		1	2	3	4	CRF/ Industry		1	2	3	4
High	n	53	24	13	16	High	n	63	27	10	6
	TRF %	40.77	25.26	27.66	32.65		CRF %	59.43	25.47	9.43	5.66
Middle	n	60	41	23	15	Middle	n	70	34	34	1
	TRF %	46.15	43.16	48.94	30.61		CRF %	50.36	24.46	24.46	0.72
Low	n	17	30	11	18	Low	n	20	12	44	
	TRF %	13.08	31.58	23.4	36.73		CRF %	26.32	15.79	57.89	
x^2=19.123, p=0.004						x^2=60.306, p=0.001					
Region: 1, Japan; 2, USA & Canada; 3, West Europe, 4,						Industry: 1, Services; 2. Retailing; 3. Manufacturing, 4. Trading					

N= 321

4.1.2. Cross-tabulation

Parent country and markets. Major responding firms, 44.24% of sample, report local market as primary customer segment. As shown in table 2, Japanese firms next to the others purposefully joint-ventured here for Taiwan customers. However, there is no significant difference among foreign parent on the preference of local or export markets, x2= 10.811, p=0.094>0.05.

Parent country and partner selection factors. As indicated in table 2, Chi-square test provides x^2values for CRF, TRF, and PRF are 15.893, 8.665, 19.123 respectively, whereas PRF is not significant. This means the nationality has no difference in using PRF as favorable selection criteria, yet there are some differences among nationality in using CRF and TRF as guide for potential partner. Examine a little detail, Japanese parents emphasize more on CRF as the first and PRF the second. On the contrary, European parents highlight the TRF as primary searching criterion, whereas American firms pay equal attention to these tree factors. It is interesting to be noted that most studies after Geringer (1991) were conducted in the Europe or near east with a conclusion of favoring TRF as primary partner consideration factor. European firms in this study are different from other two groups of nationality in favoring particular selection factors.

Industry and local / export markets. Chi-square test indicates, as shown in table 2, x^2=30.509, p<0.05, means market preference varies from one industry to another. Service and trading industries are the notable groups of favoring local market, and the manufacturing group export more than domestic markets.

Industry and partner selection factors. As suggested by the chi-square test, different industry significantly place different weights on individual selection factors. As shown in table 2, x^2 are 16.998, 29.246, and 60.306 for TRF, PRF, and CRF respectively. Service and retailing industries are the two mostly notable groups that emphasizes CRF, followed by PRF. Locating in the lowest cell of each factor, the manufacturing group seems not placing particular favor to specific factor.

4.2. Partner Slection Factors and IJV Performance

The literature tends hypothesize partner selection factors with the level of the subsidiary's performance. In the marketing literature, as suggested by Day & Wensley (1988) and Day & Nedungadi (1994), performance could be categorized as customer-based performance (CUP) and competitor/cost-based performance (COP) to fully reflect the outcomes of company's effort in attracting customers as well as in competing with rivalries. Moreover, scholars generally agreed that COP and CUP should be consolidated as a single index in order to reflect the reality of corporate performance (Narver & Slater, 1990; Kohli et al., 1993; Day & Nedungadi, 1994). This is the overall performance (OP) in this study.

Customer-based Performance

The model feature the regression of TRF and PRF on CUP, as shown in table 3, indicates a low level of explanation for customer-based performance with R^2=0.015, of which reveals PRF and TRF are not sufficient in explain the variance of the firm's performance in attracting customers. By adding CRF into the model, variance explained up to an acceptable level at 0.293, in which CRF represent the major source of impacts (0.463), much higher than PRF

and TRF, as shown in table 3. This reveals the importance of customer related factors as a role in better generating customer satisfaction and customer loyalty.

Competition-based Performance

Alternative set of performance international joint venture concerned is the competition-based performance, of which was most often used to assess the business success particularly in those strategically important markets. More gain from competition-based performance means successfully surpass rivalries' in certain campaign. Model 4 in table 3 indicates that PRF and TRF explained 63.4% of COP variance. This means TRF and PRF could be used together in successful predicting a firm's COP. Adding CRF as the third predictors in the model, variance to be explained is somehow strengthen as R^2= 0.644. PRF is the major predictors in both models with high coefficient relation (0.644), and CRF in the model has negative impact on COP. This explicitly indicates that selecting potential partner base on PRF would be effective and efficient as long as the subsidiary is designed solely for competition-based performance. Negative impacts of CRF on COP may implicitly advise us that incline too much on customers' demand may jeopardize COP.

Overall Performance

The literature generally advocates to simultaneously aware both CUP and COP for short and long term returns (Narver & Slater, 1990; Day & Wensley, 1988; Kohli & Jaworski, 1990). PRF and TRF, as shown in table 3, together explain 41.6% of variance of OP. PRF is again the major predictors (0.354) of overall performance. In the last model, we add CRF with PRF and PRF in predicting OP. Although variance explained is lower than that in model 4, this seems to be a satisfactory model for OP as the dependent variable is closer to the reality, and R^2= 0.513 is sufficient in most management studies. In sum, PRF remains the major predictors in the last model, CRF as the second, and TRF as the least and could be replaced by CRF. Figure 2 shows how the model changes with adding CRF.

Table 3 Partner selection factors and performances

	CUP		COP		OP	
Models	1	2	3	4	5	6
Constant	3.311*	2.217*	0.350*	0.383*	1.830*	1.300*
TRF	0.068	-0.075	0.243*	0.248*	0.156*	0.087
PRF	0.065	0.063	0.644*	0.644*	0.354*	0.353*
CRF		0.463*		-0.014		0.225*
R	0.121	0.541	0.797	0.797	0.645	0.716
R^2	0.015	0.293	0.635	0.644	0.416	0.513
Adj. R^2	0.008	0.286	0.632	0.631	0.412	0.508
F	2.353	43.72	276.015	183.577	113.107	111.35

CUP, customer-based performance; COP, competition-based performance; OP, Overall performance; TRF, Task related factors; PRF, Partner related factors; CRF, Customer related factors.

4.3. Market Orientation

Two sets of relationship are interesting to determine with market orientation. One is how partner selection factors affect the level of a firm's market orientation, and in the other hand, how such market orientation is in turn affecting overall performance. In the first set of relationship determination, model that involve TRF and PRF as predictor shows respective power of 0.052 (n. s.) and 0.295 with R^2=0.224. PRF is better a performance predictor in model 1. Adding CRF as another predictor, R^2 of the model up to 0.459, where CRF appears as the best predictor, followed by PRF. This means adding CRF in partner selection, firms will be more likely to be market oriented, from which support $H_{2.}$

Market Orientation and Overall Venturing Performance

Previous studies generally advocate that market orientation directly link with firm's performances in many different terms (Kirca et al., 2005). We analyze the relationship of these two constructs and receive similar results. Shown as in the right column of table 4, R^2=0.445, the effect of market orientation on overall performance is high as 0.673. Market orientation is a powerful predictor of overall performance.

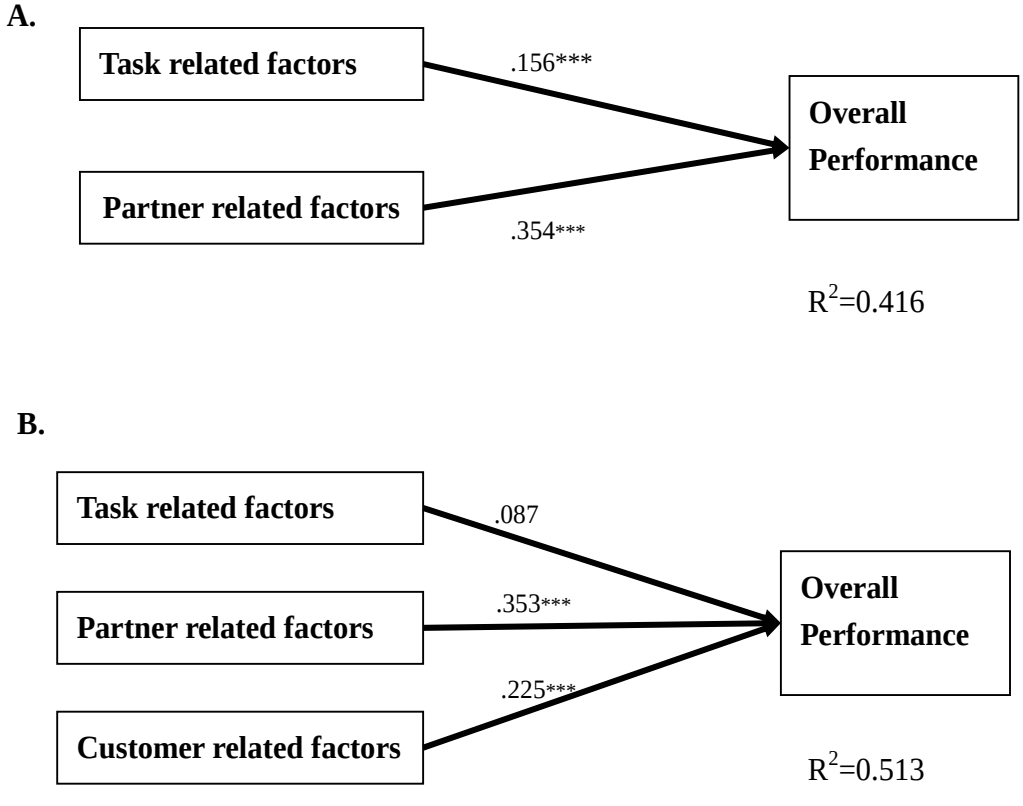

Figure 2 Partner selection factors and overall performance of IJV.

Table 4 Partner selection factors, market orientation, and performance

D. V.	Market orientation (MO)		O. P.
Models	1	2	3
Constant	2.534*	1.432*	1.311*
TRF	0.052	0.015	
PRF	0.295*	0.249*	
CRF		0.381*	
M. O.			0.673*
R	0.474	0.677	0.667
R^2	0.224	0.459	0.445
Adj. R^2	0.208	0.441	0.440
F	13.606	26.293	76.301

* $p<0.05$.

5. CONCLUSIONS

5.1. Conclusions

Main purpose of this research is to explore and confirm the existence and importance of the customer-related factors in selecting an ideal international joint venture partner. The study confirms the importance of CRF by linking this important construct with IJV performance.

This research first identifies that adding CRF into partner selection has substantially improve the variance explained of IJV overall performance (Pan, 2004a; Levitt, 1960; 1983; Lenskold, 2004), of which support Hypothesis 1. This research has also confirmed the IJV with higher level of market orientation earned better customer-based performance as well as overall (Klein & Chekitan, 1997).

Factors of partner selection significantly affect IJV's marketing strategies (Geringer, 1990; Arino & Abramov, 1997; Al-Khalifa & Peterson, 1998). Seeking partners under task related factors in mind, firms incline to have lower level of market orientation, whereas firms that seek partners under customer related appear to have higher level of market orientation. Noteworthy is the additive of CRF into original PRF and TRF has substantial and positive effects on IJV's market orientation, and eventually helpful to overall performance of the joint-ventured business (Day & Nedungadi, 1994; Ricci, 2003). Hypothesis 2 is supported.

Market orientation that simultaneously appreciates information on both customers and competitors directly result in firm's performance (Kohli & Jaworski, 1990; Deshpande et al., 1993; Diamantopoulos & Hart, 1993; Day & Nedungadi, 1994; Au & Tse, 1995; Agarwal et al., 2003; Cano et al., 2004). Consistent to previous studies, the model in this research that linking market orientation and customer-based performance has best level of variance explained, followed by the model that predicting overall performance. This provides evidence regarding the predicting value of marketing orientation, and support the hypothesis 3. Adding

the construct of customer related factors into the model not only strengthen the level of explanation power on IJV performance but also affect predicting ability of task related factor. This is Noteworthy is these two constructs has very low collinearity.

5.2. Implications

5.2.1. Theoretical Implications

Extending studies of partner selection for international joint venture (Tomlinson, 1971; Geringer, 1991; Arino & Abramov, 1997; Glaister & Buckley, 1997; Al-Khalifa & Peterson, 1998; Tatoglu, 2000), this research further addresses the importance of customer related factors beyond traditional PRF and TRF. Taking customer capital of knowledge-based view, we proof the importance of customer related factors as critical partner criteria (Stewart, 1998; Petrash, 1996; Edvinsson & Malone, 1997; Reid et al, 2001) other than PRF and TRF. This has some important academic implications.

Knowledge on customers' purchasing behavior is important and integral part of resources that firm required to establish competitive advantage. Although knowledge-based view has explicitly identified the customer capital as one of major knowledge resource, it limits its consequences by confining such capital within customer value perception (Petrash, 1996, p.366). Possible reasons that past studies ignoring the customer related factors may stem from scholars were incline to view this issue from the perspective of strategic marketing rather than from consumer behavior. Recently, academicians urge to learn from customers, to explore more into customers' mind (Garcia-Murillo & Annabi, 2002; Tiwana, 2002). Evidence provided in this research indicates that factors affecting purchasing behavior in each stage, from external environment factors to consumer internal factors, shall be included in firm's customer information system. Availability of such information system is an integral part of customer related factors for the decisions of IJV partner.

Regression analysis shows that task related factors has limited predicting ability on IJV's competitor-based performance, and not on customer-based performance. This reveals that task factors alone without help of market orientation may be not sufficient in explaining IJV performance. Customer related factor is important in predicting customer-based performance as well as overall performance, but not competitor-based performance. Compare to CRF and TRF, PRF that composed by partner's trustability, ability, and owning strategic fitted resources is a conventional yet powerful predictor for every kind of performance. Research finding has reconfirmed the perspectives hold resource-based view (Lasserre, 1984; Beamish, 1987; Harrigan, 1988; Kanter, 1994; Brouthers et al., 1995; Dacin et al., 1997; Douma et al., 2000).

5.2.2. Managerial Implications

MNE's attempt in geographical spanning, with the help of venture partner, shall replace TRF with CRF or to the minimum add PRF as part of primary seeking and assessing criteria (Diamantopoulos & Hart, 1993; Rose & Shoham, 2002; Ellis, 2006). In the past two decades, plethoras of Taiwanese firms seek overseas development in a wide variety of markets. However, many of them with task related factors in mind in recruiting partners for the venture have experienced failures. Alternatively, those collaborate with partners who are pro-customers have secured abundant growth and competitive advantage. For example, Tingyi

(Master Kang instant noodle), I-Land Foods (Want Want snacks), and China Motor Corporation (CMC vehicles) are those cases that expanding with the help of market oriented partners.

Local firms that seeking foreign investments shall also focus their attractions on those customer capital, market information system, as well as customer knowledge databank that not accessible in the open market. In doing so, firms will be easier to attract and locate market-oriented prospective for the consensus of market orientation strategies, and consequently favorable customer acceptance and performance in local venture (Day & Nedungadi, 1994; Littler & Leverick, 1995; Hofstede, Steenkamp & Wedel, 1999; Kaynak & Kara, 2002). The most notable success of market-oriented example is the joint venture between Carrefour (France) and President Enterprise (Taiwan) obtain a great success in competing with other joint-ventured hypermarkets. In the other hand, Taiwan automakers could be good example for not seeking partners based on customer related factors. In the early 1960s, plenty of Taiwan automakers seek to attract foreign joint ventures based on assembly skills, location for assembly plant, and market potential (not customer knowledge. Half century after that time, automobile industry in Taiwan had hardly been regarded as an independent or competitive industry.

Market orientation as a strategic approach starts from learning from customers (Mascarenhas et al., 2004), exploring comprehensively what determines customer purchasing decision, to move from product-centric to customer-centric (Selden & MacMillan, 2006), to perform customer-centric. Customer-centric organizations view customers as business partners (Slater & Narver, 1994a; Ricci, 2003), and thus more incline to commit themselves to understand customers, from which accumulate customer capital and upgrade current techniques in exploiting such knowledge. As numerous empirical studies confirmed, this customers return good level of preference and loyalty to this kind of companies (Kirca et al., 2005; Gosselin & Bauwen, 2006).

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Chapter 3

INFLUENCE OF INDUSTRIAL STRUCTURE ON MANAGERIAL KNOWLEDGE: A NEW VISION OF PORTER'S FIVE FORCES SCHEME

Fernando J. Garrigós Simón [*] ***and Daniel Palacios Marqués***
Universitat Jaume I, Departamento de Administración de Empresas y Marketing,
12080 Castellón de la Plana

ABSTRACT

The aim of this article is to show that, although criticized from new managerial perspectives, Porter and Industrial Organization schemes continue to be essential to the understanding of enterprise competitiveness, in the era of knowledge, and could be connected to the knowledge-based-view. In this vein, our study analyzes Porter and Industrial Organization, and the Resource-Based and Knowledge-Based perspectives to show the importance of these schemes.

In addition, by means of a Delphi study using international experts, and a sample of 189 hospitality firms, our study tries to show and analyze whether, how and why managers have different knowledge of quality of perception of the different environmental competitive forces identified by Porter in the post-Internet context.

Following the application of structural equations models, the managers analyzed in our study hold different quality of perceptions of the various forces. This demonstrates the importance the structural environment has in conforming managerial knowledge or perception, one of the most important resources highlighted in new Resource-Based, and Knowledge Management literature.

Keywords: Industrial Structure, Managerial Knowledge, Delphi, Structural Equation Models

[*] E-mail: garrigos@emp.uji.es ; dpalacio@emp.uji.es; Tel. 964728558; Fax. 964728629

INTRODUCTION

In spite of the enormous proliferation of competing schemes in the business strategy literature, two fundamental paradigms have emerged as the most influential in the last two decades. First, Competitive Positioning, as proposed by Michael Porter (1980) from the Harvard Business School in the 1980s, and, second, the Resources and Capabilities-Based view of the firm that evolved during the 1990s (Penrose, 1959; Wernerfeld, 1984; Prahalad and Gary Hamel, 1990; Barney, 1991; Petteraff, 1993). The purpose of this article is to show that, although criticized from the Resource-Based view, Porter and Industrial Organization (IO) schemes continue to be essential models in the era of knowledge.

We attempt to demonstrate that the five forces determined by Porter notably affect one of the most important resources identified by the Resource-Based perspective, that of managerial knowledge, one of the basis of knowledge-based-view. The study sets out to emphasize the importance of IO schemes by analyzing whether managers have different knowledge on or perceptions of the various environmental competitive forces, using the scheme established by Porter (2001) about how the Internet influences the industry structure. We consider this situation to be important because it could imply the validation of Porter's five forces model from a new and theoretically contrary approach, the Resource-Based perspective. In addition it would imply that the quality of the diverse sources of information in the enterprise on the various forces are also different, playing these forces a crutial role to explain managerial bias, or the fact that managerial biases or capabilities influence the correct perception of the different structural forces.

THEORETICAL PERSPECTIVE

In classic Industrial Organization it has been traditionally assumed that firm managers are incapable of influencing both industrial conditions and company performance, due to restrictions imposed from industrial forces (Bain, 1956; Mason, 1939). This deterministic vision is also followed by those Organization Theory researchers who emphasize the role of the environment, perspectives such as Population Ecology, Institutional Theory, or Contingency Theory: Are managers free to act, or are their actions determined by external constrictions such as technology, competition or the government? (Beech, 2000) Einstein pointed out that the world we have created produces problems that we cannot resolve by far at the same level as they have been produced (Chandon and Nadler, 2000:127). According to this premise, the fields of organizational literature that focus on the environment posit strategy formation as a reactive process whereby the business organization forfeits individual initiative to the external environment (Wyer et al., 2000).[1]

[1] For instance, Population Ecology suggests that managerial action is largely ineffective in overcoming natural selection processes and inertia inside the organization (Hannan and Freeman, 1977) due to excessive environmental complexity and turbulence, which act as a hurdle to the understanding of and rapid adaptation to this environment. Other argumentations such as those deriving from Institutional Theory emphasize the importance of the institutional environment and the concomitant rules in conditioning the survival of the enterprise. Additionally, the Contingence perspective argues that growing environmental turbulence obliges enterprises to develop more sophisticated systems in order to control the growing unpredictability, complexity and novelty of modern changes. While the growing dynamism, size and complexity of the environment also

Nevertheless, while also recognizing the influence of environment, the determinist vision was widely modified in the 80's years with the development of Strategic Management, particularly following the analyses developed by Porter (1980; 1985; 1990; 1991), which focuses on firm rather than industry performance. In general, strategy literature suggests that successful organizations are able to obtain co-alignment with their external environment (Phillips, 2000). It must not be forgotten however, that the basic premise behind most of the economic theories, such as the Positioning School, led by Michael Porter, is that the industrial structure plays an important role in the determination of the competitive strategies potentially available to the organization in the market (Kumar and Subramanian, 1997). According to Porter (1980:23) the structure of an industrial sector has a strong influence in determining the competitive game rules and also the strategic possibilities potentially available to the enterprise.[2] Even so, and although IO emphasizes the power of environmental factors in dictating a firm's strategic behavior, Porter (1991) views the market environment as partly exogenous and partly subject to influences by company action.[3] After this, the competitive strategic choice, and hence the performance of an enterprise, depends on the degree of attractiveness of the industry and the position obtained vis-à-vis competitors.

One of the main aims for each and every enterprise is to achieve a sustainable competitive advantage (Mathews, 2000:114). For the Positioning school, "the essence of formulating competitive strategy is relating a company to its environment" (Porter, 1980, p.3).[4] The industry structure strongly dictates the conditions and competitive rules for the company and also the potential strategies available to the company, so executive managers are in fact analysts who study large amounts of data in order to recommend generic strategies (Mintzberg *et al*., 1998:84). Porter offered insights into how firms can obtain competitive advantage through positioning in the context of industry structure and pursuing strategies appropriate to that structure. In order to analyze and understand both the current industry structure and the future attractiveness of a business area, and as basis to identify the key strategic issues confronting organizations within the industry, Porter (1980) devised a model by which managers could assess the profit potential for a given industry by analyzing the "five competitive forces". From all the perspectives, Michael Porter's Competitive Forces Model has not only become an important tool for analyzing an organization industry structure in strategic process. Actually, it is by far the most widely used framework for an assessment of the profit potential in industry, and it became the dominant paradigm in the 1980s (Teece et al., 1997). This model allows a systematic and structured analysis of market structure and competitive situation to be undertaken, examining the key forces that drive overall profitability.

increase uncertainty (Hitt, 2000:7), we must finally add that in this situation, managers do not have enough time to respond to competitive threats and to be able to implement changes (Longenecker and Fink, 2001).

[2] Porter's basic idea was to integrate the traditional IO perspective with the strategic management tradition, distilling at the same time several decades of research in industrial organization into a set of prescriptions for managers. The IO perspective views firms as a bundle of strategic activities aiming to adapt to the industry environment by seeking an attractive position in the market arena (Williamson, 1991; McGahan and Porter, 1997; Spanos and Lioukas, 2001). And in this vein Porter (1980) states that the capability of an enterprise to create economic returns depends on its ability to exploit market imperfections.

[3] As Spanos and Lioukas (2001:911-912) point out, Porter's perspective "despite being clearly rooted in the tradition of the Bain-Type IO, constitutes a definite attempt to reinstate the firm as a critical unit of analysis".

[4] This school stresses that the value of the industry's history and the analysis of competitors are the basis for the predetermination of positioning in the business market (Wyer *et al*., 2000).

The competitive forces approach, which uses competitive strategy as a broad formula for how a business is going to compete (Porter, 1980: xvi), emphasizes the importance of focusing on the forces that determine an industry's attractiveness, to decide what sort of industry it is, and to find a profitable position in the industry as the means to reach sustained competitive advantage.[5] The Five Forces Model is rooted in industrial economics, but embodies the notion that competition is much broader than just rivalry or location, and takes into account product features, services and processes, supply and demand, complementary products and substitutes, the relationship between volume and cost of production, or market structures such as monopoly, oligopoly or perfect competition. These five forces are: the threats of substitute products, the relative strength of buyers, the bargaining power of suppliers, the threats of potential entrant competitors to the industry, and the rivalry among industry incumbents. The stronger these "five competitive forces" are, the less profitable the industry. In order to deal with these forces, or to remain competitive in a particular branch of industry and outperform competitors, Porter stresses the importance of developing a defendable position, choosing from among three potentially successful generic strategies: overall differentiation, cost leadership and focus.[6]

Porter's vision is also supported by other literature fields and authors such as Fleisher and Bensoussan (2003). For instance, theoretical developments in the New Industrial Economy consider the study of company behavior, and the way in which this behavior affects industry configuration to be essential. The interest in this new development could come from the attempt to modelize the problems derived from "strategic interdependence", a characteristic element of oligopoly markets, where the firm is conscious that its performance depends not only on its own decision, but also on those of other enterprises. These new developments increasingly highlight the importance of considering variables such as the expectations the enterprise forms of its competitors, the importance of information, and the expectations of the competitive reaction from concurrence (Donsimoni *et al*., 1984). If we consider again the diverse literature that focuses on environmental determinism, we cannot ignore the excessive environmental complexity and turbulence stressed by Population Ecology (Wyer *et al*., 2000). However, even for Ecology Theory the organization has a possible choice, albeit accidental; managers must therefore attempt to obtain the maximum advantage from the environment, or create relationships with other organizations in order to reduce the selection pressures of this environment (Hannan and Freaman, 1977:961). Mintzberg *et al.* (1998:290) also state that context has different consequences for some Contingence theorists, depending on the process of strategy elaboration by top managers. As a consequence, the ability of a firm to conform strategy election could mean the difference between survival or "death" (Hartman *et al.*, 1998). On the other hand, from Resources Theory, Daily and Dalton (1994) point out that as much as some top managers' actions influence the firm's access to valuable resources and information, environmental dependence will be low.

However, although Porter's theories dominated the 80's, they have some limitations in today's market environment. For instance, certain authors criticize the fact that they do not

[5] According to Porter (1980:xiv), the five forces model offers a "… general framework for analyzing the structure of an industry and its competitors".

[6] For Porter, strategy is a consistent array or configuration of activities (Porter, 1991:102) aimed at creating a specific form of competitive advantage. To sum up, Porter and his followers maintained that sustainable competitive advantage could only accrue to firms that position themselves in the marketplace through dedicated cost leadership, differentiation or a focused combination of the two (Lee and Mukker, 1999:584)

take into consideration new business models and market dynamics, or the fact that Porter's list is not all-inclusive. Hence, work by Dill (1958), Ackoff (1970), Aldrich (1979) Gailbraith and Schendel (1983), or Wheelen and Hunger (2000), suggests additional elements for the competitive dimension. Even so, the main critics come from the new developments in the field of strategic management, which in the 90s, underwent a major shift in the focus on the sources of sustainable competitive advantage: from industry to firm specific effects (Spanos and Lioukas, 2001). These authors criticize the generalized framework considered by IO because it does not consider in depth the enterprise as an individual agent, or how company strategy can contribute to the maintenance of a differing profitability among organizations located in the same business.[7] In order to avoid these problems, new theoretical developments have come out of the literature , such as the Strategic Theory Based on Competences (Hamel and Prahalad, 1989, 1994a,b; Hamel and Heene, 1994) and particularly the Resources and Capabilities Theory, that focus on the distinctive competences and the resource and capability assets within the enterprise, as determinant key success factors.[8] These theories represent a fundamental advance in the literature, by going deeply into certain core capabilities of the enterprise. However, and as Schoemaker (1997:61) points out, a strategic view must also consider future scenarios, the industrial competitive structure, and the distinctive capabilities of the industry. As De Vasconcellos and Hambrik (1989) state, the identification of core capabilities must take place in the context of the key industrial factors, and therefore the focus on company internal analysis must always take the environment into account.

Despite these criticisms, some authors continue to use Porter's approaches in their works, and others maintain that Porter's approaches and the new perspectives complement each other in explaining a firm's performance (Amit and Schoemaker, 1993; Peteraf, 1993; Collis and Montgomery, 1999, Spanos and Lioukas, 2001). These authors state that "both are important to understanding how organizations achieve sustained competitive advantage" (Coulter 1997:40), and they are complementary, since they emphasize different dimensions of strategy, greatly contributing to the development of a strong business strategy (Hax and Wilde II, 2003).[9] It has, for example, possible complementarities with Resources Theory, as Tallman (1991) points out, or with the Strategic Theory Based on Competences, as Schoemaker (1997) maintains.[10] Moreover, recent thinking in Resource-Based Theory has directly tackled the issue of "Dynamic Capabilities" and strategies towards flexibility and responsiveness to changes in the environment (Teece *et al.*, 1997). As Spanos and Lioukas (2001:911) point out, it has been recently recognized that "Porter's framework and Resource-Based approach

[7] In this way, authors such as Tallman (1991:71) criticize the theoretical focus developed from IO, because of its excessive deterministic conception when considering that only the market positioning in an industry is a significant input on which to base company decisions and thus for its performance.

[8] In this way, whereas Porter views strategy as being primarily industry driven, these new perspectives posit that the essence of strategy is defined mainly by the firm's unique resources and capabilities (Rumelt, 1984).

[9] According to Mintzberg *et al.* (1998:16), "Strategy concerns both organization and environment". As Hanson *et al.* (2002:7) points out, "analyses of its external and internal environments provide a firm with the information required to develop its strategic intent and strategic mission" and in this way "through an effective combination of results gained by using both the IO and the Resource-based model, firms dramatically increase the probability of achieving strategic competitiveness and earning above-average returns" (*ibid*, 2002:20)

[10] In this way this author emphasizes the essentiality of developing an industrial external analysis, previous to the internal analysis and the in-depth study of "Core Capabilities" . Although this author emphasizes the fact that core capacities analysis provides the basis to develop a strategic view for the future, his methodology uses an industrial analysis and strategic segmentation analysis, which help to define the fight field about competitors, barriers and potential profits.

constitute the two sides of the same coin".[11] Thus it can be seen that empirical work exists to support both schemes (Hanson *et al.*, 2002), and hence, there are authors such as Robinson and Mc Dougall (1998), McGahan (1999), or Hanson *et al.* (2002), who continue to support the significance of the impact of industry characteristics on firm performance.

Having examined these complementary aspects, what still seems to be needed is the conceptual and practical integration of Resource-Based analysis with the Five Forces analysis. This research aims to demonstrate that Porter's approach can also be important to comprehend the nature of managers' knowledge, as we consider this knowledge to be influenced by the forces determined by Porter. In the last few years, a new related stream of discussion has emphasized knowledge as a main strategic asset (Nonaka and Takeuchi, 1995). Kogut and Zander (1996) state that knowledge is the firm's main resource, since it has been redefined as a social community specializing in speed and efficiency in the creation and transfer of knowledge. It is "a source of competitive advantage" (Randeree, 2006:146), or the fundamental basis of competition (Zack, 1999). To most of the schools that focus on the internal firm process, knowledge management attributes, *i.e.* a firm's ability to acquire, learn, accumulate, evaluate, assimilate, integrate, and diffuse, deploy, and exploit knowledge, are critical, because it is itself a skill or competence that may provide strategic advantage (Madhok, 1997; Zack, 1999). This is particularly crucial in the "New Economy" and continuous innovations in information technology, because the substantial change in and the size and complexity of the new landscape produce significant uncertainty (Hitt, 2000:7), and in this situation the maxim "knowledge is power" has a deep-seated relevance (Carroll and Tansey, 2000; Girard, 2006). As Drucker (1993) stresses, in the New Economy, knowledge is not simply just another resource, but the sole essential resource nowadays. On this point, organizations that are most efficient in gathering, processing, and distributing information and then using it to make better business decisions will enjoy a competitive edge in achieving success in their field (Myburgh, 2000).

The Resource-Based approach normally agrees that the strategically most important resource is Knowledge (Hult, 2003:189; Oslerloh and Frey, 2000:539). Prahalad also argues that the knowledge based view is the essence of the Resource-Based perspective (Mintzberg et al., 1998: 216). Meroño-Cerdan et al (2007:60) stated that "the knowledge-based view… states that the sources of competitive advantage are not all the firm's internal resources, but just the intangible knowledge-related assets of the organisation and its capability to integrate knowledge. According to Van Aken and Weggeman (2000:140), modern competition is essentially based on knowledge, because firms seek to learn and develop capabilities more quickly than their competitors.

However, knowledge is not found in the firm as an artificial organism, but rather lies in the members of the enterprise, "new knowledge always begins with an individual" (Nonaka, 1998, cited by Girard, 2006:26). In this vein, Hamel and Prahalad stated that managers have the "key role of identifying, developing and managing" capabilities (Nonaka and Takeuchi,

[11] According to these authors (*ibid*, 912), compatibility between the two models is justified by certain reasons: a) the two perspectives are complementary to explain firms' performance in the sense that by drawing insights from both, one can gain a more balanced view on the resources of competitive advantage: b) both perspectives seek to explain the same phenomenon of interest; c) because the unit of analysis is identical in both cases (*i.e.*, the firm); and d) because both perspectives acknowledge the importance of an attractive strategic position (*i.e.*, competitive advantage) viewed as an outcome of firm strategy activities.

1995:48-49).[12] As Mezias and Starbuck (2007:7) point out, "many practices in organization rely on managers' perceptions", and managers' perceptions form the bases for firms' actions and strategies. Managerial knowledge or managerial perception, "include everything that goes into managers' understanding of their work situation" (Mezias and Starbuck 2003:4). The managerial knowledge or perception of the key aspects of the enterprise and the environment are crucial because "how individuals in organizations make decisions and the quality of their final choices are largely influenced by their perceptions" (Robbins, 1998:115), and because depending on the nature of the perceptions, decision-makers will react accordingly, and thus, erroneous attributions can lead to actions that fail to correct the problem, (or actions that may even exacerbate the problems) (Zacharakis et al., 1999).

In this way, as long as we can demonstrate that Porter's scheme is important to an understanding of managers' knowledge or perceptions, we will be able to stress the importance of the IO perspective, and thus the revitalization of Porter work, and the conexion between this perspective and the knowledge-based-view. This is the objective of the present study.

METHODOLOGY

Our study made use of two main data sources. Firstly, we carried out a Delphi study with international experts on tourism to measure their perception of the post-Internet competitive environment (Appendix I). Secondly, we addressed a questionnaire to the CEOs of hospitality enterprises to obtain their perception of the post-Internet competitive environment, in order to compare their individual perceptions with those resulting from the Delphi study, thus enabling the Quality of Managerial Perception to be determined. In short, we used the Porter (2001) scale to obtain the quality of managerial perception, measuring this quality of managerial perception as the difference between the managers' responses and those from the Delphi study.

The scale used highlighted the effect of the new post-Internet environment on the five forces model. We used this scale because it was devised by Porter himself, and because it refers to a difficult and recent object of perception. In addition, we chose to study the hospitality sector for various reasons: the lack of strategic studies in this sector,[13] the importance of the Internet in its development, and the simplicity of collecting data.[14]

[12] Moreover, according to Hamel and Prahalad (1993), the construction and fit of the strategic assets is essential, and the manager must know how to combine and transform the different resources in the way that they multiply the value of each one at the same time as they equilibrate their resources.

[13] This study also attempts to respond to the fact that, despite the importance of strategy in the hospitality literature, there is a paucity of empirical investigation of strategy in this sector (Olsen and Roper, 1998).

[14] The rapid development, and intensive and essential use of the Internet in this sector, mainly as a resource to capture new customers, but also for other purposes should be stressed. Almost all hospitality firms have access to and make use of the Internet, and thus, the data gathering process is relatively simple.

The "External" Measurement of the Hospitality Structure: The Delphi Study

Firstly, we carried out a Delphi study in order to determine the "correct" perception of the post-Internet competitive hospitality environment. This "correct" perception was then compared with each manager's individual perception on the same questions, in order to obtain his or her "quality of managerial perception". We consider this to be an appropriate method to analyze this "correct" perception, because of the characteristics of the Delphi method and the repute of the experts that participated in this study.

The Delphi Technique

The Delphi technique is a qualitative method of gathering group information. It can be defined as a structured brainstorming, based on the collection and analysis of expert opinion (Jarich, 1998:6). It takes its name from the mountain where the ancient Greeks met to consult with the oracles. The objective of this method is to forecast the potential opportunities and future trends, taking into account the impossibility of studying the issues in isolation from the economic, social and political context in which they develop (Dalkey *et al*., 1972).

The method is considered to be especially useful in contexts of imperfect information. It is regarded as one of the most appropriate techniques for the study of the tourism sector, and for the long term predictions in high probability situations of changes of unknown dimension and lack of suitable numerical data (Archer, 1987). For this reason, its importance is crucial in the prediction of changes in the context of the New Economy and the advent of Internet. Its use in tourism can be observed in articles by D'Amore (1977), Kaynak and Macaulay (1984), Green et al (1990), or more recently Lloyd *et al.* (2000) or Miller (2001).

The method comprises various stages. First, experts' opinions are gathered anonymously through questionnaires. These data are then analyzed, and finally, the experts are provided with a summary of the information, to allow them to modify their opinions. The process is repeated in successive rounds until the answers converge appropriately.

Characteristics of the Delphi Sample and the Sampling Process

The Delphi Study was undertaken with Spanish and International experts in the period between September 2001 and January 2002 (see Table 1). The process started with the definition of the problems, the examination of the research objectives, and the preparation of the questionnaire. The experts were then selected and contacted. In the composition of our group of experts, we sought to include university professors specialized in Tourism and Tourism Information Technology, members of public administrations, and professionals from tourism and hospitality enterprises or other organizations.

Table 1. Technical file on the Delphi Method

Ambit	*National and International Experts in Tourism*
Date of the empirical work	*September 2001 to January 2002*
Type of study	*DELPHI*
Sample size	*30 Questionnaires in 1st round* *19 Questionnaires in 2nd round*

Every effort was made to personally contact the experts.[15] The importance of personal contact with experts is crucial to providing initial motivation that will then lead to the successful development of the process. The objectives of the project were explained, together with our reasons for soliciting their opinions. Finally, the confidentiality of their responses was guaranteed. The process was carried out by e-mail, although experts' motivation was also improved by telephone contact.

Having established the quality of the initial scale used, developed by Porter (2001), the preliminary Delphi process was limited to separating the questionnaire into four hospitality businesses: rural hotels, spa hotels, city hotels and sun and beach hotels. After this initial phase, the questionnaire was sent out to the experts. As this step was intended to collect qualitative opinions, a 7-point Likert scale was used, in ascending order in accordance with the expert's agreement with the specific item.

From the initial questionnaires sent, 30 replies were received, 13 Spanish and 17 international. Once the data had been compiled and analyzed, we returned the results of this round to the experts (we provided them with mainly the median and the Interquartile Range), in order to obtain a new estimation and get closer to the "correct" perception of the post-Internet market structure. Questionnaires were filled in again with some modifications and comments. In this round, a total of 19 questionnaires were received, 8 Spanish and 11 international. Having obtained the acceptable degree of consensus, the analysis was judged to be complete. Precedents with a 3-step Delphi method do exist, which are regarded as being sufficient to obtain a high degree of group consensus (Green *et al.*, 1990, or Miller, 2001). As Green points out, it has been demonstrated that with each extra round, both the number of experts and the degree of consensus obtained decrease. In addition, the final total number of experts is also acceptable, given the quality of their opinions, and the numerous Delphi studies that have used 20 initial experts (Masser and Foley, 1987), or as few as 10 (Dalkey and Helmer, 1963: Dalkey *et al*., 1972).

Miller (2001) refers to authors such as Taylor or Wheeler to highlight the importance of selection, and the equilibrium of the sample to ensure the goodness of the results. The quality and diversity of the experts that participated in our study should be mentioned; 5 Spanish professors and international experts from Belgium, Cyprus, France, Greece, Malta, Mexico, Peru, Thailand, Taiwan, USA, and UK took part. In addition, the international experts included prestigious academics in tourism and management. The participation of representatives from business associations and the public administration system was also notable, with the involvement of members such as the general director of a national association of tourism enterprises, or members from various national or regional tourism organizations.

[15] Contact with Spanish and International experts was largely made through TURITEC'99 (National Congress on Tourism and Communication and Information Technology), the AECIT conference of 2001 (Spanish Association of Scientific Experts in Tourism). In addition some national conferences such as the ACEDE and AEDEM congresses (main Spanish scientific organizations in management and business administration), and diverse international conferences were also used.

The Questionnaire to Managers

The evaluation of managerial perception was based on a questionnaire sent by e-mail to the CEOs of Spanish hospitality enterprises. The following section explains the advantages of this process and the characteristics of our questionnaire.

Self-administered Questionnaires Sent by E-mail

This methodology included aspects from self-administered questionnaires via mail and telephone interviews, given that this procedure provided for a more personal contact with the interviewees.

The advantages and disadvantages of self-administered questionnaires are well summarized by Nichols (1990:11); Smith (1995:63), and Descombe (1998:105-107). Advantages include a higher response rate than other methods, relatively economic costs, simple administration, the possibility of collecting data that can be expressed statistically through graphs and tables, the partial anonymity of the method, carried out in order to reduce the personal interaction effect, the wide geographical scope or the control permitted in the distribution of questionnaires. All these advantages can also be observed with the electronic method. However, Internet insecurity negatively affects the response rate. In addition, Internet does not enable us to overcome some of the chief difficulties of the postal method. Among these, it should be pointed out that the pre-codified answers may prevent experts from answering in specific ways; a certain bias may arise in the answers which coincide more with the point of view of the researcher as opposed to that of the expert: experts are free to answer certain questions randomly, or there may be a lack of qualitative depth in the answers. However, as Lyon et al (2000:1058) point out, this method can bring advantages such as the possibility of obtaining uniform interpretations that can allow for comparison, the use of standardized questions or the fact that scales can be developed directly to cover the highlighted construct, promoting the validity of these constructs.

With regard to telephone interviews, Pope (1993) outlines the following advantages: (1) a broad, geographically dispersed sample can easily be obtained; (2) it is easily supervised; (3) the interviewed can clarify certain questions; (4) it is associated with greater speed and low cost. To these advantages might be added the opportunity for interviewers to use their writing abilities through e-mail. In addition, e-mail overcomes the main disadvantages of telephone interviews, such as limited interview time, the lack of expression or the impossibility of showing images, articles etc. to the interviewee during the interview, or tiredness associated with telephone interviews.

It should also be pointed out that we used managerial perception rather than real facts. As Lyon *et al.* (2000:1058-1059) state, the use of managerial perception can lead to problems related to the lack of internal consistence, functional bias, or due to their subjective character. In addition certain interpretation problems arise from the standard codification of the answers. However, according to these authors, managerial perceptions provide the most precise evaluation of the conditions inside the enterprise. In addition, these perceptive measures provide the possibility of having more specificity levels than do other aggregated methods.

Table 2. Technical file on the questionnaire to managers

Date of the empirical work	*September 2001- January 2002*
Sample population and scope	*Hospitality enterprises from all Spain, with e-mail published on the main Spanish tourism websites, providing an approximate total of 3,500*
Sample size	*189*
Type of interview	*Structured questionnaires sent by e-mail*
Sample error	*± 5.48%*
Confidence level	*95% for the most unfavorable case (p=q=50%)*

Questionnaire Characteristics and the Sampling Process

In the questionnaire to firms, CEOs were asked about the post-Internet hospitality structure. The same questions put to the experts in the Delphi study were used, to enable responses to be compared and to calculate the quality of perception of each CEO. The 17 questions from Porter's scale were used (2001).

The technical details of this study are shown in Table 2. According to the Spanish Institute of Statistics (INE), 14,881 hotels were registered in Spain in 2001. However there is no data on the number of hospitality firms. Our study was aimed at hospitality firms, excluding hostels and other residences. In addition, our questionnaires were sent only to firms that provide their e-mail addresses on the main specialized Spanish web pages. Accordingly, the population of our study was approximately 3,500 hospitality firms, which we sub-divided into spa hotels, sun and beach hotels, city hotels and rural hotels. Questionnaires were sent to the CEOs of these enterprises between February and June 2002. The total number of questionnaires collected was 194, although 5 of them were removed because of errors or having been received late. This response rate gave, for a confidence level of 95 %, a sample error of 5.48%. The survey was comprised of closed questions, with multi-item measurement Likert scales of 7 points, comparison with competitors, as in Slater and Olson (2000). In addition, we asked the managers demographic questions about the enterprise and about themselves. The database was created using SPSS.

Analytic Tools

This study used the Structural Equations methodology. According to Bollen (1989:1), in the Multiple regression analyses or ANOVA (analysis of the Variance), the regression coefficients or variance error of the estimators derive from the minimization of the sum of the square differences of the observed dependent variance and of this predicted for each case. However, the structural equations methodology differs in that it emphasizes the covariance more than the cases, and, instead of minimizing the functions of the observed and predicted individual values, it minimizes the difference between the sample of covariances and the covariances predicted by the model. The structural equation models comprise the analysis of

the covariance structure, the analysis of the latent variable, or the confirmatory factorial analysis (Hair et al., 1998:612). These techniques are distinguished by two main characteristics, the estimation of the multiple and cruised dependence relations, and the capability of representing non-observed concepts, taking into account the measurement error in the estimation process, and also simultaneously estimating all the coefficients and evaluating the fit of the whole model with the general data (Reisinger and Turner, 1999:72; Kristoff-Brown et al., 2002:37-38).

In general these models are "a powerful analytical tool, whose true value lies in using simultaneously observed and latent variables that play different roles within the general analysis" (Luque, 2000:492). In addition, they "constituted one of the most powerful tools for the study of causal relationships about non-experimental data when these relationships are of a lineal kind" (Batista and Coenders, 2000:12).

To sum up, in order to determine the measurement scale of the quality of managerial perception we used the following steps:

- The Delphi study collected expert opinions on the post-Internet hospitality structural environment, using the Porter (2001) scale of measurement. We collected the data from all the experts and calculated the arithmetic mean of their answers. These data are considered to be of good quality as they came from qualified experts and were collected with an appropriate convergence method.
- Secondly, from the questionnaire addressed to top hospitality managers, we obtained their individual opinions on the same questions put to the experts in the Delphi method.
- Once the whole sample had been obtained, we calculated the square difference between the individual opinion of each top manager for each variable and the mean of each variable obtained in the Delphi study. This difference revealed the "non-quality of perception" of each manager in relation to each variable.
- We then proceeded to the configuration of the structural model. In order to validate the scale with our data, we carried out the following tests: 1) a dimensionality analysis using Confirmatory Factorial Analyses and proving the fit of the model; 2) a reliability analysis for the parameters estimated and the latent variables; 3) analysis of validity of the measurement instruments.

According to Bagozzi (1981), when new measures are introduced, the convergent, discriminating and content validity must be corroborated. In order to do this, we used empirical tests to examine the suitability of the scale used, analyzing the dimensionality, reliability and validity of the Porter scale, using confirmatory factor analysis (CFA).

Factorial analyses are usually used to reduce the amount of data to a level that can be easily used (Kinnear and Taylor, 1991). Basically they consist of applying linear combinations of original variables, to represent underlying dimensions or constructs that summarize or justify an original series of variables that must be observed (Hair *et al.*, 1998). Among these analyses we can highlight the EFA, which attempts to observe the more likely possibilities according to the data. The CFA is a more sophisticated tool. It is a multivariate technique that tests the likelihood of a previously formulated relationship or hypothesis. This research uses the CFA technique to measure performance, because it draws statistical

inferences leading to a stricter and more objective interpretation of the validity than with the EFA (Gerbing and Anderson, 1988).[16]

The CFA procedure includes the steps of specification, identification, estimation, and evaluation and interpretation. The first step, or specification phase, consists of establishing dependence variables among the different variables, in accordance with theory (Bollen, 1989). In our case, as pointed out above, this step follows the Porter (1980) five forces scheme. In the identification phase we have to ensure that the model's parameters can be derived from the variances and covariances between the observed variables, in order to estimate the model. One necessary condition establishes that the number of equations, or elements other than the variances-covariances matrix, must be bigger than the number of parameters to be estimated. This difference is called "degree of freedom". The next step is to estimate the results with the aim of looking for the theoretically inconsistent estimates (Hair *et al.*, 1998:659).

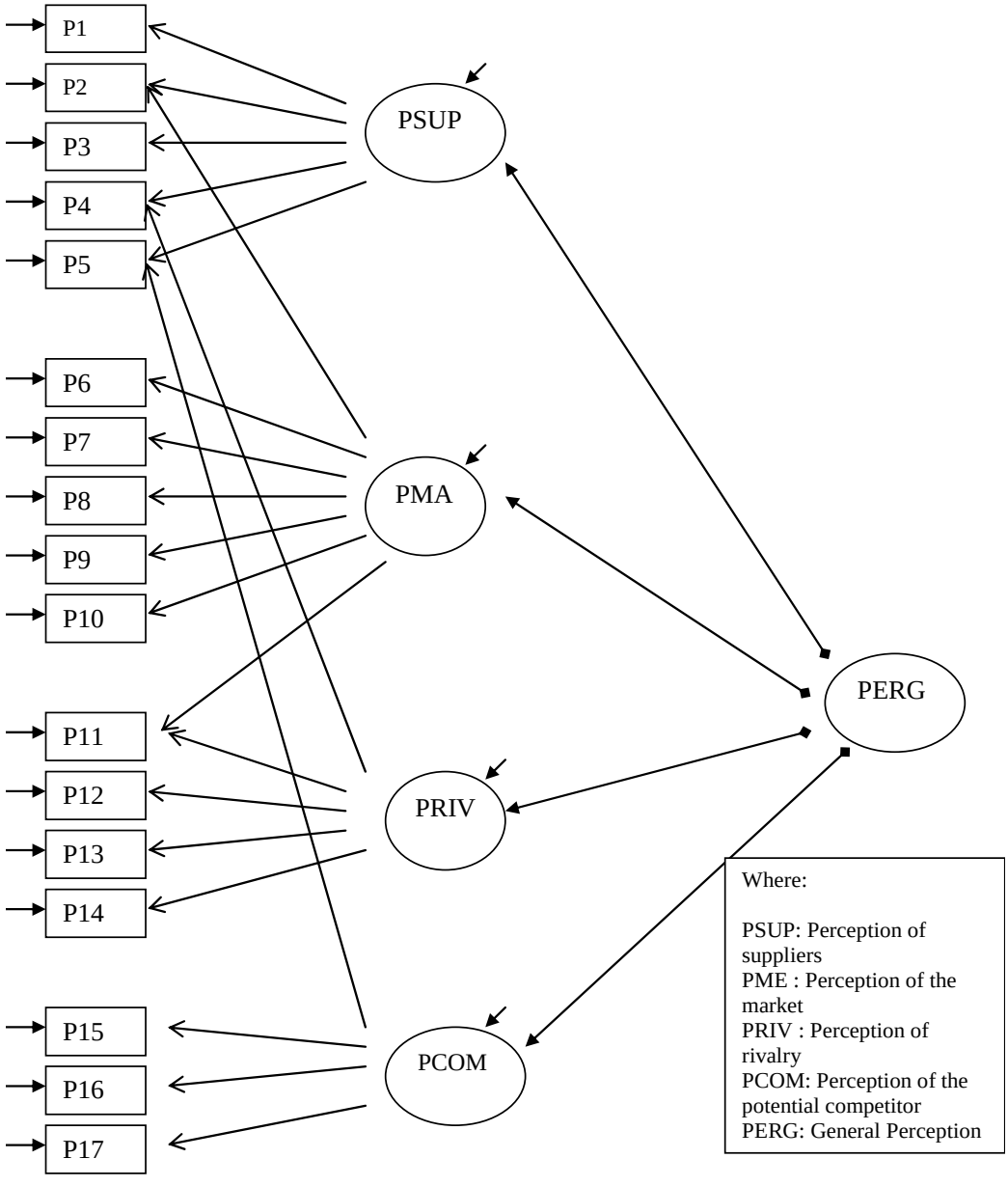
This research uses the CFA technique to estimate the parameters with EQS 5.7b. This program uses the Maximum Likelihood method by default, offering consistent estimators for big samples, with continuum variables, and a multi-normal distribution (Bollen, 1989). However, our research violates the assumption of multivariate normality and it uses a continuous variable when it uses Likert scales. In this situation, some authors such as Satorra and Bentler (1994, 2001) suggest using other methods such as Robust Standard Estimators, implemented in EQS and the statistic that bears their name. We have used this method in our work. Finally, the evaluation of the model attempts to observe how well our data correspond with the proposed model

RESULTS

Dimensionality Analysis

For each analysis we have to start from the premise that each scale or structural model is based on a strong theoretical definition that shows the construct or the relationship that we intend to measure. First of all, a dimensionality analysis of each scale must be carried out, to prove the existence of one single concept or underlying characteristic in all the indicators that show one single construct (Anderson and Gerbing, 1988). With this process we attempt to corroborate the existence of the dimensions that configure the proposed model on managerial perception. In order to do this, we used the Confirmatory Factorial Analysis technique, in an attempt to contrast the model shown in Figure 1.

[16] The CFA technique is included in a broad family of structural equation models (Hair *et al.*, 1998: 612). The use of CFA is very suitable for drawing up measurement scales, because it allows us to test the degree of correspondence that exists between the measures and the concepts that they are attempting to measure (Bagozzi and Phillips, 1982: 460). In addition, they allow us to overcome the weakness of the measurements, because they take measurement error into account, simultaneously estimating all the coefficients and evaluating the fit of the model with the data, as in each structural technique (Kristof-Brown *et al.*, 2002: 37-38).



Source: Author's own from Porter (1980) and Porter (2001).

Figure 1. Initial Model to measure managerial perception of the post-Internet competitive environment.

Our model hypothesizes that managerial perception of the structural environment is conceived as a second order factor that comprises four dimensions or factors: The perception of suppliers (PSUP), the perception of the market (PMA) (in which we include both customers and substitute products), the perception of rivalry in the industry (PRIV), and the

perception of potential competitors (PCOM).[17] Secondly, the model hypothesizes that each indicator has positive factorial weighs in the factors that theoretically it has to measure, and null factorial weights for the other factors. Finally we have to specify the correlation among measurement errors in the scale.

Previous to the estimation of the global factorial model (see Figure 1), the dimensionality of each first order factor corresponding to the individual dimensions must be analyzed. In Table 3 we show the adjustment measures of the models that indicate the individual dimensions. In this step, the initial proposed models are modified according to the reliability of the parameters, the individual weights or the correlation between the measurement errors, obtained after carrying out the Lagrange Test. The initial models for each individual dimension are shown in Appendix I, where an asterisk indicates the indicators eliminated in the initial process.

In Table 3 we show the fit measures in each individual dimension. The observation of all indices shows the closeness of our fit. First of all, every model is supra-identified with more than two degrees of freedom. According to the absolute fit measures (to show the correspondence between the matrix estimated by the model and the observation matrix) we can corroborate how highly significant the Satorra-Bentler χ^2 is, as it is greater than 0.05. In addition, the GFI is greater than 0.9, and the RMSEA lower than 0.08 in almost all cases. As for the incremental fit measures (to compare the proposed model with a null model showing the lack of any association among the model's variables), all of them (AGFI, BBNFI, BBNNFI, RCFI and IFI) are greater than 0.9 in almost all the models, as described by theory. Finally, the NC (that correlates the quality of the model with the number of estimated coefficients needed to obtain these levels of fit) falls within the ideal interval of 1-2 in two models, and always below 5 points in every model. If we look carefully, we can see relative problems in the model PCOM. To avoid these problems we could eliminate certain items or assume some correlation between some measurement errors. However, the inconvenience of these modifications belies their use.[18]

Once the dimensionality for each of the first order factors had been corroborated, we were able to analyze the second order factor model. The adjustment of this analysis also suggests the elimination of some items, which are shown with two asterisks in Appendix I.

Table 4 presents the standard estimators of the main parameters in the final model. Apart from the fit of the model, it can also be observed that, in this model, all the parameters are statistically significant for a level of 95%, and most of the factorial weights are greater than 0.4.

[17] Although we would like to have used Porter's original scheme, the fact that we use perceptions and not competitive forces, and the existence of few items to measure the substitutive products, led us to consider a variable that indicates the perception of the market, that connects both dimensions, customers and substitute products. It should be pointed out that we were not able to use the CFA technique for each dimension, because there were insufficient items to confirm each of these dimensions, as we have a saturated model, without sufficient degrees of freedom. In addition, Porter's (1980) schemes indicate that some items can influence some dimensions, so we have included this fact in our model.

[18] In this case we cannot eliminate any item, because it would cause a saturated model, with 0 degrees of freedom. It should also be noted that the EQS program suggests a correlation between the measurement errors of items P4 and P5 in model PSUP, correlations that we have implemented to obtain a better fit of the model

Table 3. Fit measures of the individual models on managerial perception

Fit Measures	**Individual Model**			
	PSUP	**PMA**	**PRIV**	**PCOM**
Satorra-Bentler χ^2	4.898	3.501	2.328	5.861
Degrees of Freedom	4	5	2	2
Sig. Level	0.298	0.623	0.312	0.053
GFI	0.987	0.984	0.986	0.976
RMSEA	0.054	0.053	0.101	0.141
AGFI	0.951	0.952	0.929	0.882
BBNFI	0.980	0.965	0.965	0.932
BBNNFI	0.982	0.975	0.929	0.832
RCFI	0.992	1	0.995	0.901
IFI	0.993	0.988	0.977	0.946
NC	1.225	0.700	1.164	2.930

Table 4. Standard estimators and measurement error of the final model to measure managerial perception

Measure	PSUP	PMA	PRIV	PCOM	PERG	Errors
P1 P2 P3 P4 P5	0.780 0.569 0.764 0.402 0.446					0.629 0.728 0.645 0.777 0.742
P7 P8 P11 P2		0.635 0.725 0.821 0.219				0.773 0.689 0.571 0.728
P12 P4			0.684 0.353			0.729 0.777
P15 P5				0.631 0.368		0.776 0.742
PSUP PMA PRIV PCOM					0.393 0.999 0.983 0.885	0.919 0.045 0.185 0.466

Table 5. Fit indexes of the second order factorial model on managerial perception

Identification of the model	**Final scale to measure managerial perception**
Degrees of freedom	26
Estimation of the model	
Absolute fit measures	
Satorra-Bentler χ^2	30.055
Sig level	0.265
GFI	0.950
RMSEA	0.075
Incremental fit measures	
AGFI	0.895
BBNFI	0.927
BBNNFI	0.931
RCFI	0.984
IFI	0.961
Parsimony fit measures	
NC	1.156
AIC	1.270. (compared with 639.095 from the independent model)

The evaluation of fit of the final model is shown in Table 5.[19] This table shows all the indexes to have the desired values. First of all the model is supra-identified with twenty-six degrees of freedom. If we start with the absolute fit measures, we can observe that the Satorra-Bentler χ^2 statistic is highly significant. In addition, the GFI is greater than 0.9, and the RMSEA lower than 0.08. According to the incremental fit measures, except the AGFI that has a value of 0.895, all the rest (BBNFI, BBNNFI, RCFI and IFI) are greater than 0.9. Finally, as the NC has a value of 1.1556, it falls within the ideal interval of 1-2 and close to 1.

Reliability Analysis

According to Hayes (1992:50), reliability can be defined as the degree in which the measures are free of any bias resulting from causal errors. This reliability ensures that the measurement process gives the same results, independently of the model or of the way in which this model is developed. In short, in contrast to the validity analysis, which refers to the goodness with which one measure defines a concept, reliability is related to the coherence of measure (Hair *et al.*, 1998).

Within the structural equation modeling framework, reliability has to be measured for each indicator and finally for the whole model. Bollen (1989), Sharma (1996) and other authors propose measuring the individual reliability with the square multiple correlation coefficient (R^2 >0.5). The reliability for the whole model is usually measured with the construct reliability, with appropriate measures greater than 0.7, although this value can be

[19] After the application of the initial models, and following the previously established criterion, some items were eliminated. In addition, the program shows the existence of correlation between the measure errors of indicators P8 and P12, a correlation that we established to improve the fit.

smaller depending on the study (Hair *et al.*, 1998). Table 6 shows the results obtained for the initial models and for the general model. These results show that the observed variables are representatives of the latent construct. Nevertheless the individual reliability is not greater than 0.5[20] for each indicator. We also encountered problems with the construct reliability of PCOM. However the global model shows the existence of high reliability, which validates the goodness of all previous analyses.

Table 6. Reliability of the scales used to measure managerial perception

Model	Construct reliability	Indicators	R2 of indicators
PSUC	0.75	P1	0.597
		P2	0.457
		P3	0.572
		P4	0.313
		P5	0.345
PMA	0.7	P2	0.191
		P7	0.341
		P8	0.527
		P9	0.123
		P11	0.754
PRIV	0.69	P4	0.265
		P11	0.679
		P12	0.397
		P14	0.379
PCOM	0.65	P5	0.209
		P15	0.402
		P16	0.633
		P17	0.288
PERG	0.92	P1	0.609
		P2	0.469
		P3	0.583
		P4	0.396
		P5	0.449
		P7	0.403
		P8	0.526
		P11	0.674
		P12	0.468
		P15	0.398
		PPRO	0.155
		PME	0.998
		PRIV	0.966
		PCOM	0.783

[20] However, these items have not been eliminated in order to avoid any affect on the content validity of these dimensions

Table 7. Correlation matrix and Cronbach´s alpha, to measure the discriminant validity of the managerial perception measurement scale

	PSUP	PMA	PRIV	PCOM
PSUP	**0.7981**			
PMA	0.673**	**0.6993**		
PRIV	0.607**	0.622**	**0.7331**	
PCOM	0.558**	0.597**	0.584**	**0.6993**

** The correlation is significant for a level of 0,01 (bilateral).
Cronbach's α in the main diagonal.

Validity Analysis

The purpose of validity analysis is to confirm that what we are measuring actually is the construct we are attempting to valuate. It is usually measured with three kind of validity: content validity, convergence validity and discriminant validity.

Content validity implies that the indicators measure all the aspects making up the concept. The criterion to measure this validity depends on the theoretical literature review and it is highly subjective (Bollen, 1989:185). The theoretical argumentation of our article, the utilization of the Delphi technique, and the use of the measurement scale established by Michael Porter, go some way to corroborating the content validity of our measure.

The convergence validity indicates that the various items used to measure the concept are strongly and positively correlated (Churchill, 1979). This validity can be contrasted with the factorial analysis, and therefore the fit of the models, especially due to the goodness of incremental fit measures such as AGFI or BBNFI, corroborate this validity. Secondly, the magnitude of factorial weights, with values greater or near 0.4 (Hair et al., 1998) also ensures this validity. Finally, we should mention the statistical significance of each weight obtained between the indicator and the latent variable (*t* value greater than 1.96 with α=0.05), as indicated by Anderson and Gerbing (1982).

Finally, discriminant validity measures the correlation among the outputs obtained with this measure and other related constructs. Certain Structural Equations mechanisms can be used to measure this validity, such as the χ^2 differences test (Jöreskog, 1971). However, we chose other two frequently used mechanisms. One of these attempts to reveal the standard correlation between the latent variables, since if they are high (more than 0.9, or even 0.8) the latent variables cannot be considered as a different construct. The other mechanism compares the Cronbach's alpha of each scale with the correlation of each scale with the others. As can be observed in Table 7, all the standard correlations between different dimensions are lower than 0.8. In addition, all the Cronbach's alpha are greater than any correlation between each scale and all the others.

CONCLUSION

This study has used the Resource-Based and Knowledge Management perspectives to show the importance of Porter and Industrial Organization schemes. We have tried to demonstrate that the five forces determined by Porter notably affect one of the most essential

resources identified by the Resource-Based view, managerial knowledge. This point has been demonstrated by showing that managers have different knowledge or quality of perception of the different environmental competitive forces.

Perceptual processes are critical within the framework of the "New Economy", due to the continuous generation of new scenarios arising from the transformation of economic, technological and organizational environments. This new turbulent environment has brought about situations that cannot be compared with any previous situations. Although huge amounts of information may now be available to managers, time restrictions and uncertainties about how to cope with increasingly complex environments are growing. In this context, knowledge has become the most important resource to firm success, and as such, we need to know how to increase this knowledge if we want to improve the effective firm's competitive bases.

The differing qualities of perception of the various structural forces is important, firstly because give that these environmental forces are independent dimensions or constructs, that have to be considered as Porter showed, this demonstrates the importance of Porter's work, and the need to study the competitive environment following precisely the five forces he established.

Secondly, while not ignoring the fundamental importance of the Resources and Capabilities-Based view, our study demonstrates that the industrial structure continues to play a determinant role in the new literature, as it also affects the development of one of the most important of these resources and capabilities: managerial knowledge. This is demonstrated by the confirmation of the existence of differing managerial perceptions of the various structural forces which implies that the quality of the diverse sources of information in the enterprise on the various forces are also different, playing these forces a crutial role to explain managerial bias, or the fact that managerial biases or capabilities influence the correct perception of the different structural forces. Both facts are crucial to the development of the firm, hence, appart from showing that IO and Porter's five forces model once again demonstrate their fundamental relevance in the explanation of firm performance, our study could open a new area of research in the literature of management by connecting Porter's work with knowledge-based-view.

However, conclusions drawn from this study must take into account the limitations of our sample and the methodology used. Restrictions might include the fact that qualitative data was used. Nevertheless, according to Lyon *et al*. (2000:1058-1059), managerial perceptions provide the most precise evaluation of conditions inside an enterprise, and we are not aware of any more sophisticated measures to evaluate this perception. In addition, the quality of the experts used in our Delphi study, the characteristics of this method, and the large sample of CEOs that participated in the second questionnaire are guarantees of the quality of the study.

Finally, we consider relevant the need for future research that could enhance our analysis. Further research might use the same perspective with different samples in the tourism sector or in other industries, or could use different methodologies. We also suggest that a more complete scale of Porter's five forces be used to avoid certain methodological problems. In addition, it would be interesting to discover how important quality of perception is in the explanation of firm performance. This would represent the objective for a new analysis.

APPENDIX I

Indicators used to measure the perception of how the Internet Influences Industry Structure (source, Porter, 2001)

P1. Procurement using the Internet tends to raise bargaining power over suppliers.
P2. Procurement using the Internet can give suppliers access to more customers
P3. The Internet provides a channel for suppliers to reach end users, reducing the leverage of intervening companies.
P4. Internet procurement and digital markets tend to give all companies equal access to suppliers, and gravitate procurement to standardized products that reduce differentiation.
P5. Internet reduces barriers to entry and the proliferation of competitors downstream shifts power to suppliers.
P6. Internet makes the overall industry more efficient, the Internet can expand the size of the market*.
P7. The proliferation of Internet approaches creates new substitution threats.
P8. Internet eliminates powerful channels or improves bargaining power over traditional channels.
P9. Internet shifts bargaining power to end consumers**.
P10. Internet reduces customer switching costs*.
P11. Internet reduces differences among competitors as offers are difficult to keep proprietary.
P12. Migrates competition to price.
P13. Widens the geographical market, increasing the number of competitors*.
P14. Internet lowers variable cost relative to fixed cost, increasing pressures for price discounting**.
P15. Internet reduces barriers to entry such as the need for a sales force, access to channels, and physical assets – anything that Internet technology eliminates or makes easier to do reduces barriers to entry**.
P16. Internet applications are difficult to keep proprietary from new entrants.
P17. A flood of new entrants has come into many industries**.

* indicates the indicators eliminated in the scale to fit initial first order factors. ** shows those items eliminated for the adjustment of the second order factor model.

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Chapter 4

CORRECTING THE NEGATIVE EXTERNALITIES OF TOURISM: UNCERTAINTIES AROUND THE DESIGN OF PUBLIC ENVIRONMENTAL MANAGEMENT POLICIES

***María Teresa Palmer-Tous*[*], *Antoni Costa-Costa*[†] *and Catalina Torres-Figuerola*[‡]**

Centre de Recerca Econòmica, Universitat de les Illes Balears, Carretera Valldemossa km. 7,5, 07122 - Palma de Mallorca, Spain

ABSTRACT

Over the last years, most of studies concerning the tourism sector have focused on its positive impacts on economic growth. However, tourist activities also have the potential to cause negative effects on the natural environment of tourism destinations. Hence, there exists a divergence between the social and private costs of tourism related firms that leads to inefficient levels of production affecting both the costs of other companies and the satisfaction of tourists and residents. In this context, there is a need for the design of environmental policy tools oriented to changing the behavior of social agents in an attempt to correct tourism negative externalities. However, three kinds of uncertainty around the implementation of policy tools make their design a difficult task. First, the different potential effects of the high array of alternative environmental policy tools lead to instrumental uncertainty. Second, economic uncertainty emerges when governments can not know the compliance costs of affected firms. Third, there exists environmental uncertainty related to the timing and magnitude of thresholds of sustainability and possible irreversibilities. In this context, a well-designed environmental policy will require a simultaneous study of these three types of uncertainty to achieve environmental friendly goals in tourism destinations.

[*] E-mail: teresa.palmer@uib.es; Tel. +34 971 171381; Fax +34 971 172389
[†] E-mail: acostacosta@uib.es
[‡] E-mail: cati.torres@uib.es

INTRODUCTION

The tourist industry is one of the world economy's leading sectors, not only due to the share of the world economy that it currently represents but also because of its anticipated future growth. The trend in international arrivals and income from these trips points to a constant rise in the tourist industry's share of production and world employment. At the same time, forecasts by the World Travel and Tourism Council (WTTC) indicate growth rates in international travel, in real terms, of 4.3% up until 2014, a figure that is higher than the forecasted growth rate for world production (WTTC, 2007).

Given the importance of the tourist industry and its forecasted future growth, it is advisable to incorporate all the possible repercussions of tourism in analyses in order to try and identify the sector's true impacts. Table 1 summarizes the main impacts of tourism from an economic, sociocultural and environmental perspective, including in this last category all the effects that are not directly quantifiable in monetary terms. In the case of mass tourism, these last effects can be truly important (Briguglio *et al.*, 1996).

Table 1. The positive and negative impacts of tourism

Impacts	Positive Impacts	Negative Impacts
Economic	• An influx of money • The knock-on effect of tourism through tourist expenditure • Increased production • The generation of income • The opening up of the labour market • Increased revenue	• The opportunity cost of the resources' alternative uses • A monoculture • Regulatory pressure on other economic sectors • Speculation • Tax costs
Sociocultural	• Inter-cultural dialogue. Tourism as an "instrument of peace" • The recovery of trades and craft activities • The recovery of popular and historic heritage	• The gradual loss of the local culture • The redistribution of wealth
Environmental	• The local population hold the environment in high esteem • The conservation and protection of natural areas	• The repercussions on the environment and landscape due to the construction of tourist infrastructure. • Atmospheric, noise and water pollution, the generation of solid waste, the over-consumption of resources in short supply, a loss of biodiversity (vegetation, flora and fauna) due to constant visits.

Source: own elaboration.

Despite the variety of different impacts, most tourism analyses have focused almost exclusively on the positive effects that tourism has on economic growth (De Rus & León, 1997; Palmer *et al.*, 2007). In assessments of the economic benefits of tourism growth, various different modelling techniques have been developed, such as tourism multipliers (Archer, 1976; Archer & Fletcher, 1988) or, more recently, computable general equilibrium models (Dwyer *et al.*, 2004; Zhou *et al.*, 1997) or tourism satellite accounts (WTO, 2000). Likewise, it is possible to find numerous references to analyses of the sociocultural effects of tourism on local populations, based on methodologies that reflect the local community's perception of the benefits and costs of tourism (Gursoy *et al.*, 2002; Lindberg *et al.*, 2001; Lindberg & Johnson, 1997).

This contrasts with the limited number of relevant studies where an economic assessment of the environmental impacts of tourism is made, since most regularly cited studies tend to have tackled the issue from a strictly descriptive point of view. (Briassoulis & Van der Straaten, 1992; Davies & Cahill, 2000; Hunter & Green, 1995; OECD, 1980; Palmer & Riera, 2004; Pearce, 1985; Roberts, 1983). In this sense, there is increasing consensus on tourism's big negative environmental effects and their possible repercussions on a destination's ability to compete, given how important the environment is as input in the tourism production function. (Aguiló & Riera, 2003; González & León, 1998; Huybers & Bennet, 2000).[1]

From an economic point of view, the environmental effects of tourism are seen as external costs or negative externalities. Using terminology coined by Baumol & Oates (1971), this implies a reduction in the welfare of local residents and tourists, a decline in the standards of the tourist product and, by extension, the diminished competitive capacity of the tourist destination, as indicated above. Thus, the environmental costs of tourism imply a divergence between the social costs and private ones (with the former being higher than the latter, since they also include external costs), leading in turn to inefficient production levels. For this divergence to be eliminated, firstly the external costs of tourism have to be assessed so that they can be included, through some kind of mechanism, in the cost function of the agent causing the externality in such a way that the price reflects the real social cost of tourism and an efficient level of tourism production can be achieved.

Although it is essential to assess the environmental costs of tourism in order to achieve efficient production levels (and, in doing so, to explore different methods of estimating these costs), this goes beyond the aims of this article. Instead, this paper focuses on the second stage of the corrective process: the design of an environmental policy by policy-makers at tourist destinations in order to try and influence the behaviour of tourism agents with a view to achieving a better quality environment. It is important to emphasize that choosing an instrument is no easy task, bearing in mind the uncertainty that surrounds certain factors that are decisive in guaranteeing a close to optimal design.

Firstly, 'instrumental' certainty is generated by the wide variety of mechanisms that are available to the authorities, given the different effects that different environmental polices can have in terms of the efficiency and effectiveness of the chosen instrument. Secondly, the process also generates 'economic' uncertainty, since the authorities do not know the cost of compliance curves for the corresponding agents, making it impossible to gain an advanced

[1] A destination's natural resources not only play an important role in its choice as a holiday destination. They are also an essential factor in how tourists later rate the destination. Consequently, the quality of the environment plays a determining role in a tourist product's competitive capacity (De Rus & León, 1997).

insight into the effects on the firms' competitive capacity and on prices, employment and the demand. Lastly, an incomplete awareness of the environmental effects of activities by the tourist industry and the true costs of environmental degradation both generate 'environmental' uncertainty.

Given this 'instrumental', 'economic' and 'environmental' uncertainty, a simultaneous analysis of all three factors is advisable if an environmental policy is to be designed that is effective in meeting the required goals. With this purpose in mind, this article has been divided into four parts, excluding this introductory section and the conclusion. Firstly, a brief description will be made of the main environmental impacts of tourism, thus justifying the need for corrective mechanisms. Secondly, an outline will be given of the main instruments that can be used to work toward the sustainable management of tourist destinations, classified according to the agents that promote them. In the third part, an analysis is made of the 'instrumental' and 'economic' uncertainty that underlies the selection process of the measure or measures that can be used to achieve the anticipated environmental goals. Finally, the last section explores the problem generated by 'environmental' uncertainty: a factor that can play a decisive role in the final design of a corrective policy.

I. THE NEGATIVE ENVIRONMENTAL EFFECTS OF TOURISM

From an environmental perspective, tourism growth leads to problems of congestion, atmospheric pollution, the generation of waste, and the destruction of flora and fauna, among other things, as a direct consequence of the increased production of a series of activities that supply direct private tourism services, like transport, food and lodging, leisure, sporting and cultural activities, and shopping at the destination (OECD, 1980; WTO, 1998). Additionally, when there is a growth in the number of tourists, the public resources that complement tourist services (public infrastructure, natural resources, etc) all have a higher number of users, leading to problems of congestion and the destruction of the local habitat.

An analysis of the environmental effects of tourism therefore explores the different problems that arise during the production of private tourism services (some of which are shown in Table 2), and the impacts that are derived from mass visits to natural areas.

Firstly, when analyses are made of the possible negative effects of transport, a distinction is normally made between the different means of transport that tourists usually use: air transport, sea transport, trains, buses and private transport (private or hire cars). Of all of them, the most commonly used forms of transport are the plane (which represents about 25% of all expenditure on tourism, according to statistics by the World Tourism Organization) and the motorcar which, as well as being the most commonly used means of transport for domestic travel (IET, 2005), is also rising in popularity through the increased use of hire cars. As a result, analyses of the effects of tourist transport normally focus on the negative effects of motor vehicles and air transport. The possible external costs of these activities include atmospheric pollution, noise pollution and the destruction of the natural habitat, together with the costs of congestion and accidents. Although neither of the latter is considered to be an environmental cost, they are extremely important in the case of tourism (Banfi, 2000; OECD, 1980). The contribution of each of these effects differs, depending on the means of transport that is used. While atmospheric pollution is the key externality in the case of air transport

(EEA, 2001),[2] with motor vehicles, congestion is the main problem,[3] although they also contribute to atmospheric pollution because they are responsible, for instance, for 25% of all CO_2 emissions[4] and to noise pollution in cities, because motor vehicles subject over 20% of the population to noise levels that are considered to be detrimental to their health.

Tourist accommodation centres also generate different types of environmental problems, depending on the type of lodging. Traditionally, hotels are the favourite type of tourist accommodation. This means that hotels must be given priority when assessing the impacts of tourist accommodation centres. Thus hotels' most serious impacts are water pollution, waste generation and atmospheric pollution. Tourist accommodation centres generate several problems in terms of water. Firstly, an increase in the number of tourists staying at hotels leads to a big rise in the demand for water, given the tourists' higher per capita consumption compared to the resident population. (Holden, 2000). This is an added problem for tourism economies subject to periodic droughts and a lack of water (UNEP, 2002). At the same time, higher consumption leads to the generation of more wastewater, with the subsequent effect on the quality of water if there are not enough sewage plants to treat the increased amount of wastewater. If the hotels are coastal ones, it can also lead to the deterioration of coastal areas. As for the tourist industry's contribution to atmospheric pollution, an approximate estimate can be achieved by analysing energy consumption by hotels (mainly from cooking and heating).[5] Lastly, another external effect of this aspect of tourism is the increased generation of solid waste and problems relating to its management.

Together with transport and accommodation, feeding and shopping are also activities included in tourism, since they constitute an important part of tourist consumption, particularly in countries like France, Italy or Spain, where per capita expenditure on these kinds of activities is particularly relevant due to the customs or lifestyles of their inhabitants plus the large number of tourists they receive. Whatever the case, a growth in tourism is detrimental to the environment, mainly due to the increased generation of solid waste, problems of atmospheric pollution brought about by the increase in energy consumption, and problems caused by the greater amount of effluent generated by an increase in water consumption.

Finally, the tourist supply is complemented by a series of activities that come under the heading "recreational, cultural and sporting activities", such as visits to the destination's natural areas, water parks, theme parks, theatres, museums, libraries, ski resorts or golf courses. The main problems that are generated by this subsector are the congestion of recreational and cultural attractions and excessively heavy water consumption to meet the needs of tourism and maintain golf courses.

As for a destination's natural parks and other natural areas, environmental damage is mainly caused through the increase in the number of users. This not only gives rise to

[2] Mainly by worsening the problem of global warming, due to the greater damage that carbon dioxide emissions cause at high altitudes.

[3] The incorporation of one additional user reduces the average speed, which leads to an increase in operational costs and travel time. This not only affects tourists, but users in general. The external cost of congestion is the difference between the social and private costs.

[4] Most of these emissions are related to energy consumption. Indeed, according to data by the (EEA, 2001), in sectoral terms, the transport sector is the EU's most rapidly growing energy consumer. Additionally, motor vehicles contribute to 70% of all CO emissions, 65% of NOx emissions and 45% of VOCs.

[5] The more services a hotel offers, the more energy it consumes. For example, one-star hotels consume 157 kWh per square metre per year while, as the number of stars goes up, so do energy consumption and pollutant emissions.

problems of congestion but also deterioration through the destruction of the natural habitat. In practice, many ecosystems have been affected by tourism, even leading to the need to close them to tourism. In other situations, the deterioration caused by mass numbers of visitors has been irreversible, given the effect on the flora and fauna (Boyle & Samson, 1985).

Table 2. The main environmental impacts of tourism

Transport • Atmospheric and noise pollution • Destruction of the natural habitat • Congestion problems
Accommodation • Atmospheric pollution • Water pollution: generation of wastewater and deterioration of coastal areas • Generation of solid urban waste
Feeding and Shopping • Atmospheric pollution • Water pollution: generation of wastewater • Generation of solid waste
Recreational, cultural and sporting activities • Destruction of the flora and fauna • Congestion problems • Water pollution etc.

Source: own elaboration, based on: OECD (1980), Roberts (1983), Pearce (1985) and Crnjar & Sverko (1998).

II. INSTRUMENTS FOR THE SUSTAINABLE MANAGEMENT OF TOURIST DESTINATIONS

A variety of different instruments can be used for the environmental management of tourism economies. A distinction can be made between measures introduced by the authorities to lessen the environmental impact of tourism through the creation of public infrastructure (wastewater treatment plants, desalination plants, etc) and measures aimed at redirecting types of behaviour that have a negative impact on destinations. From an economic point of view, this second group is clearly the most important when it comes to eliminating externalities. More specifically, behaviour can be modified through instruments promoted by the tourist industry itself and/or through the intervention of the public authorities. Table 3 offers a general overview of the instruments that can be used to work toward a destination's sustainable management, classified according to the agents that promote them.

Thus a wide range of measures can be used to implement policies aimed at ensuring a destination's sustainable management, from traditional means of intervention by the authorities in the form of regulations to the latest voluntary initiatives introduced by the tourist industry.

Two-star hotels consume 230 kWh and four-star hotels 380 kWh (EEA, 2001).

Table 3. Environmental management instruments in tourism economies

	Instruments	
Measures promoted by	Tourist industry (voluntary instruments)	Guidelines and codes of conduct Voluntary contributions Voluntary certification system Eco-labels Eco-management and environmental audits
	Public sector	Informative and training instruments Economic instruments Command and control instruments Price-based or incentive instruments

Source: Own elaboration.

More specifically, measures by the tourist industry can either comprise a series of environmental guidelines or codes of conduct created by agents from the sector or else voluntary certification systems (WTO, 2002). Whilst environmental guidelines or codes of conduct make agents aware of the effects of their behaviour so as to encourage more environmentally friendly behaviour, certification systems entail the certification of compliance with a series of environmental criteria that are stricter than those required by legislation. The certificates are issued by external independent bodies, which gives them credibility in the eyes of today's increasingly environmentally aware consumers. Among measures promoted by the tourist industry, we should highlight voluntary certification systems, given their progressive inclusion in destinations' environmental policies, such as eco-labels and eco-management or environmental auditing systems (Font, 2002; Font & Buckley, 2001).

Among the different measures promoted by the authorities, a distinction should be made between informative mechanisms promoted by local bodies and what are known as economic instruments. Although the first type help promote environmentally friendly behaviour, economic instruments are clearly the most relevant public measures, and public agents can intervene by introducing direct regulations or what are known as incentive instruments.

Regulatory mechanisms in the tourist sector consist of compulsory regulations on minimum environmental quality standards (like the quality of seawater for bathing or acceptable noise levels in tourist resorts), quantitative limits aimed at the protection of the environment or the prevention of congestion (like the establishment of a maximum number of boats near coral reefs or maximum number of daily visitors to a natural park) and regulations on tourism development (such as a moratorium on the creation of new hotel beds). Meanwhile incentive instruments consist of the application of financial mechanisms aimed at modifying the economic decisions of tourism agents by raising the price of those activities that are most environmentally damaging. In short, they are economic pointers that force agents to react by choosing the most advantageous solution. They are also known as price-based instruments, because the corrective environmental solutions they propose affect the price paid by users of the area in an attempt to reflect the true social cost of the level of activity or use. Among the different options that are available, one possibility is the application of tax-based instruments as means of correcting externalities, with a purpose that goes beyond the mere collection of revenue, such as levies on admittance to natural areas

(Alpízar, 2006; Eagles *et al.*, 2002; Laarman & Gregersen, 1996) or levies on typical tourist activities (Palmer & Riera, 2003; Palmer *et al.*, 2007).

III. 'INSTRUMENTAL' AND 'ECONOMIC' UNCERTAINTY

Having ascertained the variety of instruments that are available, it is important to consider what method must be used to choose the right instrument. This is not without problems, given the different effects that different environmental policies have. For this reason, in order to make it easier for policy-makers to choose the measure or set of measures that is/are best suited to the corresponding goals, a selection mechanism is recommended. The key factors to be assessed are the instrument's environmental effectiveness and efficiency, both from a static and dynamic perspective (Baumol & Oates, 1988). Likewise, it is important to bear in mind compliance with the principle that underlies environmental policies ('the polluter pays principle') and the instrument's capacity to generate income in order to weigh up the possibility of a 'double dividend' (Goulder, 1995) or, alternatively, the possibility that high costs in the administration and implementation of the instrument might, in some cases, offset any efficiency-related benefits.

More precisely, the instrument's environmental effectiveness or capacity to achieve the proposed environmental goal or goals is the first important criterion in the selection process. When the instrument can achieve the established environmental goals at a minimum cost for society in general, the 'static' facet of efficiency is achieved. However, efficiency can also have a 'dynamic' facet if the policy that is designed encourages long-term environmental improvements. Additionally, two other factors to assess are compliance with the polluter pays principle and the instrument's capacity to generate income. The polluter pays principle - the guiding principle behind international environmental policies - is aimed at internalizing costs (by compensating for damage caused through the use and degradation of the environment) and at ensuring a certain equity by making the agent responsible for the pollution or deterioration pay for the damage. Lastly, it is interesting to explore the instrument's capacity to generate income, since a possible double dividend might be achieved as well as environmental benefits through the improved efficiency of the tax system (by reducing existing distorting taxes).

If we take the above criteria as a reference, literature on environmental policy instruments tends to opt for the use of incentive instruments. The vigorous defence that is made of price-related instruments can no doubt be attributed to their static and dynamic efficiency in comparison with regulations that are compulsory for agents from the tourist industry. It is argued that the former allow environmental goals to be reached at a much lower cost compared with direct regulatory policies (Baumol, 1972; Baumol & Oates, 1988; Spulber, 1985), while also representing constant incentives for the introduction of techniques or types of behaviour that gradually help improve environmental conditions (Jung *et al.*, 1996; Milliman & Prince, 1989). The application of these corrective taxes also guarantees income that can be used for different purposes, from funding environmental improvements or bolstering the authorities' general finances to the most recent proposal for a reduction in other taxes as part of what are known as 'green tax reforms' (Gago & Labandeira, 1999).

Despite all the advantages that incentive instruments apparently offer from a theoretical point of view, it should be highlighted that they are scarcely used in tourism economies' environmental policies in comparison with direct forms of regulation (Palmer & Riera, 2004). Thus in many tourist destinations it is usual to find regulations on the quality of seawater for bathing or noise levels, quantitative limits on access to certain natural areas, maximum thresholds for building permits or moratoriums restricting the creation of new hotel beds. As a result, the priority that is given to environmental effectiveness as opposed to other criteria helps explain the greater prevalence of compulsory regulations in recent decades in these economies. In this context, although incentive-based tax instruments can be found in tourism economies that are theoretically designed to be corrective measures (Piga, 2003), the tax instruments that have become most common in these economies (levies on access or admittance, development levies, taxes on water consumption, or hotel room taxes) are designed in such a way that, on most occasions, they are mainly aimed at collecting revenue.[6]

Several reasons can induce policy-makers to opt mainly for direct regulations as opposed to incentive instruments when implementing environmental policies, although one reason is doubtlessly the need to design and implement policies in a context often fraught by uncertainties.

One source of uncertainty of an 'economic' kind that policy-makers might have to face is the huge practical complexity involved in determining the compliance curves of the agents that generate externalities, in terms of the marginal net private benefit (MNPB)[7] in the case of suppliers of private tourism services like accommodation or tourist transport, or the demand curves (D) of people who visit specific locations in regions with a certain tourist appeal (Demand D), such as natural assets like beaches or natural parks. This 'economic uncertainty' affects the selection process of the instruments that can best achieve either the optimal or desired environmental goal (the last one being sought if it is not possible to estimate the marginal external damage curve). This lack of knowledge of the costs that the agent generating the externality must compensate if the policy-maker's environmental goal is to be achieved therefore constitutes an added problem, in addition to the different effects that alternative environmental policies might have.

In order to demonstrate the potential effects of economic uncertainty when trying to choose an optimal environmental policy instrument, Figure 1 shows the estimated demand curve (ED) or estimated marginal net private benefit (EMNPB) calculated by the policy-maker and the true demand (TD) or true marginal net private benefit (TMNPB).

In this context, policy-makers can introduce a regulation or use an incentive instrument. In the case of externalities associated with the production of a tourist service, the authorities can establish a maximum level of emissions (for effluent or the generation of solid urban waste) for the agents causing the externalities or a quantitative limit in the number of users who are admitted to a certain natural area in the case of congestion-related externalities associated with the use of a recreational area. In both cases, the level of activity and any associated externalities would be situated at the desired *ex ante* (U*) level, provided that fines were paid for non-compliance with the existing regulations. Likewise, the authorities can also

[6] See Palmer & Riera (2003) for an analysis of the minimal environmental objectives behind hotel room taxes, taking as an example the Balearic ecotax. See too Bird (1992) and Gooroochurn & Sinclair (2005) for an analysis of the arguments that justify greater taxation on the tourist industry.

[7] Or marginal abatement costs (MAC) if reducing the externalities does not imply a reduction in the level of activity but in pollutant emissions.

consider introducing a tax equal to t* on emissions by agents or on the use of an area, thus encouraging a shift toward the *ex ante* optimal level.

A priori both instruments would be efficient from an environmental point of view, given the effectiveness of a regulation and a Pigouvian or optimal tax.[8] Nonetheless, economic uncertainty can give rise to differences in the optimality of the instruments that are used. Indeed, if policy-makers decide to introduce a second-best tax[9] equal to t*, the real number of users or real level of emissions will reach U**, while if policy-makers initially decide to establish a quantitative limit, the real number or level will be situated at U*. Note, therefore, that when there is uncertainty, neither of the instruments will achieve a socially optimal level of users or emissions (U_0). Nonetheless, the social losses that are derived from the introduction of a tax (represented by area abc) are clearly higher than those derived from the introduction of a quantitative limit (area ade), which points to the suitability of a regulatory mechanism rather than an incentive-based one.[10]

A preference for regulatory policies can be confirmed, as highlighted in the pioneering work by Weitzman (1974)[11], when the slope of the external damage curve is high and steeper than the slope of the agents' cost of compliance curve. In such situations, an increase in the number of users or emissions causes substantial environmental damage of a greater nature than the increased costs that the agent generating the externality must pay to reduce the damage, whatever the latter's position. In these cases, the loss generated by this mistaken choice is too much for society, making it advisable to use instruments whose effectiveness is guaranteed, as demonstrated by the environmental policies of many tourist destinations.

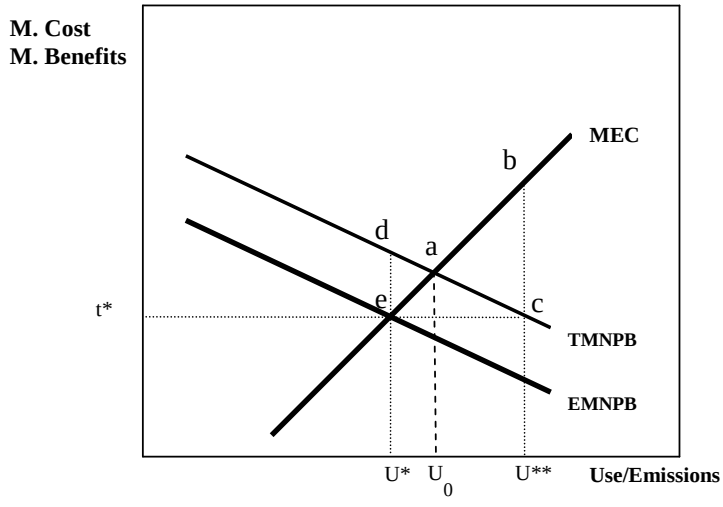

Figure 1. Economic uncertainty and the choice of policy instrument.

[8] Note that taxes might be more efficient when the D or MNPB curves of the agents are clearly different.

[9] In a situation of uncertainty with regard to one of the cost curves (in this case private compliance costs), the proposed tax is aimed at achieving an environmental goal at a lower cost than a regulation, which leads us to define these taxes as cost-effective or second-best taxes.

[10] A similar analysis to this study, applied to the tourist industry, can be found in Forsyth *et. al.* (1995).

[11] See too the studies by Adar & Griffin (1976), Fishelson (1976) and Roberts & Spence (1976).

Following Weitzman's study (1974), other authors have published interesting contributions on the effects that uncertainty has on the selection process when choosing optimal environmental policy instruments. Some of them modified Weitzman's hypothesis (the linearity of the curves, uncertainty in relation to the position of the curves but not regarding their slope, or non correlation between both uncertainties), analysing the results that were obtained. Malcolmson (1978) and Watson & Ridker (1984) pointed out that when the marginal external costs (MEC) and MNPB curves are not linear, Weitzman's conclusions can be incorrect. Similarly, Tisato (1994) concluded that incentive instruments can be advisable in more situations than those listed by Weitzman, since the greatest losses for society that might be generated when these instruments are used instead of regulations (see Figure 1) might be offset by the higher levels of efficiency that the former often guarantee (particularly in cases when there is a multitude of agents with different MNPB curves). Stavins (1996), on the other hand, assumed the existence of simultaneous uncertainty on the MNPB and MEC curves and, at the same time, he considered a possible certain degree of correlation between both uncertainties. Faced with this situation, the author concluded that, when there is a positive correlation, direct regulations are better, but when the correlation is negative, incentive instruments are more advisable.

A combination of instruments is another possibility that emerged from studies based on Weitzman's work, aimed at minimizing the losses that can be derived when environmental policies are applied in a scenario of uncertainty. Roberts & Spence (1976) pointed out that an effluent tax can have too limited an impact in cases in which the MNPB curve is higher than the originally estimated one, while the effect can be too high when the curve is lower than the estimated one. As a result, it is better to introduce the tax in tandem with maximum and minimum quantitative limits. Meanwhile Shavell (1984) proposed the joint use of quantitative limits and compensation systems for the agents generating externalities and their victims (liability rules) in order to improve efficiency and reduce the risks inherent in the use of environmental policy instruments in a context of uncertainty. Finally, some authors opt for technical amendments to some instruments in order to improve their behaviour in the event of uncertainty. Koenig (1985) and Dickie & Trandel (1996) compared the effects derived from the use of specific taxes and *ad valorem* ones as compared with quantitative limits, concluding that when it is possible to use both taxes, generally it is advisable to do so, although in certain circumstances it is still a good idea to introduce quantitative limits. Similarly, Kaplow & Shavell (2002) conclude that when the environmental damage caused by the agents follows a non-linear pattern, the most advisable instrument is a non-linear tax. However, the authors also acknowledge the big amount of data that is required to determine the non-linear pattern that the environmental damage follows and thus the practical complexity of introducing these types of measures.

Whatever the case, as we see it, an analysis of studies subsequent to Weitzman's, most of which are theoretical studies, does not rule out the possibility an environmental policy based on comparing the slopes of the external damage and cost of compliance curves in order to select the instrument best suited to correcting the externalities derived from tourism.

IV. ENVIRONMENTAL UNCERTAINTY

In many, if not all, tourism-related environmental problems, decision makers are faced with uncertainty. As seen in previous sections, environment-oriented regulations are subject to uncertainties regarding instrumental and economic issues. However, the fact that the effects of actions upon the nature and the costs of environmental degradation due to the growing tourist flows are imperfectly known leads to consider another kind of uncertainty that cannot be overlooked: the environmental one. Indeed, the efficiency and effectiveness of management mechanisms oriented to correcting negative tourism externalities on the environment depend on the simultaneous treatment of these three kinds of uncertainty around environmental policy making. It is to investigate the role that environmental uncertainty plays within this framework that the discussion now turns.

Decision making implies valuation. If this is so, decisions concerning the environment involve that ecosystems have a value to society. Indeed, interconnections and co-dependence between the ecological and economic systems imply that services and functions provided by ecosystems directly and indirectly support all economic activities. In other words, environmental resources provide both direct and indirect services and functions that affect human well-being. In this context, the better the valuation of ecosystems, the better the choices made by decision makers, or, in words of Costanza (2000), 'society can make better choices about ecosystems if the valuation issue is made as explicit as possible'. In this sense, knowledge about the dynamics of ecological systems is required in tourism destinations for a good valuation of the environment and, hence, better designs of environmental policy tools aimed at correcting the negative ecological impacts stemming from tourism.

One of the main features of ecosystems is they change over time in very complex ways. In fact, they involve many ecological variables interacting with each other at a range of spatial and temporal scales and have a highly non-linear behavior. Ecological systems' dynamics is then characterized by a high degree of complexity. In addition, they are also subject to unpredictable effects of variables that are not anticipated by decision makers. In this context, there is abundant literature concerning ecosystem functioning that proves the existence of ecological thresholds and their effects as a consequence of human disturbances on the environment (Groffman *et al.*, 2006; Ludwig *et al.*, 1997; Romme *et al.*, 1998; Scheffer & Carpenter, 2003). Following Muradian (2001), 'ecological thresholds are ecological discontinuities that can be defined as a sudden change in any property of an ecological system as a consequence of smooth and continuous change in an independent variable. They imply critical values of this independent variable around which the system flips from one stable state to another'. Ecological thresholds can also be considered as regions or zones of transition in stochastic systems (Huggett, 2005). One of the most important issues underlying ecosystem dynamics is the concept of resilience, which has been traditionally associated with ecological stability (Limburg *et al.*, 2002). It refers to the capacity of the environment to repair itself in the face of a source of disturbance. More specifically, resilience can be defined as the magnitude of disturbance that can be absorbed before a system crosses the threshold or as the time taken for a disturbed ecosystem to return towards some initial state (Dalmazzone, 1998).

In this context, the state-of-the-art knowledge in ecosystems shows that information about their dynamics is limited. Thus, the magnitude, timing, and spatial proximity of

thresholds are imperfectly known. Limburg *et al.* (2002) point out that 'the problem is the difficulty to have complete knowledge of every component and a perfect model of the interactions'. According to that, in many tourism destinations there exists the risk that the carrying capacity of the system can be exceeded at any moment, causing a collapse of the natural system, if levels of pressure on the environment increase continuously. For instance, given specific environmental conditions, coastal waters can experience a change in their color and transparency when a certain level of nutrients emissions is achieved, partly caused by an increase in water demand aimed at satisfying the needs of the hotels and apartments, swimming-pools, golf courses as well as the tourists' personal water use, among other things. This *ecological* ignorance constitutes the ecological uncertainty faced by decision makers when dealing with tourism-related environmental problems. Additionally, degradation of ecosystems due to tourism development in a context of unpredicted thresholds causes uncertainty as to future supply of vital functions and services provided by ecological systems (Batabyal *et al.*, 2003; Eiswerth & Haney, 2001; Rapport *et al.*, 1998). In this sense, and returning to the example above, an issue of interest could be to examine if bathing suitability is the same before and after the change in water color and transparency. Therefore, environmental uncertainty not only involves ecological uncertainty, but also uncertainty over the value to society of changes in current ecosystems (Young, 2001).

Recognizing the existence of uncertainty within the environmental framework implies there is a risk of potential irreversibilities or points of no return. Muradian (2001) defines them 'as critical values of a driver (burden) beyond which the shifts to a different regime of a state indicator shows resistance to return to the original state as the driver is reduced below the threshold'. Irreversibilities force the need to recognize uncertainty, because otherwise uncertainty would not be a so important issue in decision making. Young (2001) states that the limited substitution possibilities for some critical environmental services and functions forming the basis of life supporting processes lead to consider irreversibility. In this context, literature concerning the study of ecological systems has usually advocated the maintenance of ecosystems' resilience as a key aspect of sustainability and, hence, a key goal for tourism-focused environmental policy. Many authors argue that if the ecological system loses resilience, it becomes vulnerable to disturbances that earlier could be absorbed without changing its structure (Chee, 2004; Scheffer *et al.*, 2001). Resilience of ecosystems is said to depend on the range of species capable of supporting the critical structuring processes of those systems under different environmental conditions. This is why many papers involving the analysis of ecosystem dynamics focus on biodiversity issues (Granero, 1998; Huggett, 2005; Perrings & Pearce, 1994). In this sense, biodiversity conservation becomes a crucial objective for policy makers in tourism destinations if ecosystem functioning wants to be maintained stable and sustainable, that is, self-organized, over time, regardless of whether this self-organization is created and maintained only by a small set of critical processes (Holling, 2001) or not. In other words, sustainability of evolutionary potential of ecosystems and maximization of their adaptive flexibility to future environmental conditions depend on their conservation (Van den Bergh & Gowdy, 2000).

With this in mind, there is no doubt that threshold knowledge is very valuable in decision making concerning the tourism sector so that tools can be developed to devise biodiversity conservation and natural resource management in ecosystems. Some authors argue that knowing about how and when ecological discontinuities occur and how they respond to disturbances provides insights to the actions needed to avoid perturbations and helps to

implement preventative management strategies (Huggett, 2005). Additionally, knowledge about critical thresholds (i.e. critical loads) can also help to design abatement strategies to control pollutants emissions, as the ones caused by the tourist transport (i.e. rental cars and planes). They can also supplement the information given by environmental indicators (Alfsen & Saebo, 1993; Limburg *et al.*, 2002) in an attempt to make them more useful. However, complexities and uncertainties inherent to the interconnections between the ecological and economic systems make difficult not only to define the extent and type of tourist activity consistent with ecological sustainability, but also to decide which tourism-oriented environmental policy to carry out.

In an uncertain setting, choosing the optimal instrument is problematic. Optimality of an environment-directed action depends on the social benefits and costs related to a natural resource. Therefore, optimality can only be judged ex-post, not ex-ante. In a context of increasing human pressure on the environment due to growing tourist flows, since there is a risk of unpredicted ecological disturbances and uncertain threshold effects, and hence (i.e. uncertain environmental costs), defining an optimal policy is a difficult task. It is shown in Figure II 2 in the case of coastal water quality degradation caused by an increase in nutrients emissions due to higher levels of water demand. It is seen that, with certainty around the threshold (U*) and the marginal environmental cost (MEC), whenever the U* falls at a point where the MEC of nutrient emissions is lower than its marginal net private benefit (MNPB), the efficient solution (U_0) does not guarantee water quality if it requires not crossing the threshold. In this context, although more knowledge about thresholds and potential irreversibilities could provoke a perceived increase in current costs, and thus a movement of MEC to MEC' or MEC'', leading in this way, apparently, to an efficient solution, the problem of optimality could still remain due to the uncertainty surrounding the timing and magnitude of the threshold. Graphically, this is equivalent to say that the position of U* is not known with certainty.[12]

In this context, direct regulations seem to be the solution when designing environmental policy tools aimed at correcting tourism-related ecological negative externalities. Indeed, many tourism-oriented environmental policies have been constructed on the basis of the command-and-control approach. This is because under a scenario of unanticipated ecological changes with the risk of possible irreversibilities, environmental effectiveness is viewed as the best criterion in the establishment of a policy. According to this, however, the use of market-based instruments that guarantee the environmental effectiveness criterion is also appealing, as is the case of tradable permits. Policy theory then needs to shift the weight from economic efficiency to risk-avoidance strategies and effectiveness criteria (Van den Bergh & Gowdy, 2000). Moreover, the fact that the ex-post condition of the effectiveness criterion requires to minimize the risk of instrument failure has led some authors to argue that this objective can be more easily achieved with the use of safety margins (Chavas, 2000; Dalmazzone, 1998). In this setting, based on the idea that ecosystems require experiment research, careful monitoring, policy learning and adaptive management due to their complexities and uncertainties, some researchers bet on the prospects of adaptive environmental management (Van den Bergh & Gowdy, 2000) as a good strategy to meet ecological goals and ensure sustainability in tourism destinations. It is one of the most recommended forms of science-based natural resource management. Groffman *et al.* (2006)

[12] See Granero (1998) to see a similar example in the case of biodiversity use.

define it as a method 'in which solutions to problems are proposed and implemented, but prescriptions are constantly re-evaluated based on actual ecosystem response to management'.

From a higher risk aversion perspective, however, other authors state that the adjustment of safety margins or corrective measures is not sufficient, and advocate the adoption of a preventative strategy (Granero, 1998). Myers (1993) argues that 'precaution is grounded in the need for a premium on a cautious and conservative approach to human interventions in environmental sectors that are usually short on scientific understanding, and usually susceptible to significant injury, especially irreversible injury'. In this sense, the precautionary principle is argued to be a good basis on which to construct environmental mechanisms, especially in those physically unique areas of new tourism development, because they are extremely vulnerable to increased human impact and environmental change and it might be difficult to predict the consequences on their natural environment (Fennell & Ebert, 2004). Then there exists the need, as Perrings & Pearce (1994) point out, to implement instruments beyond economic criteria, that is, motivated by an ethical judgment related to a *socially* acceptable margin of safety in the natural resource management.

To sum up, when sustainability of tourism destinations is the goal, the interconnectedness between the economic and ecological systems imposes limits to the impacts of tourist activities on the environment. However, as earlier seen, managing the nature is no not an easy task. Environmental uncertainty must be taken into account when designing tourism-focused management mechanisms. If not, decisions can lead the nature to cross some ecological threshold with the risk of irreversibilities having important negative effects on tourism areas' sustainability and competitiveness, and, consequently, on tourists and residents' welfare. In view of situation, efforts must be made to promote scientific research in ecosystems. In any case, although knowledge and understanding in ecological systems become crucial to guide sound tourism-directed environmental management, erring on the side of caution seems to be a good way to proceed in a context of limited information about ecosystems.

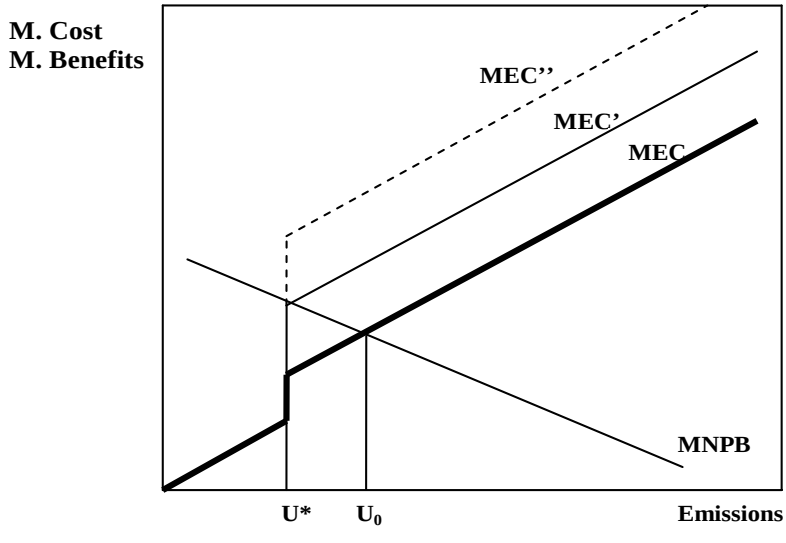

Figure 2. Optimal nutrient emissions and threshold.

CONCLUSION

Most studies of the tourist sector have focused on the economic impacts of tourism, demonstrating the substantial positive effects of tourism in terms of income and employment. However, there is increasing consensus on the big negative effects that it has on the environment, which can lead to a destination's diminished competitive capacity and subsequent economic repercussions. Thus behind the abundance of tourism services there can lie an aspect that is not so evident: unsustainable tourism which uses and depletes natural resources to make the most out of production. As a result, a strategy aimed at ensuring the future viability of the tourist industry and the sustainable development of regions dedicated to tourism inevitably calls for an analysis of the environmental effects of tourism and the factors that must be taken into consideration if management policies are to be introduced that can reduce these effects.

The aim of environmental policies is to tackle the environmental degradation caused by tourism, trying to influence the economic agents involved in the tourist industry through the application of a wide range of instruments. In a context of perfect information, designing and implementing an environmental policy can guarantee the achievement of optimal environmental conditions. However, in reality the said policy must be designed and implemented under conditions of uncertainty, in which case, far from being arbitrary, the instrument that is chosen can influence how effective the policy is.

Firstly, environmental policies are subject to uncertainty regarding the efficiency and effectiveness of the proposed corrective mechanisms, depending on the characteristics of the available instruments. 'Instrumental' uncertainty is thus derived from the different effects that alternative policies can have and from the need to choose from among the available options depending on the policy-maker's priorities. Secondly, the authorities' lack of data pertaining to the economic cost curves can be a very important factor to bear in mind when choosing the best combination of environmental measures, making 'economic' uncertainty an issue of prime importance. Lastly, 'environmental' uncertainty, derived from a lack of information about the financial impacts of the environmental damage, and the environmental problems' possible irreversibility must also both be incorporated in the economic analysis. Thus environmental policies are affected by the coexistence of uncertainty, since an initially proposed instrument can prove to be less advisable in the presence, for instance, of irreversibility. In such situations, the risk of introducing incentive instruments is too high, justifying the use of direct regulations.

Whatever the case, an analysis of the different 'instrumental', 'economic' and 'environmental' uncertainties that underlie the selection process is essential if a level of activity and, by extension, a level of externalities can be achieved that do not represent a threat for the future of the tourist industry.

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Chapter 5

THE GLOBAL EXPANSION OF FINANCIAL INSTITUTIONS: EXAMINING THE INTERNATIONAL OPERATIONS OF CREDIT RATING AGENCIES

Lynnette D. Purda*
Queen's University, Kingston, Ontario, Canada

ABSTRACT

As global financial markets become increasingly integrated, so too do the financial institutions that operate within them. The international expansion of US-based credit rating agencies provides one such example. The most prominent of these agencies have expanded to operate in a wide-range of developed and emerging market economies and their opinions influence international investors and firms looking to raise debt either at home or abroad.

Expanding into international markets is not without its challenges, perhaps the most significant of which is to ensure that some degree of global consistency exists across ratings while incorporating country-specific features that influence credit risk. Using a unique database of Moody's ratings from six different countries, I model the agency's rating assignment decision and document the extent to which the model applies to firms from different countries. I find that significant cross-country differences exist and that a single model depicting rating assignments does not accurately reflect the actual ratings assigned in some countries. The chapter concludes with a discussion of why these differences may occur and the resulting implications for managers of international firms.

* Queen's School of Business, Queen's University, Kingston, Ontario, Canada K7L 3N6. Phone: (613) 533-6980 Fax: (613) 533-2321. Email: lpurda@business.queensu.ca.

I. INTRODUCTION

The globalization of financial markets has been progressing at an astonishing pace. Between 1969 and 1998, the US share of global financial markets fell from 65 percent to approximately 41 percent.[1] From the perspective of US investors, this implies that an increasing proportion of their investment portfolios may be made of foreign securities. Meanwhile, from the perspective of foreign managers, globalization implies that a wide-range of cross-border financing options exist in order to raise capital from the cheapest possible source.

As the internationalization of financial markets has increased, so too has the scope of the institutions that operate within them. American financial service firms are scrambling to expand their operations in response to demands from both US investors looking for advice on foreign investments and the international firms looking to attract their capital.

Perhaps one of the best examples of the internationalization of financial services comes from the bond rating industry which provides opinions on the credit risk of borrowing firms. The two dominant US rating agencies, Standard and Poor's (S&P) and Moody's Investors Service (Moody's) both operate in several countries world-wide with the larger of these, Moody's, maintaining ratings on approximately $US85 trillion of debt from borrowers in over 100 countries. The role of these two rating agencies in the international market is perhaps best described by a recent quote from the business press: "…for big international issuers of debt there is little choice...for many investors the imprint of S&P or Moody's will drive decisions for a long time to come."[2]

As rating agencies have expanded their operations abroad, they have been faced with the challenge of balancing local knowledge while maintaining global consistency of ratings. Ratings must be comparable across countries yet provide an accurate assessment of credit risk that reflects country-specific conditions. This chapter begins with a discussion of the role of rating agencies and how this role has evolved with their international expansion. It then models Moody's rating assignment process to establish whether a given set of financial characteristics are similarly related to ratings across all countries. Using a unique database of Moody's ratings from six different countries, I then test whether firms with similar financial characteristics receive similar ratings regardless of nation. I find that significant discrepancies in rating assignments exist. As a result, the chapter concludes with a discussion of factors that may account for these differences and their managerial implications.

II. THE CREDIT RATING INDUSTRY AND ITS INTERNATIONAL EXPANSION

A Moody's credit rating is a function of two factors: 1) the probability of default and 2) the severity of loss that a creditor faces if default occurs (Moody's, 2000). Clearly, the information contained in bond ratings is important to current and prospective bondholders but evidence suggests that it is valued by other capital market participants as well. Numerous

[1] Reilly and Brown (1999).
[2] The Economist, March 26, 2005 Volume 374, Issue 8419, page 69.

studies have found that both bond and stock prices are impacted by changes in a firm's credit rating. In both cases, prices exhibit abnormally negative returns when news of a downgrade is released to the market (Wansley and Clauretie, 1985; Hand, Holthausen and Leftwich, 1992). While this pattern was first documented in the US, research has found that it is prevalent in other markets as well. Matolcsy and Lianto (1995) documented its existence in Australia, Steiner and Heinke (2001) in Germany and Li, Shin, and Moore (2006) in Japan. Even equity analysts, who are clearly also very knowledgeable about the firm, have been shown to update their estimates in response to movements in bond ratings (Ederington and Goh, 1999).

Although credit ratings were originally conceived to provide information to unsophisticated investors, they are now widely used by institutional investors (Cantor and Packer, 1994). The investment guidelines of many mutual and pension funds use credit ratings to detail the types of investments that can be held by the fund. Financial regulators have also begun to reference credit ratings in their policies with perhaps the most recent and extensive example being the use of ratings in determining capital adequacy standards for the banking industry as recommended by the Bank of International Settlements (BIS).[3] As the BIS represents the interests of the central banks of 55 member nations, these standards have contributed in large part to the significant international expansion that US rating agencies have been undertaking.

The importance of ratings to investors and regulators has in turn made them important inputs to managerial decisions. Surveys of financial managers have found that credit ratings are important influences on the decision of how much debt the firm should maintain in its capital structure, regardless of whether these managers are based in the US (Graham and Harvey, 2001) or Europe (Bancel and Mittoo, 2004). Not only do ratings influence the cost at which the debt can be obtained (Ederington, Yawitz, and Roberts, 1987) they also impact management's decision on whether or not debt should be issued at all (Kisgen, 2006).

When US-based rating agencies have expanded into foreign markets, they have done so in a variety of ways. In some cases they have acquired local rating agencies outright (for example S&P's acquisition of the Canadian Bond Rating Service and Australian Ratings) while in others they have opened branch offices or partnered with foreign firms (Lyons, 1996).

Regardless of how credit rating agencies have entered foreign markets, their international expansion has been fast-paced. Paul (2002) suggests two potential reasons for this. The first is the trend towards disintermediation or, the increased tendency for firms to raise money through the capital markets rather than intermediated transactions such as bank loans. Traditionally, bank debt has been viewed as "informed debt" (Fama, 1985) in the sense that banks maintain close relationships with their borrowers and are in a better position to actively monitor their creditworthiness than numerous, arms-length investors. Arms-length investors must instead rely on third-party information such as credit ratings. The second possible reason for ratings' international growth suggested by Paul is the globalization of capital markets. Today, capital flows much more freely across national borders than at any other time in history. Firms looking to raise funds internationally may welcome the credibility that a rating from a reputable US-based agency brings. What little evidence there is on ratings in the international arena is consistent with this idea. Purda (2005) documents a positive abnormal

[3] A detailed discussion of these requirements can be found in Altman, Bharath, and Saunders (2002).

stock price reaction for firms with ratings from the Canadian Bond Rating Agency when it was announced that Standard and Poor's was acquiring the agency. Similarly, Bae, Purda, and Welker (2007) find positive abnormal stock returns when S&P first initiates ratings for firms in emerging markets. It appears that establishing a rating from one of the leading US-based agencies is greeted favorably by investors.

The extensive use of ratings by investors and managers in addition to their rapid international expansion, motivates us to provide a better understanding of how a traditionally, US-based institution has exported its methods abroad. As a very fundamental starting point, it is useful to establish how similar the rating assignment process is across countries and whether there is evidence that firms with similar financial characteristics are treated similarly. The remaining sections of the chapter are dedicated to this issue. Section III begins by describing the sample that will be used to empirically document the extent to which cross-country ratings are assigned in a consistent fashion.

III. EXAMINING CROSS-COUNTRY RATINGS

To examine the consistency in rating assignment across countries, I create a database of corporate credit ratings from six countries using data provided directly by Moody's Rating Services. The countries are similar to the extent that they all represent developed nations with well-functioning financial markets and institutions. Specifically they are Canada, France, Germany, Japan, the UK and the USA. Ratings are provided for firms in these countries at calendar year-end for nine years, beginning in 1993. As a result, a single firm may represent up to nine observations in the sample if they maintained a credit rating during the entire sample period. It is, however, not required that a firm be present for every year of the sample.

Table 1 provides an initial look at the data categorized by both country and rating level. Ratings are combined into six categories ranging from Aaa, indicating the most creditworthy firms to B, representing those firms with the highest credit risk within the sample. I ignore numerical modifiers within these rating categories, combining actual ratings of A1, A2, and A3 for instance into a single category labeled "A". Moody's uses these modifiers to indicate whether the firm's risk of default is in line with the category average (2) or on the high (3) or low (1) end for the letter grouping.

Table 1. Sample Firm Characteristics by Country

Proportion of Country Observations in Each Rating Category							
	Aaa	**Aa**	**A**	**Baa**	**Ba**	**B**	**Observations**
Canada	0	54	102	134	58	26	374
France	33	122	50	37	1	2	245
Germany	36	71	28	13	4	1	153
Japan	27	166	363	511	167	60	1294
U.K.	0	33	61	39	4	3	140
USA	57	347	1394	1073	661	487	4019
Total	153	793	1998	1807	895	579	6225

Unsurprisingly, Table 1 indicates that the country forming the largest proportion of the sample is the US, followed by Japan and then Canada. The UK has the smallest number of observations with 140. The division by rating category reveals an interesting distinction between US and foreign (foreign, meaning non-US in this context) rated firms. Figure 1 highlights this distinction by plotting the proportion of US and foreign observations falling within each rating category where all five non-US countries are combined to form the foreign data points. Here we see that the distribution of foreign ratings is skewed towards higher ratings. Approximately 25% of foreign ratings are in the top two rating categories of Aaa and Aa. In comparison, only 10% of US observations maintain this level of rating.

The observations from Figure 1 may simply represent the fact that only foreign firms of reasonable credit quality seek out a rating from a US agency. This is intuitive in that it is probably these firms that are most likely to attract US investors or attempt to raise capital abroad. A second possibility suggested by McNamara and Vaaler (2000) is that credit rating agencies may be influenced by their competitive position in the region. The authors hypothesize that agencies entering a new market may seek to attract business by providing more favorable ratings than what the objective characteristics suggest. Finally, a third possibility is that country-specific factors exist that impact the risk of default. If this is the case, firms may have similar financial characteristics but legitimately be assigned different ratings to account for the influence of institutional, regulatory or legal factors that impact investors' exposure to risk.

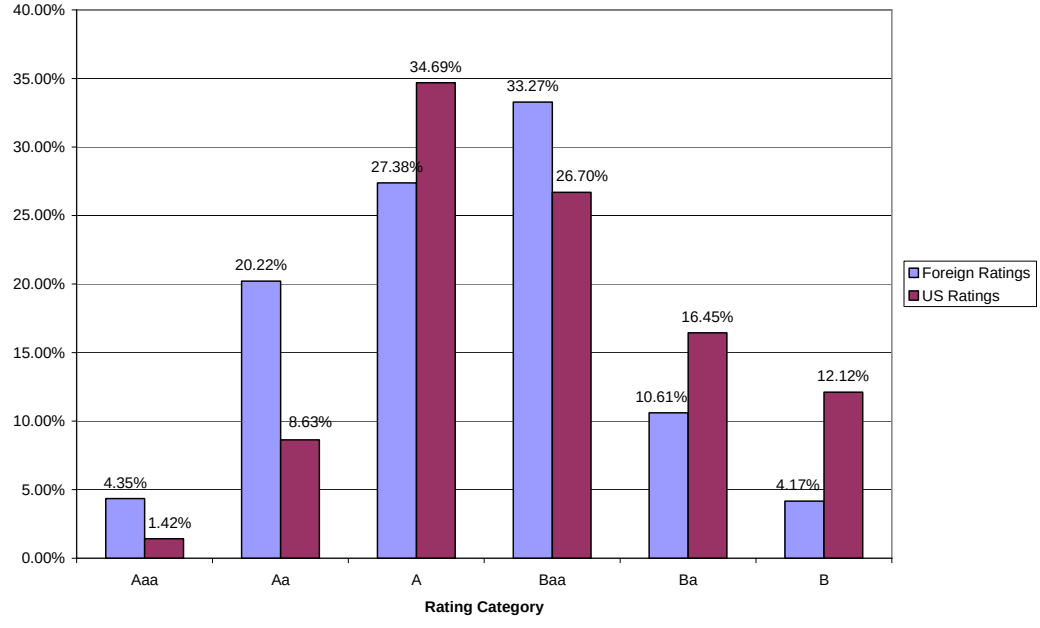

Figure 1. Proportion of Foreign and US Observations by Rating Category.

To learn more about how rating agencies evaluate foreign firms requires additional information about the financial position of these firms and the way in which this position is assessed by Moody's. A model of Moody's rating assignment process is provided in the section below.

IV. MODELING THE RATING ASSIGNMENT DECISION

Examining Moody's rating decisions requires knowledge of firm-specific financial information and an approximation of how this information translates to the ultimate rating assigned by Moody's. The financial information consider here largely reflects information provided by the rating agencies themselves. In the interest of transparency, rating agencies publicly release detailed notes related to rating methodology including financial metrics used in establishing the rating that is ultimately assigned.[4] The measures used in this chapter are drawn from these metrics and are similar to those employed by Blume, Lim, and MacKinlay (1998) and Purda (2007).

The specific financial information gathered for each observation includes long-term debt to total capital, total debt to total capital, interest coverage, return on assets (ROA), and the market capitalization of equity. Leverage and return on asset variables are presented in percentage form. For example ROA is calculated as net income divided by total assets multiplied by 100. Interest coverage is defined as the sum of operating income after depreciation plus interest expense divided by interest expense. Following Blume et al (1998) this measure is adjusted in several ways to reflect the fact that an improvement in coverage may be more meaningful if the initial coverage level is low. Four individual coverage variables, denoted c1 through c4 are defined to represent coverage in the range of 0 to 5 times, 5 to 10, 10 to 20, and 20 to 100. Ratings are expected to be related most strongly to interest coverage when this ratio falls within the first range from 0 to 5. Since additional coverage beyond a certain level may be meaningless, ratios in excess of 100 are set equal to 100. All negative coverage ratios are set to 0. Market capitalization is measured in ln form and all financial statement variables are downloaded from the Global Vantage database. Because the entire sample of rated firms is not covered by the database and specific measures may be missing for certain firms, the rating assignment decision cannot be modeled for all observations and the sample size decreases.

In addition to financial performance, I control for the firm's industry using the classification system provided by Campbell (1996). This system translates 2-digit SIC codes into 13 industry categories.[5] Dummy variables are created to correspond to each industry category. I also control for the year of the observation since evidence suggests that the rating process is not entirely stable over time. Altman (1998) documented an increase in the number of downgrades relative to upgrades while Blume et al (1998) found that the standards of rating agencies have become increasingly stringent over time.

The firm-specific information reflecting financial performance can be related to the rating letter ultimately assigned via an ordered probit model. This model is appropriate when a categorical dependent variable, in this case ratings, has an intuitive ranking from high to low. To employ the model requires assigning each rating category a number which will be used as the value for the dependent variable. The correspondence between rating category and assigned number for the dependent variable (denoted by Y) are as follows:

[4] See for example Standard and Poor's Corporate Rating Criteria (2006).

[5] The precise categories are petroleum, consumer durables, basic industry, food and tobacco, construction, capital goods, transportation, textiles and trade, services, leisure, unregulated utilities, regulated utilities, and financials.

Rating Category	Value for Dependent Variable (Y)
Aaa	6
Aa	5
A	4
Baa	3
Ba	2
B	1

The ordered probit model allows us to link the observed financial performance of our sample firms to the assigned rating. Denoting a vector of financial characteristics by X, the model generates a set of estimated coefficients for the independent variables as denoted by the vector β. With the dependent variable defined as above, a positive estimated coefficient for a financial variable implies that an increase in the variable corresponds to an improvement in the assigned rating. For instance, a positive coefficient for return on assets would have the intuitive interpretation that an increase in a company's profitability as measured by ROA corresponds to a better rating. The resulting model can be described by equation 1,

$$Y = \beta' X + \varepsilon \tag{1}$$

where ε is assumed to be normally distributed across observations.

In addition to the estimated coefficients, the ordered probit model generates a set of cut-off points. These estimated cut-off points serve as useful boundaries in establishing the probability implied by the model that a firm with a particular set of financial characteristics will be assigned to a specific rating category. Since the sample represents firms from six rating categories (Aaa through B) the model generates five cut-off points denoted by μ1 through μ5. Without describing the technical details[6], the intuition is that the probability of a firm being assigned the highest rating category, Aaa, is associated with the probability that the model's predicted value for the observation exceeds the highest cut-off point. For our purposes it is sufficient to know that these probabilities can provide a useful measure of the model's fit for observations from different countries. This will be seen explicitly in the next section of the chapter.

V. Tests of Global Consistency of Credit Ratings

1. Descriptive Statistics and Univariate Tests

Table 2 examines the mean values for the five financial characteristics used in the model of rating assignments when observations are categorized according to rating level. Average financial values are provided for each rating category and within the category additional means are provided for the subset of US and foreign firms. The final two columns of the table

[6] A detailed explanation of ordered probit models can be found in Hausman, Lo and MacKinlay (1992).

provide univariate tests of whether the mean and median values are similar for foreign and US firms that share the same rating.

When US firms are examined in isolation, Table 2 shows few surprises. The mean value of long-term debt to total capital increases consistently as we move from firms with the highest credit rating of Aaa to those with the lowest credit rating of B. Interest coverage and market capitalization show a similar pattern with large firms and those with high coverage ratios receiving strong ratings and smaller firms or those with low interest coverage receiving poor ratings. Results for return on assets are also intuitive with the mean value of ROA falling substantially as we move down the rating spectrum from Aaa towards B.

Combining foreign and US firms eliminates some of these intuitive patterns. When the full sample is examined, mean values for the long-term debt to capital ratio no longer increase in a systematic fashion as we move towards weaker rating categories. Examining the averages for foreign firms in isolation illustrates why this is the case. Surprisingly, the mean of long-term debt to capital is higher for foreign firms in the top two rating categories than it is for those with lower ratings. While these higher means may be driven in part by outlier observations, the median test rejects the null that the foreign and US sub-samples are drawn from populations with the same median. The comparison between foreign and US firms is most dramatic for firms with the best possible rating, Aaa, where the mean long-term debt to capital ratio for foreign firms is a staggering 59.22% compared to 22.39% for US firms.

Leverage is not the only characteristic that varies significantly among foreign and US firms within the same rating category. Firm profitability as measured by return on assets is also significantly different across the two groups. With the exception of only one rating category (B), the average return on assets is substantially lower for foreign firms than it is for their US counterparts. The difference is always statistically significant regardless of whether mean or median values are examined.

While differences are clearly present across the entire spectrum of rating categories, discrepancies between US and foreign firms are most striking within the two top rating categories of Aaa and Aa. In these categories foreign firms maintain significantly higher amounts of long-term debt in their capital structure, are less profitable, have smaller market capitalizations, and exhibit lower levels of interest coverage than their US peers. All of these differences are statistically significant.

Table 2 provides some interesting preliminary insights, but its univariate nature does not allow us to consider how the combination of a firm's financial characteristics, its industry group, and the year of observation, relate to the ultimate rating that is assigned. For this analysis I turn to an estimation of the ordered probit model outlined in the previous section and represented by equation 1.

Table 2. Mean Financial Characteristics by Rating Category and Country

	Mean Financial Characteristics			Test Statistics	
	Full-Sample	**US Firms**	**Non-US Firms**	**US mean – Non-US mean = 0**	**US median = Non-US median**
Aaa					
LTD. to Capital (%)	45.20	22.39	59.22	-7.30***	19.21***
Debt to Capital (%)	65.85	56.30	74.07	-1.40	6.80***
Ret. on Assets (%)	5.01	12.30	0.66	12.06***	69.89***
Mkt. Cap. (millions)	76,200	120,901	25,618	7.60***	22.98***
Interest Cov. (times)	19.77	25.77	5.43	7.56***	24.71***
Aa					
LTD. to Capital (%)	38.05	30.77	43.08	-6.76***	7.89***
Debt to Capital (%)	77.41	74.41	79.70	-0.80	18.23***
Ret. on Assets (%)	3.99	7.20	1.76	13.82***	138.05***
Mkt. Cap. (millions)	29,331	37,999	23,207	7.74***	19.48***
Interest Cov. (times)	17.12	23.27	10.92	3.26***	57.56***
A					
LTD. to Capital (%)	37.49	37.66	37.13	0.46	3.26*
Debt to Capital (%)	74.11	75.81	70.49	1.14	5.81**
Ret. on Assets (%)	3.64	4.40	2.04	13.26***	136.85***
Mkt. Cap. (millions)	10,995	10,639	11,747	-2.59***	4.22**
Interest Cov. (times)	29.17	8.01	76.93	-1.20	2.17
Baa					
LTD. to Capital (%)	41.32	42.16	40.23	0.83	8.61***
Debt to Capital (%)	61.21	54.16	70.39	-5.03***	79.34***
Ret. on Assets (%)	2.53	3.52	1.22	9.41***	244.11***
Mkt. Cap. (millions)	4,411	4,324	4,523	-2.76***	3.50*
Interest Cov. (times)	7.44	8.55	5.75	0.99	0.99
Ba					
LTD. to Capital (%)	51.27	51.71	50.14	0.84	0.77
Debt to Capital (%)	66.83	56.53	92.76	-8.99***	59.79***
Ret. on Assets (%)	1.97	2.65	0.31	6.48***	89.94***
Mkt. Cap. (millions)	1,632	1,491	1,982	-5.06***	23.63***
Interest Cov. (times)	4.04	6.28	-1.56	1.89*	12.06
B					
LTD. to Capital (%)	74.41	76.03	66.41	1.90*	0.02
Debt to Capital (%)	90.79	84.05	123.06	-3.67***	20.84***
Ret. on Assets (%)	-2.11	-2.16	-1.87	-0.29	0.01
Mkt. Cap. (millions)	509	437	856	-9.26***	57.41***
Interest Cov. (times)	1.67	1.64	1.80	-0.41	0.07

* indicates statistical significance at the 10 percent level.

** indicates statistical significance at the 5 percent level.

*** indicates statistical significance at the 1 percent level.

2. Global, US and Foreign Models of Rating Assignments

Table 3 provides the results from estimating the ordered probit model on a variety of samples. The first model estimated in Column 1 of the table includes all firms regardless of country of origin. Data requirements for the model result in a decline in the number of observations to 2786 with approximately 59% of these representing observations from US firms. It is apparent from Column 1 that long-term debt to capital, market capitalization and interest coverage are meaningfully associated with rating assignment. Firms that have lower long-term debt ratios, larger firms, and those that maintain higher levels of interest coverage are assigned better ratings. Coefficients for return on assets and total debt to total capital are not significantly related to assigned ratings.

Table 3. Modeling Rating Assignments for International and US Firms

	1. All Firms		**2. US Firms**		**3. Foreign Firms**	
	Coeff.	**Z-Stat (P > |z|)**	**Coeff.**	**Z-Stat (P > |z|)**	**Coeff.**	**Z-Stat (P > |z|)**
LTD. to Capital	-0.007	-2.35** (0.02)	-0.011	-3.22*** (0.00)	0.008	2.14** (0.03)
Debt to Capital	0.001	1.18 (0.24)	0.002	1.59 (0.11)	-0.008	-3.94*** (0.00)
Ret. on Assets	-0.011	-1.37 (0.17)	-0.015	-1.40 (0.16)	-0.015	-0.92 (0.36)
Ln. Mtk. Cap.	0.901	21.67*** (0.00)	0.860	15.26*** (0.00)	1.017	13.49*** (0.00)
C1	0.134	3.83*** (0.00)	0.225	4.30*** (0.00)	0.103	2.13** (0.03)
C2	0.106	3.54*** (0.00)	0.111	2.94*** (0.00)	0.092	2.20** (0.03)
C3	0.042	2.07*** (0.00)	0.064	2.00** (0.045)	0.031	1.12 (0.26)
C4	-0.005	-1.43 (0.15)	-0.020	-3.03*** (0.00)	0.001	0.25 (0.80)
Year dummies	YES		YES		YES	
SIC dummies	YES		YES		YES	
Cutoff Points						
μ_1	4.070		3.913		3.505	
μ_2	5.532		5.500		5.119	
μ_3	7.226		6.991		7.333	
μ_4	9.262		9.362		9.211	
μ_5	11.254		11.060		12.289	
N	2786		1640		1146	
Pseudo R-squared	0.40		0.44		0.39	

* indicates statistical significance at the 10 percent level.
** indicates statistical significance at the 5 percent level.
*** indicates statistical significance at the 1 percent level.

To get a sense of how well a single, global model of rating assignment fits the actual observed ratings, I establish the probability predicted by the model of an observation being assigned each of the 6 possible rating categories. I label the rating that is assigned the highest probability by the model the "predicted" rating. The difference between the actual rating and this prediction is defined to be the rating residual. A value of 0 for the residual implies that the actual rating was predicted by the model, a value of -1 indicates that the actual rating was lower than the predicted rating by one rating category and a value of +1 indicates that the actual rating was higher than the prediction by one category.

The difference between actual and predicted ratings is plotted in Figure 2. In the figure, results are presented for both US and foreign firms. In both cases, almost 60% of assigned ratings are accurately predicted by the model. Surprisingly, the prediction rate for foreign firms is slightly higher than for US observations.

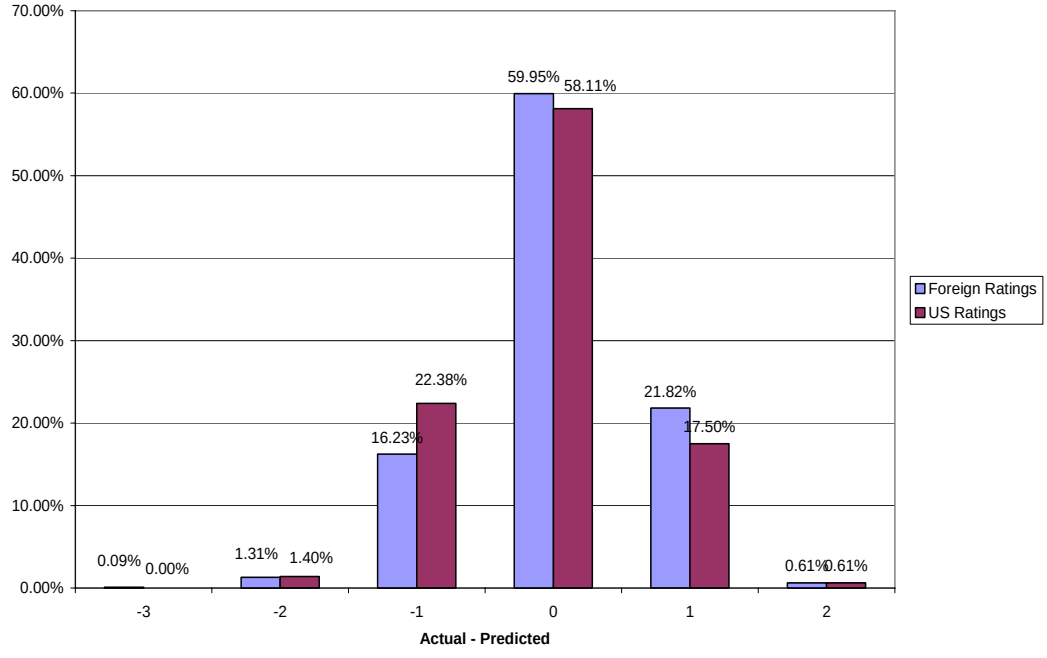

Figure 2. Actual-Predicted Ratings Assuming a Global Model of Rating Assignment.

Overall, rating residuals are similar across all observations regardless of country of origin. There is seldom more than a 5% difference in the proportion of foreign versus US observations with a particular rating residual. The most significant differences occur for rating residuals of +1 and – 1. While US firms tend to have slightly lower ratings than what the model would predict, foreign firms tend to have slightly higher ratings than predicted. Specifically, we note that actual US ratings are lower by one rating category approximately 22% of the time (versus 16% for foreign firms).

Some similarities for foreign and US ratings emerge from Columns 2 and 3 of Table 3. Instead of estimating the ordered probit model across all observations as in Column 1, in these columns the model is estimated independently for the sub-samples of US and foreign firms. Despite the use of different samples, some consistencies emerge. In all cases, market

capitalization and interest coverage are strongly positively related to ratings. In addition, there is never any evidence that return on assets contributes significantly to rating assignment. It is with respect to the treatment of leverage however that significant differences emerge for the samples. For both the entire sample and the sample of US firms, it appears that the long-term component of debt contributes more significantly to rating assignment than the total debt level. The results of these models suggest that as long-term debt increases, ratings fall whereas this same relationship is not apparent for total debt. The difference in treatment for the two leverage levels may be in line with Flannery's (1986) signaling theory that suggests that firms issue short-term debt as a signal that their credit quality is strong and their prospects bright. The rationale is that firms would lock into longer term debt to guarantee a current interest rate if they expected their performance to deteriorate in the future and therefore their cost of borrowing to increase. Using short-term debt may indicate that the firm is willing to go to the capital markets again in the near future, implying that they believe their future prospects to be secure. As a result, the short-term component of total debt may not be viewed negatively by investors whereas long-term debt may signal weaker financial performance.

Whatever the rationale for the differences in treatment of long-term and total debt ratios, formal tests confirm that the estimated coefficients on these two ratios cannot be distinguished across the full and US-only samples. In fact, of all the coefficients only the estimated value for the first component of interest coverage, c1, representing coverage in the 0 to 5 times range, has a statistically different value when estimated across models 1 and 2 in Table 3. In general, the model estimated using only US firms seems to closely approximate the model estimated across the full sample.

Moving to the third model of rating assignment that is based solely on foreign firms provides more dramatic results. Immediately apparent from this column is the differential relationship between firm leverage and rating assignment. Here, total debt to capital enters the equation significantly and negatively for the first time. Perhaps more surprising is the fact that the long-term debt to capital ratio has an estimated positive coefficient that is statistically significant. These results imply that firms with a larger proportion of long-term debt in their capital structure actually receive higher ratings although firms with a significant amount of total debt (both short and long-term) receive lower ratings. While counter-intuitive, the estimated long-term debt coefficient is consistent with our observations from Table 2 that foreign firms from the two best rating categories maintain significantly higher long-term debt ratios than their US counterparts. This may also be consistent with Figure 2 and the significant proportion of predicted foreign ratings that lie below the actual rating assigned. Apart from the leverage ratios however, formal tests cannot distinguish differences in the estimated coefficients for the other financial variables at statistically meaningful levels.

The results from Table 3 suggest that a single, global model of rating assignment does not provide an accurate description of the actual ratings assigned by Moody's. In particular, leverage seems to contribute to rating assignments differently for firms from different countries with either total debt or simply its long-term component being more meaningful depending on the firm's origin. In general, it appears that foreign firms are able to receive high ratings even while holding a larger proportion of long-term debt.

3. A Global Model with Country Indicators

As an additional examination of the extent to which cross-country ratings are assigned in a consistent fashion I estimate a single ordered probit model for the entire sample but allow country differences to enter the model through indicator variables. The results of this analysis are presented in Table 4 with the first column including a single "foreign" indicator that is equal to 1 for non-US firms and 0 for US firms. Of course, this does not allow for ratings in some countries to be assigned in a similar way as US ratings while permitting other countries to exhibit significant differences and so the second column expands the foreign indictor into 5 country-specific dummy variables.

Including the foreign and country indicators in Table 4 does not dramatically alter the relationships previously found between financial characteristics and rating assignment. Even with country indicators included, firm size, interest coverage and the proportion of long-term debt are significantly related to ratings (although the significance for the long-term debt component falls to the 10% level). What is interesting, however is that the foreign (or non-US) indicator variable enters the rating assignment model in a significantly positive way. The estimated positive coefficient implies that foreign firms are assigned better ratings than what their financial characteristics would suggest.

Column 2 of the table further explores the possibility for ratings for firms from certain countries to be systematically different than US ratings. In this column we see that three of the country indicators have significantly positive coefficient estimates. In particular, French, German, and Japanese firms all appear to receive better ratings than what their financial information would indicate. No significant discrepancies in rating assignments can be found for observations from Canada or the UK. Some possible reasons for these differences and their implications are discussed in the section below.

VI. Discussion and Implications

Broadly speaking, there are two possible explanations for the differences in cross-country rating assignments documented by the model. First, it is possible that there is some firm-specific characteristic that is not captured in the model that varies in a systematic way for firms from different countries. Second, there is the possibility that country-specific factors exist to cause rating agencies to view firms with similar financial data in a different light depending on their country of origin.

While modern financial theory largely assumes that the firm is a widely-held entity with numerous, small shareholders, applying this assumption to firms outside of the US does not necessarily provide an accurate picture of the true ownership structure of the firm (La Porta et al, 1999; Morck and Yeung, 2004). As a result, one possible firm-specific explanation for the differences in credit ratings is the extent to which the firm is widely or closely held. For the firms used here, the proportion of closely held shares varies considerably and systematically across countries. The UK, US, and Canada are clustered together at the low end of the spectrum with median proportions of closely held shares of 5.0, 0.1, and 0.0 percent respectively. At the other end of the spectrum lie Japan, France and Germany with median

proportions of closely held shares ranging from a high of 43% for France to 24% for Germany with Japan squarely in the middle at 31%.

Table 4. Modeling Rating Assignments with Country Indicators

	All Firms		All Firms	
	Coefficient	**Z-Stat (P > |z|)**	**Coefficient**	**Z-Stat (P > |z|)**
LTD. to Capital	-0.005	-1.66* (0.10)	-0.005	-1.63* (0.10)
Debt to Capital	-0.000	-0.00 (0.98)	-0.000	-0.05 (0.96)
Ret. on Assets	-0.003	-0.43 (0.67)	-0.004	-0.49 (0.63)
Ln. Mtk. Cap.	0.906	21.57*** (0.00)	0.901***	21.19*** (0.00)
C1	0.137	3.90*** (0.00)	0.142	4.04*** (0.00)
C2	0.112	3.64*** (0.00)	0.114	3.78*** (0.00)
C3	0.037	1.83* (0.07)	0.040	1.93** (0.05)
C4	-0.006	-1.80* (0.07)	-0.007	-1.89* (0.06)
Non-US	0.383	3.74*** (0.00)		
Canada			0.298	1.66* (0.10)
France			0.700	2.42** (0.02)
Germany			0.893	2.82** (0.01)
Japan			0.364	3.08** (0.00)
U.K.			0.242	1.04 (0.30)
Year dummies	YES		YES	
SIC dummies	YES		YES	
Cutoff Points				
μ_1	4.138		4.117	
μ_2	5.650		5.629	
μ_3	7.362		7.342	
μ_4	9.410		9.410	
μ_5	11.366		11.374	
N	2786		2786	
Pseudo R-squared	0.41		0.41	

* indicates statistical significance at the 10 percent level.
** indicates statistical significance at the 5 percent level.
*** indicates statistical significance at the 1 percent level.

Firms with a large proportion of closely held shares may be subject to different governance considerations than widely-held firms. Dyck and Zingales (2004) examine the extent to which a controlling shareholder can extract private benefits from a company for his or her own personal gain and whether these benefits differ systematically across countries. They find that the ability to extract private benefits declines with a country's level of tax compliance, its laws, and the diffusion of its media and press. The existence of large controlling shareholders who are able to extract benefits, perhaps to the detriment of bondholders, may vary with country characteristics and prove influential to Moody's cross-country assessments of risk.

In some countries, large blocks of shares may be held not only by company insiders but also by the creditors of the company. As Neave (1998) explains, German and Japanese banks frequently maintain close connections with their borrowers by maintaining a stock position in the firm. This permits banks to closely monitor the firm's operations and provides them with early indications of any signs of distress. Early identification of problems may allow lenders to renegotiate credit arrangements as needed, possibly impacting their recovery rates and therefore the expected loss if default occurs. As a result, the ownership structure of the firm, for instance whether it is closely or widely held and who its major blockholders are, may greatly influence Moody's evaluation of the risks posed by the firm.

The role of banks and the proportion of funds that firms obtain from capital markets versus financial intermediaries may point to a country-specific factor that alters the credit risk posed by a firm. In the case of the countries examined in this chapter, France, Germany and Japan are commonly said to maintain bank-based financial systems while Canada, the US, and UK maintain market-based systems. In market-based systems firms obtain a significantly smaller portion of their external funds from banks. Despite numerous studies on the merits of bank versus market systems, there is limited evidence that one type of system dominates the other (Beck and Levine, 2002; Demirgüç-Kunt and Maksimovic, 2002) which perhaps explains the persistence of these two financial systems today. What can be said however is that investors frequently use banking relationships as a signal of the firm's future prospects. James (1987) was the first to document that the willingness of a bank to supply funds to a firm is viewed by equity holders as a sign that information shared between the firm and its banker is positive. As a result, stock prices increase in response to the announcement of new banking relationships and decrease when relationships are terminated. Irvine and Rosenfeld (2000) and Fields et al (2006) elaborate on these findings by documenting that signals from banking relationships appear to be more meaningful for small firms or firms with poor credit quality. This is consistent with investors viewing the extensive monitoring that can be provided by a financial intermediary as being more valuable when public information about the firm is limited or credit risk significant. Applying these observations to credit rating agencies may imply that Moody's views the existence of close banking relationships to systematically lower the credit risk posed by firms.

A country's financial system is not the only institutional detail that may explain deviations in assessments of credit risk. It must be kept in mind that debt represents a legal contract and the success with which creditors are able to secure repayment depends in part on the strength of the laws protecting creditors and ultimately the efficiency of the courts with respect to bankruptcy proceedings. Work by Bae and Goyal (2006) has shown that these factors influence the interest rate at which debt can be issued while La Porta et al (1997) have demonstrated the relation between a country's legal origin and the development of its capital

markets. Countries that maintain a civil law orientation tend to offer less protection for the interests of minority investors. In comparison to common law countries, civil law nations have been shown to have less developed debt and equity markets. Since the sample used here is evenly split between common and civil law countries it is possible that legal orientation significantly impacts Moody's assessment of credit risk.

The quality of a country's information environment may also play a significant role in how rating agencies assign firm-level ratings. For the purposes of this chapter, I have assumed that the financial data provided for the sample firms is roughly equivalent. Net income for Canadian firms, for instance, has been taken to be comparable to the income figures for Japanese firms and likewise for other country comparisons. This financial information however is the result of a country's accounting standards and the extent to which conservative financial reporting guidelines are in place. Bhattacharya, Daouk, and Welker (2003) examine earnings quality across 34 countries and test whether there is a relation between the opacity of earnings and the return required by shareholders. After controlling for other possible influences, they find that an increase in earnings opacity is associated with a significant increase in the cost of equity capital and a reduction in the amount that shareholders trade. Clearly, Moody's may also be influenced by earnings quality and be inclined to alter its overall risk assessment if it has reason to question the reliability of the financial data used in forming this opinion.

Financial system, legal environment, and quality of financial information are only some of the country-wide factors that may influence a firm's rating assignment. While individual managers will be unable to alter their home-country's institutional infrastructure, they can take steps to overcome any shortcomings that their home environment may present. For instance, firms from countries with poor accounting standards may voluntarily choose to compile financial statements in accordance with International Accounting Standards. Similarly, firms from countries with inefficient bankruptcy proceedings or weak creditor protection may incorporate additional covenants into their borrowing arrangements to provide lenders with increased security, thereby reducing the cost at which they may be willing to provide funds. In general, managers need to be aware that country-wide factors can influence the lens through which rating agencies view their firm. Where these factors point to potential weaknesses, firm-level factors may be needed to compensate for these risks.

VII. CONCLUSION

US-based credit rating agencies have been aggressively pursuing international expansion plans. Ratings from these agencies are valued by investors, regulators and managers both in the US and abroad. The expansion of these agencies to new environments leads us to question the extent to which a single model of rating assignment is applied to firms around the globe. Using a database of ratings from six different countries, we have seen that firms with similar financial characteristics are not necessarily assigned similar ratings and that systematic differences, particularly with regards to the treatment of leverage, exist. Smaller discrepancies exist among ratings for US, Canadian and UK firms when compared to ratings from German, French and Japanese firms. It is perhaps no coincidence that firms from countries that share

common-law legal origins and market-based financial systems are treated similarly in Moody's assessments of credit risk.

It is reassuring that the international expansion of rating agencies has not resulted in the mere export of a "made in the USA" rating methodology. However, the consideration of individual countries' institutional environments forces rating agencies to deal with the challenge of finding a delicate balance between global consistency and meaningful assessment of country-specific factors. Fortunately, the rating agencies are not taking this challenge lightly. Moody's for one, has established a standing committee on Rating Consistency to address this issue. This committee and debt capital markets in general would benefit from additional research on the country-specific factors that influence credit risk. In particular, researchers need to examine how country factors may impact both domestic and international lenders especially in cases of financial distress. As the globalization of financial markets increases and the expansion of financial service firms continues, our understanding of how these firms operate in a multitude of different environments must continue to grow.

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Chapter 6

FORECASTING TOURISM DEMAND USING COMPUTATIONAL METHODS: A CHALLENGE FOR THE TOURISM INDUSTRY

Marcos Álvarez-Díaz and Jaume Rosselló-Nadal
Centre de Recerca Econòmica (UIB-Sa Nostra), Carretera Valldemossa km 7,5,
07122 Palma de Malorca, Spain

ABSTRACT

The rapid expansion of international tourism has motivated a growing interest in forecasting studies. The developments in tourism forecasting methodologies fall into several streams among which the computational methods seem to be capable of beating the traditional ones. This study reviews the principal applications in tourism demand forecasting of different techniques based on Computer Sciences and underlines inappropriate methodological procedures carried out in previous research. Furthermore, it also suggests potential lines of future research such as the use of new forecasting methods (Evolutionary Neural Networks and Data-Fusion) or the possible existence of chaotic dynamics in tourist time series.

1. INTRODUCTION

Given the perishable nature of tourism services, there exists an important need to obtain accurate forecasts of future business activity. Certainly, forecasting plays a crucial role in tourism planning both in the short and in the long run but, from a merely practical point of view, tourism industry is much more interested in getting good short-term predictions. Hotels, restaurants, supermarkets, ferry service firms, cruise ship lines as well as airline companies are only a few examples of business that require accurate short-term predictions to avoid shortages or surpluses in the provision of goods and services. In general, managers need

accurate predictions to reduce the strong uncertainty inherent to the tourist activity and, therefore, improve the entrepreneurial decision making process.

Identifying an optimal forecasting model has received considerable interest in the specialized literature on tourism demand (Witt and Witt, 1995; Lim, 1997; Li et al., 2005). Since the beginning of the sixties and until the middle of the nineties, tourism demand models were based on single equation models that were estimated frequently by ordinary least squares. Nevertheless, the problems of traditional tourism demand modelling and forecasting, i.e., spurious regression, were not analyzed widely since the end of the nineties. Since then, log-linear regression is still the predominant functional form in the context of tourism demand, while cointegration analysis and error correction models have been generalized (Li et al. 2005). However, Kulendran and Witt (2001) evidenced that the forecasts produced using these recent methodological developments, although they were more accurate than those generated by least squares regression, they could not overcome, in general, to univariate time series models.

Whatever the context, univariate or multivariate analysis, tourism forecasters had usually presupposed a parametric and linear modelling perspective. Therefore, they assumed a linear functional form with a series of parameters to be estimated using some traditional optimization method. This modelling procedure could be justified because, first, it reduces the analytical complexity and, second, facilitates the estimation of parameters, the statistical inference and the hypothesis testing. However, nowadays, a linear perspective can be considered an extremely restrictive assumption. The inclusion of methodological improvements into the linear analysis, such the Time-varying parameter model (Li at al. 2005), can be a solution in the context of multivariate modelling. Nonetheless, one should not forget that all these empirical results rely on the strict assumption of linearity; therefore, they must not be considered definitive or conclusive due to the possible existence of non-linear structures. In fact, different non-linear and parametric methods were developed in time series forecasting such as the bilinear model (Granger and Anderson, 1978) and the threshold autoregressive model (Tong, 1978) but, to the best knowledge of the authors, these models were never employed in tourism forecasting. Nevertheless, the results obtained in other fields show that the inclusion of nonlinearities into the parametric models does not suppose a clear forecasting improvement (Meese and Rose, 1991). This is because of the functional form of these models is discretionally imposed by the researcher rather than observed in the data, leading to a possible predictive loss. There are too many possible nonlinear patterns and specifying previously a rigid nonlinear model may not be general enough to represent adequately the data. Thus, it seems to be more suitable to consider a perspective which does not assume any a-priori and discretional hypothesis on the functional form of the model and, therefore, allows obtaining models in which "*data speak for themselves*". This modelling approach, called non-parametric or data-driven, allows discovering and exploiting possible hidden nonlinear patterns. In consequence, the forecasting accuracy could be greatly improved.

During the last years, new advances carried out in Computer Science allowed developing, improving and applying sophisticated non-parametric techniques for the solution of engineering problems, and the estimation and prediction of different natural, financial and economic phenomena. Relatively recently, forecasters have incorporated all these techniques into their toolbox to analyze and predict tourism demand. Artificial Neural Networks underwent an intense and popularized use. At a first glance, the results obtained in the

published literature seem to indicate that they can be a very useful technique to predict tourism demand (Pattie and Snyder, 1996; Law and Au, 1999; Uysal and El Roubi, 1999; Laww, 2000; Burger et al. 2001; Cho, 2003; Palmer et al. 2006). Indeed, general results show that neural network forecasts outperform traditional forecasting methods such as multiple regression, moving average, ARIMA and exponential smoothing, among many other methods.

In spite of the predominant use of neural networks, currently other novel methods based on computer science are strongly emerging. In this way, Wang (2003) supports the use of grey theory and fuzzy logic to predict the arrivals to Taiwan from Hong Kong, United States and Germany. In contrast, Yu and Schwartz (2006) attempted to predict annual tourist arrivals to U.S. using these two techniques and they concluded that none of them could systematically outperform simpler and conventional methods. Fernando (2005) utilized neuro-fuzzy logic models, among other methods, to predict the tourism demand to Japan. He concluded that neuro-fuzzy models can be effectively employed in tourism forecasting. Pai et al. (2006) examined the feasibility of a support vector machine to predict tourist arrivals to Barbados. Empirical results revealed that the proposed technique outperformed traditional methods like ARIMA. Chen and Wang (2007) also applied a support vector machine to predict the number of travellers to China. They compared the results with those obtained with ARIMA and a back-propagation neural network and they proved the predictive ability of the proposed method. Finally, Álvarez-Díaz et al. (2007) made use of a genetic program to predict the tourist arrivals to Balearic Islands from Germany and Great Britain obtaining some predictive gain in comparison with ARIMA.

In order to revise and evaluate the underpinnings of these new methodologies, the rest of the chapter is organized as follows. Section 2 describes the fundamentals of the artificial neural networks and genetic programming methodologies. Section 3 focuses on some key issues in applying and evaluating new methodologies that have not been introduced vastly enough in the context of tourism forecasting but are common in other fields. Section 4 presents three different alternatives for future research that could probably be of interest in the tourism forecasting literature during the next years. Finally, Section 5 concludes.

2. COMPUTATIONAL FORECASTING METHODS

2.1. Artificial Neural Networks

Artificial neural network is a modelling technique inspired by the findings of studies on how the brain and the nervous system work. It has been widely employed in numerous fields such as medicine (breast cancer cells analysis), national defense and security (bomb detection in airports and signal/image recognition), entertainment (animation and special effects), robotics (artificial intelligence), banking (credit application evaluation), among many other. The use of networks in economics and finance for forecasting and modelling purposes is noteworthy. The literature on this topic distinguishes among different types of neural networks (Gately, 1996), although the feed-forward multi-layer network with a learning algorithm based on the back-propagation technique (Rumelhart et al., 1986) is certainly the most popular network employed in economics, finance (Trippi and Turban, 1996) and tourism

forecasting (Law, 2000; Burger et al., 2001; Cho, 2003; Palmer et al., 2006). Other types of networks such as radial-basis function networks, recurrent neural networks or wavelets are also very useful, but much less used than the feed-forward neural networks.

The main advantage offered by neural networks is the great capability to detect and exploit any non-linearity that might exist in the data, even under conditions of incomplete data or where the presence of noise is important. Specifically, a neural network is considered a universal functional approximator. It has been demonstrated that a neural network correctly designed can approximate any continuous function to any desired level of accuracy (Cybenko, 1989). In this manner, the technique is more suitable than traditional methods to model and predict phenomena characterized by a complex behavior. The great majority of empirical applications in forecasting tourism data have showed that neural networks scored as good as, or significantly better than, the classical methods considering different data periodicity (Pattie and Snyder, 1996). Nevertheless, the method is not exempt of some important drawbacks. First of all, there is no economic theory behind an artificial neural network. Many times, this method is criticized because it is considered a black-box without any economic foundation. Second, it is difficult to analyze the impact of the explanatory variables on the dependent variable and, moreover, it is difficult to perform traditional statistical inference to construct confidence intervals or check the statistical significance of the predictions. Third, the design of a neural network is a tedious and time-consuming procedure in that the user must specify a correct architecture. Usually, the construction of a neural network is considered an art more than a science. Fourth, the results can strongly vary depending on the determination of some technical parameters. Finally, and more important, the great power of the neural networks to replicate data can be also a serious disadvantage. There is a risk that the network merely mimic data and it cannot generalize new observations. The model fits irrelevant characteristic existing in the data rather than fitting the underlying function which links inputs and outputs loosing, in this way, its capacity to predict accurately untouched observations (overfitting problem). Next, a brief review of the method is provided. For a more detailed technical explanation, the reader is referred to the books written by Bishop (1995) and Smith (1995). And for empirical applications, it is recommended the read of Trippi and Turban (1996) and Refenes (1995).

A neural network is composed by an input layer, an output layer and one or more hidden layers. Each layer has a group of process units called neurons or nodes. These nodes are connected to nodes at adjacent layer. The connections, called synapses, are weighted by a series of coefficients. The goal will be to find the values of these weights that minimize the forecast errors. Figure 1 illustrates graphically a simplified structure of a neural network with three layers, *J* input variables, *H* hidden neurons and one output variable.

The statistical formulation of a feed-forward network can be expressed as

$$\hat{y}_t = \Phi\left(\beta_0 + \sum_{h=1}^{H} \beta_h \cdot \Psi_h\left(\alpha_0 + \sum_{j=1}^{J} \alpha_{hj} \cdot x_j\right)\right)$$

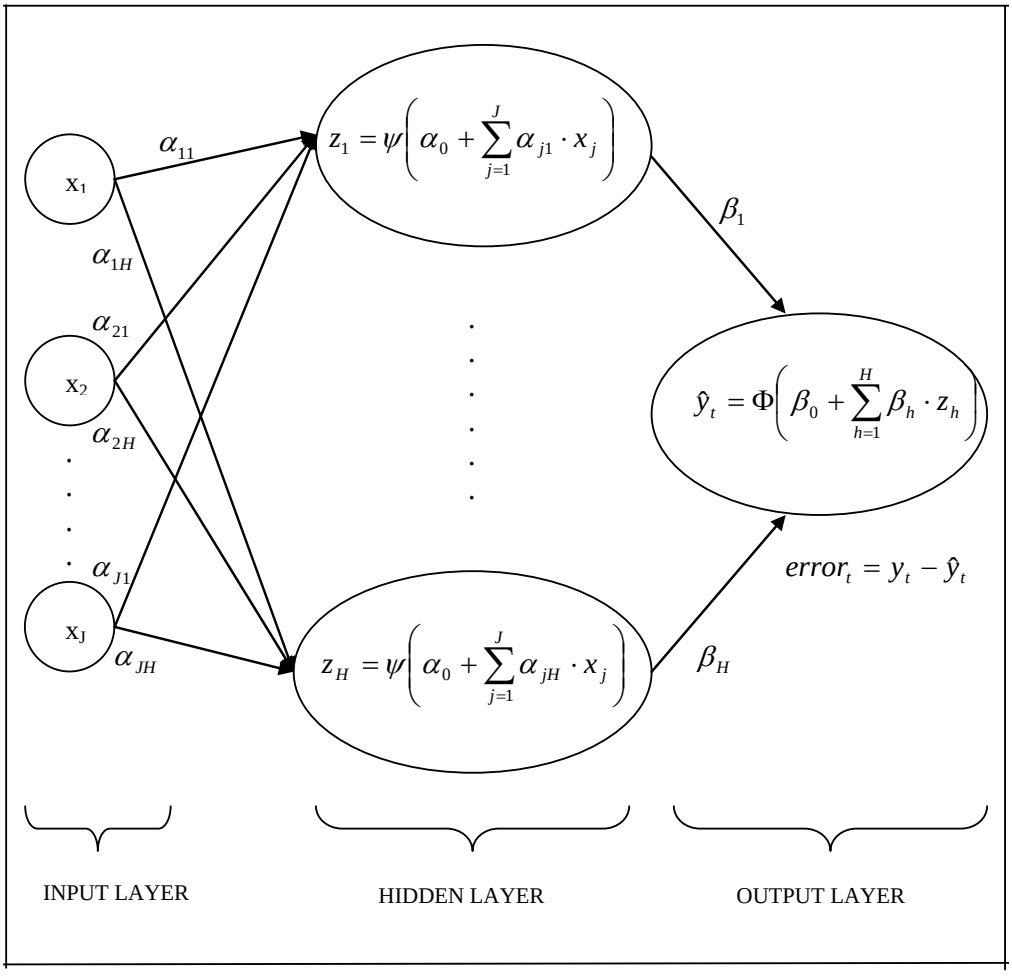

Figure 1. Graphical neural network architecture.

where $\hat{y}_t$ is the output of the model, and the functions $\Psi(\cdot)$ and $\Phi(\cdot)$ are denoted as transfer functions of the hidden and output levels, respectively. The network has *J* inputs (explanatory variables or delays of the dependent variable), *H* process units (neurons) in the hidden level and one output. Initially, the weights α_{jh} and β_h are randomly determined and have values within a given range. By means of an iterative learning process, based on the back-propagation technique, the values of these weights are modified such that the difference between the real value and the estimated value (i.e., the output of the neural network) is minimal. Several theoretical studies done on this sort of network, with just one hidden level and a high enough number of units, have demonstrated that it can approximate any non-linear function with a certain degree of accuracy (Cybenko, 1989; White, 1990).

In addition to the complexity of the data, the success of the prediction of a neural network depends, to a great extent, on the correct determination of its architecture. It is therefore necessary to accurately specify the number of inputs (*J*) and the number of process units in the hidden level (*H*), as well as to select the right structure of the transfer functions, ($\Psi(\cdot)$ and $\Phi(\cdot)$). An excessive number of *H*, for example, might create overfitting problems, thus

eliminating any generalization. On the other hand, with an insufficient number of process units, the network could lose its forecasting capability because it would not fully exploit the non-linearity in the data. In the literature, one can find different rules for defining how many inputs and process units there must be in the hidden unit, but none of them is perfect nor have any of them ever been adopted as a general rule (Yao, Tan and Poh, 1999). A frequent recommendation is to determine *J* and *H* through a process of *trial-and-error*. Therefore, following this recommendation, it is necessary to consider different architectures and choose that which produces the least errors in a sub-set dedicated exclusively to this purpose, (i.e., the *selection set*).

With regard to the transfer functions $\Psi(\cdot)$ and $\Phi(\cdot)$, only a small number of "well-behaved" (bounded, monotonically increasing and differentiable) functions are used in practice (Zhang et al., 1998). The most common are

1. The logistic function
   $f(x) = (1 + \exp(-x))^{-1}$;
2. The hyperbolic tangent function
   $f(x) = \dfrac{(\exp(x) - \exp(-x))}{(\exp(x) + \exp(-x))}$
3. The sine or cosine function
   $f(x) = \sin(x)$ or $f(x) = \cos(x)$
4. The linear function
   $f(x) = x$

Usually a non-linear structure is defined in the hidden level ($\Psi(\cdot)$) and, among them, the hyperbolic tangent function is one of the most frequently employed. On the other hand, a linear function is habitually considered in the output level ($\Phi(\cdot)$) (Qui, 1999). Indeed, this functional structure is the one that is most commonly employed in forecasting time series (Chapman, 1994).

Besides determining the number of inputs, hidden neurons and the form of the transform functions, an additional problem to be solved is that of the excessive variability in the results when considering different initial weights for the values of α_{jh} and β_h (Racine, 2000). The solution proposed in the specialized literature is to run the networks considering different weights and choose that architecture which optimises the fit criterion in the selection sub-sample (Hu et al, 1999).

2.2. Genetic Programming

Genetic Algorithms, originally developed by Holland (1975) and later spread by Goldberg (1989) and Mitchell (2001), enclose a whole series of computing procedures inspired in biological concepts based on the Theory of Evolution of Species*:* survival of the fittest individuals, reproduction, and birth of offspring with a good genetic heritage. The basic characteristic of these procedures is to use some evolutionary rules observed in Nature as

inspiration for solving certain mathematical optimization process. Specifically, from the evolution of a random set of possible solutions and by means of applying operators based on natural selection concepts, these methods allow finding a good approximation to the solution of different optimization problems, including modelling issues.

In the specialized literature there is not a definition of genetic algorithms commonly accepted which allows distinguishing them from other computational evolutionary methods. However, there exist many programs considered as genetic algorithms which present the following common elements: initial population of possible solutions to the problem, selection process using some fit criterion, and use of crossover and random mutation to generate new solutions (Mitchell, 2001). Different variations of genetic algorithms have been applied to a large number of scientific and engineering problems, but they are practically unknown in tourism forecasting. Specifically, Chen and Wang (2007) used genetic algorithms as a tool to optimize the parameters of their vector support regression.

A kind of genetic algorithm called genetic programming (Koza, 1992; Álvarez et al., 2001) presents the possibility of predicting directly tourism data and, moreover, provides multiple advantages regarding to other forecasting techniques used in tourism forecasting. Firstly, it does not have any initial restriction on the functional form underlying in the data. Secondly, it is more robust and easy-to-use than other non-parametric methods like neural networks and, finally, it provides explicitly a mathematical equation which allows a simple *ad hoc* interpretation of the results. As opposed to these advantages, the technique usually has the difficulty of being computationally intensive.

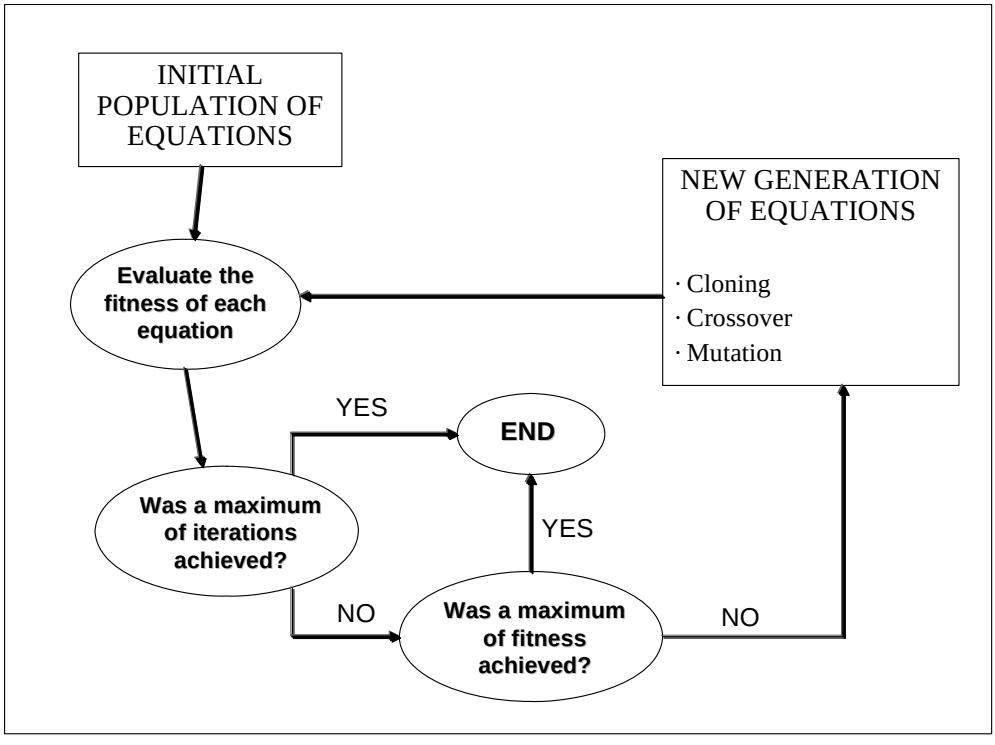

Figure 2. Genetic programming procedure.

The main goal of a genetic program is to find an optimal predictive model among a collection of multiple candidate equations. This searching process will be done replicating in a computer some basic evolutionary rules. Figure 2 shows the artificial evolutionary process, which can be explained by means of a series of simple stages. At a first stage, the genetic programming creates a random initial population of N mathematical equations susceptible of representing accurately the time series evolution. These mathematical equations are created by means of a random combination of operators and arguments in the following way:

$$S_j : \left((A \otimes B) \otimes (C \otimes D)\right) \quad \forall\, 1 \leq j \leq N$$

where A, B, C, and D are the arguments, the symbol $\otimes$ represents the mathematical operators and the subscript *j* refers to each one of the N equations belonging to the initial population. These arguments can be real numbers included in a certain interval (the equation coefficients) or independent variables (explanatory variables or delays of the dependent variable). Besides, the mathematical operators ($\otimes$) used will be sum (+), subtraction (-), multiplication (·) and division (/), being the latter 'protected' to prevent zero divisors. It is also possible to include other mathematical operators (such as logarithm or the trigonometric ones) but at the expense of increasing the complexity in the functional optimisation process. Moreover, previous studies on genetic programming have demonstrated that it is possible to describe complex dynamics with mathematical expressions that are built simply with these four arithmetical operators (Szpiro, 1997; Yadavalli et al., 1999; Álvarez et al., 2001).

At a second stage, after determining the initial population of candidates, the evolution process starts selecting those equations that fit best to the problem. For this purpose, the following cost function was adopted

$$SSE_j = \sum_{t=1}^{T} \left(A_t - \hat{A}_t\right)^2 \quad \forall \mathrm{j} = 1,..., \mathrm{N}$$

where SSE_j is the *Sum of the Square Errors* and represent the strength index obtained by the equation j-th ($\forall\, 1 \leq j \leq N$), A_t is the observed value, $\hat{A}_t$ is the predicted value and T is the total number of observations reserved to train the genetic program. Later on, all equations of the initial population are classified in decreasing order according to their value of SSE_j. Those equations whose value of SSE_j is very high are rejected, while those with a low value are more likely to survive, being the base for the next generation of equations.

The equations that survived after the selection process are used to create the equations of a new generation (i.e., reproduction process). In order to do that the so-called genetic operators will be applied: cloning, crossover and mutation. With the cloning operator, the fittest equations are replicated in the next generation. With the crossover operator pairs of equations with low values of SSE_j are selected and they exchange part of their arguments and of their mathematical operators. Finally, mutation means that any operator or argument is randomly replaced in a small number of equations. The first top ranked individuals are exempted from mutation, so that their information is not lost. Let us consider, for example, that the following equations belong to the initial population:

$$S_1 : (A + B) / C$$
$$S_2 : (D \cdot E) - G$$

where A, B, C, D, E and G are the equation arguments (coefficients and time series delays). Suppose that both expressions will survive the selection process and so they become the base equations for the next generation. The crossover operator means the random selection of a block of operators and arguments in each equation and their later exchange. For instance, let us suppose that the block (A+B) in expression S_1 and the argument G in expression S_2 have been selected. By means of an exchange of blocks two new equations appear as follows:

$$S_3 : G / C$$
$$S_4 : (D \cdot E) - (A + B)$$

As one can observe, the new equations inherit certain features from their parents. Now let us suppose that the expression S_1 is selected again and the mutation operator is applied. So, the following equation can be obtained from S_1:

$$S_5 : (A \cdot B) / C$$

where the mutation was the random alteration of a mathematical operator.

In short, the new population created from the initial population of equations is composed of cloned equations (such as S_2), mutated expressions (such as S_5), or crossed (such as S_3 and S_4). From this moment, the process will repeat the selection and reproduction stages in an iterative way. After a given number of generations determined by the user or a maximum fitness is achieved, the iteration procedure ceases and an optimal mapping $\hat{A}_t = F(\cdot)$ is provided by the strongest mathematical equation in the final population.

3. SOME METHODOLOGICAL RECOMMENDATIONS

3.1. Evaluating the Predictive Accuracy

Different accuracy measures are available for tourism demand forecasting evaluation. The predominant measure in the majority of the studies is the mean absolute percentage error (MAPE), which is calculated from the expression

$$MAPE = \frac{100}{T} \cdot \sum \left| \frac{A_t - \hat{A}_t}{A_t} \right|$$

This fit criterion represents the absolute error as a percentage of the actual arrival number. Witt and Witt (1992) suggest that this criterion is the most appropriate error measure for evaluating the forecasting performance of tourism models because it does not depend on the magnitudes of the forecast variables. This characteristic allows tourism forecasters to compare forecasting accuracy not only between different models but also across countries (Song and Witt, 2000). In spite of this advantage, other statistical metrics commonly employed in other disciplines should be also taken into account in tourism forecasting. The normalized mean square error defined by the expression

$$NMSE = \frac{\sum \left[A_t - \hat{A}_t\right]^2}{\sum \left[A_t - mean(A_t)\right]^2}$$

is widely employed in engineering and finance. It has been recommended in the general literature on forecasting (Casdagli, 1989) and, moreover, it was used to evaluate entries into the Santa Fe Time Series Competition (Weigend and Gershenfeld, 1992). The generalized use in other disciplines contrasts with the scarce consideration in tourism forecasting. To the best knowledge of the authors, only the study carried out by Chen and Wang (2007) applied the NMSE in a tourism context. The criterion, only suitable for stationary time series, compares the errors of the proposed forecasting method and the errors obtained by considering the sample mean as naive predictor. Therefore, a NMSE value lower than/equal/higher than one would imply a forecasting ability better than/equal to/worse than the mean as predictor.

Another performance measure broadly used in finance is the U-Theil statistics. This fit criterion is especially appropriate for time series that show a tendency. It compares directly the prediction performance of the proposed method with the no-change model. Therefore, the U-Theil can be expressed as

$$U - Theil = \frac{\sqrt{\sum_{t=1}^{T} (A_t - \hat{A}_t)^2}}{\sqrt{\sum_{t=1}^{T} (A_t - A_{t-i})^2}} \qquad \forall \mathrm{j} = 1,..., \mathrm{N}; \mathrm{i} = 1,4 \text{ and } 12$$

where i can take values 1, 4 or 12 depending on the periodicity of the data (i=1 for annual data, 4 for quarterly data and 12 for monthly data).

Finally, a key issue scarcely treated in the tourism literature is to forecast the direction change in tourism demand. Certainly, only few studies analyzed the possibility of predicting downturns or upturns (Witt and Witt, 1991; Rosselló-Nadal (2001); Witt, Song and Louvieris, 2003). However, as Witt et al. (2003) pointed out, it may be even more important to predict correctly the direction of the changes rather than to know the exact value of tourist arrivals. The smallest forecast errors can lead to heavy financial losses for the tourism industry if the direction of the forecast is mistaken. Managers need to have all information available to improve their decision making process. Therefore, further investigation is required to cover

this unfilled topic in tourism forecasting. The considered fit criterion in this kind of studies must be the success ratio defined by the expression

$$SR = \frac{\sum_{t=1}^{T} \theta\left[A_t \cdot \hat{A}_t > 0\right]}{T} \times 100$$

where *SR* is the ratio of correctly predicted signs (Success Ratio) and $\theta(\cdot)$ is the Heaviside function ($\theta(\cdot) = 1$ if $A_t \cdot \hat{A}_t > 0$ and $\theta(\cdot) = 0$ if $A_t \cdot \hat{A}_t < 0$). Therefore, this criterion gives us the percentage of correct predictions in direction changes.

3.2. Analysing the Statistical Significance of the Predictions

To evaluate the forecasts on an apparently objective basis, tourism researchers usually utilize the scale developed by Lewis (1982) for the MAPE accuracy measure. In this way, if the MAPE presented a value greater than 50%, the prediction would be inaccurate; in the range 10-20% would be consider good. Finally, if it showed a percentage less than 10% it would be judged as highly accurate. This procedure to evaluate the accuracy of a predictive method does not have any statistical foundation and, definitively, it does not seem too rigorous.

Unfortunately, the majority of empirical applications on tourism forecasting do not provide any test to support the statistical significance of the predictions. This deficiency supposes an important drawback which must be resolved in future forecasting studies. As Li, Song and Witt (2005) indicated, formal statistical tests need to be applied to examine if the difference in the accuracy of competing forecasts is statistically significant. Different test can be imported from Finance and applied to tourism forecasting such as that designed by Diebold and Mariano (1995) or Pesaran and Timmermann (1992). Next, a brief description of these statistical tests is provided, a simple encompassing test is described and a technique to construct empirical confidence intervals using the surrogate-data method is explained.

The Diebold-Mariano test (D-M test) allows researcher to verify if the predictive values of two competing forecasting methods are statistically different. Typically, one of the methods is a benchmark such as considering the mean or the no-change model as predictors. Therefore, the test becomes a perfect complement to verify if the NMSE or the U-Theil are statistically different from one, value which is obtained if the forecasting ability of the proposed method is equal to the benchmark model. Formally, let $\hat{A}_t^{Method}$ and $\hat{A}_t^{benchmark}$ be the predicted value using the proposed forecasting method and the benchmark model, respectively. Let $error_t^{Method} = A_t - \hat{A}_t^{Method}$ and $error_t^{benchmark} = A_t - \hat{A}_t^{benchmark}$ be their associated forecasting errors, and $d_t = (error_t^{Method})^2 - (error_t^{benchmark})^2$ the quadratic loss differential. These authors show that, under the null hypothesis of equal forecasts ability between methods $\left(H_0 : E(d_{t+1}) = 0 \text{ or } \mathrm{E}\left[(\mathrm{error}_{t+1}^{\mathrm{Method}})^2\right] = \mathrm{E}\left[(\mathrm{error}_{t+1}^{\mathrm{benchmark}})^2\right]\right)$, the following statistic follows asymptotically a standard normal distribution

$$D-M \text{ Test} = \frac{\bar{d}}{\sqrt{\frac{2\pi \hat{f}_d(0)}{H}}}$$

where T is the sample size, $\hat{f}_d(0)$ is a consistent estimate of the spectral density of the loss differential at frequency zero corrected for serial correlation and

$$\bar{d} = \frac{\sum\left[(error_t^{Method})^2 - (error_t^{benchmark})^2\right]}{T}$$

is the sample mean loss differential. A positive and statistically significant D-M test would imply to reject the null hypothesis and, in consequence, we could assert that the proposed forecasting method provides statistically better predictions that the benchmark model.

Another approach to verify the statistical significance in point prediction is to consider an encompassing test. The idea is simple, easy to implement, applied in many financial forecasting studies (Donaldson and Kamstra, 1996; Darrat and Zhong, 2000; Álvarez-Díaz and Álvarez, 2005) and, in certain sense, already used in tourism forecasting to check the forecasting unbiasedness (Witt et al., 2003). The procedure can be explained as follows. The forecasting errors obtained using a benchmark model are regressed against the forecasts of the proposed method

$$error_t^{benchmark} = \beta \cdot \hat{A}_t^{Method} + \varepsilon_t$$

If the estimated coefficient $\hat{\beta}$ is statistically different from zero, it can be stated that the proposed forecasting method outperforms the benchmark predictor and, consequently, the test would provide evidence of the statistical significance of the predictions obtained using the proposed forecasting method.

In the case of directional accuracy, the Pesaran and Timmermann test (P-T test) verifies if the percentage of successes obtained by the proposed method differs significantly from those that would have been achieved if the real values (A_t) and the predicted values ($\hat{A}_t$) were independent. In other words, this test checks if the percentage of correct signs obtained by the forecasting method differs significantly from 50%. This percentage is the expected success ratio if the benchmark method was simply based on throwing a coin to decide if the tourism demand is going to go up or go down. To understand how the test works, let us consider $\hat{P}_{\hat{A}} = \Pr(\hat{A} > 0)$, $P_A = \Pr(A > 0)$ and SR the success ratio previously defined in expression. The P-T test adopts the following expression

$$P-T \text{ Test} = \frac{SR - SR^*}{\sqrt{\hat{V}(SR) - \hat{V}(SR^*)}}$$

where SR^* is the ex-ante probability of correct sign prediction in the case that A_t and $\hat{A}_t$ were independent, $\hat{V}(SR)$ and $\hat{V}(SR^*)$ are the estimated variance for SR and SR^*, respectively. Formally,

$$SR^* = \Pr\left(A_t \cdot \hat{A}_t > 0\right) = P_A \cdot P_{\hat{A}} + (1 - P_A) \cdot (1 - P_{\hat{A}})$$

$$\hat{V}(SR) = \frac{SR^* \cdot \left(1 - SR^*\right)}{T}$$

and

$$\hat{V}\left(SR^*\right) = \frac{1}{T^2} \cdot \left\{ \begin{array}{l} T \cdot \left(2 \cdot \hat{P}_A - 1\right)^2 \cdot \hat{P}_{\hat{A}} \cdot \left(1 - \hat{P}_{\hat{A}}\right)^2 + T \cdot \left(2 \cdot \hat{P}_{\hat{A}} - 1\right)^2 \cdot \hat{P}_A \cdot \left(1 - \hat{P}_A\right) + \\ + 4 \cdot \hat{P}_A \cdot \hat{P}_{\hat{A}} \cdot (1 - \hat{P}_A) \cdot \left(1 - \hat{P}_{\hat{A}}\right) \end{array} \right\}$$

Under the null hypothesis of independence, Pesaran and Timmermann showed that the P-T test is asymptotically distributed as a standard normal. Therefore, a significant value of the P-T test would indicate the existence of statistical arguments for rejecting the hypothesis of independence between the real values and the predicted values. The success ratio achieved by the proposed method would be statistically different from 50%.

Finally, an alternative technique to verify the statistical significance of a predictive exercise is to employ the surrogate-data method (Theiler et al., 1992). Actually, it has become a very useful analytical tool for many scientific fields such as physiology and geophysics but, however, it was scarcely ever applied in economic analysis and never used in tourism forecasting. To clarify the exposition and explore the potential application of the surrogate-data method in the specific case of tourism forecasting, consider $\{A_t\}_{t=1}^T$ to be a tourist arrival time series. Suppose that this time series is filtered using some linear forecasting technique, for example, the autoregressive which best suits the data according to some fit criterion

$$A_t = b_0 + b_1 \cdot A_{t-1} + b_2 \cdot A_{t-2} + ... + b_m \cdot A_{t-m} + e_t$$

where *m* is the optimal number of delays and $\{e_t\}_{t=1}^T$ are the residuals of the specification, also called forecast errors. If the linear model was well-specified, the errors should be considered an independent and identically distributed random variable (i.i.d., in short), without any deterministic structure and, consequently, unpredictable. Therefore, the following null hypothesis can be defined

$H_0 : e_t$ *is an unpredictable time series*

To check if the null hypothesis is true, some non-linear forecasting method such as neural network or genetic programming is applied to predict the dynamic evolution of the errors, and the corresponding fit criteria (NMSE, MAPE or SR) are calculated. The next step is to

generate artificially 1.000 time series shuffling randomly the forecast errors $\{e_t\}_{t=1}^{T}$. By scrambling the data, any possible deterministic structure should be destroyed but without modifying the distributional properties of the original series. In other words, the scrambled series would become like an i.i.d. series even thought the original series was not. Later on, the considered non-linear forecasting method is also employed to predict each one of these artificial and random series obtaining, in this way, a sequence of 1.000 values of the accuracy measure. If there were no predictable structures, the accuracy measure obtained in the original series should not be statistically different than those reached by the shuffled series. Using these 1.000 values, a confidence interval with a specific significant level, usually at the 95 percent, can be built. Any value of the fit criterion inside this empirical interval would be considered as the result of the application of a forecasting method on a random and unpredictable time series. Consequently, if the criterion of the original series of errors is outside, it would be statistically proved the superiority forecasting ability of the non-linear technique regarding to the linear method and, moreover, the existence of predictable structures in an apparently random time series would be confirmed.

3.3. Avoiding Overfitting Problems: Training, Validation and Out-of-Sample Sets

A serious methodological warning must be sent to tourism researchers interested in using computational forecasting methods and, specifically, neural networks. This method is characterized to be an extremely powerful mechanism to approximate any complex dynamics (Cybenko, 1989). Moreover, as Marquez et al. (1990) pointed out, neural networks are more advantageous regarding to other methods when working with low sample sizes and high level of noise. Certainly, these all advantages seem to be desirable for a forecasting method; however, they could be hiding an important methodological failure.

In tourism forecasting applications, the total available data are usually divided into a training set (in-sample data) and a test set (out-of-sample or hold-out sample). In theory, the training set is used for the construction of the neural network while the test set is used for measuring the predictive ability of the method. Nevertheless, researchers can be tempted to try different neural network structures in the training set and select that with the highest accuracy in the test set. The result would be a neural network with a strong predictive ability in the test set but, however, it would not capable of generalizing and performing well with new data. The neural network would suffer from an overfitting problem and the forecasting utility would be practically null.

To avoid overfitting problems and develop a useful and fair predictive exercise, the forecaster must follow the technical and practical recommendation proposed in the literature on Computer Science (Bishop, 1995), Finance (Álvarez-Díaz and Álvarez, 2005) and, more recently, tourism forecasting (Palmer et al., 2006). These studies advise to divide the sample period into three sub-samples. The first one, called training set, is reserved to train distinct architectures of neural networks. Each neural network will have different number of inputs, hidden layers, hidden nodes or values of certain technical parameters (i.e. learning rate and momentum factor). The next sub-sample, the selection period, is employed to look for and select that architecture which obtains the highest accuracy according to some fit criterion. Finally, the predictive validity of the selected network is checked using data which were not

employed in the modelling process. These new and untouched data conform the out-of-sample set and the value of the accuracy measure obtained in this sub-sample must be the only valid to check the predictive power of the network and to make predictive comparisons with other methods. Moreover, it will be necessary that the considered fitting criterion shows a similar and relatively high value in the training, selection and out-of-sample sets. If this condition was verified, it would be proved the ability of the network to generalize new observations and, therefore, the no-existence of overfitting problems.

3.4. Working on Levels or Taking Differences?

Usually tourism forecasters assume the seasonal differences of a tourist time series logarithm as variable of interest instead of considering the original data. Therefore, given a tourist time series A_t, the variable under study is

$$d_t = \log(A_t) - \log(A_{t-i})$$

where d_t is the differenced time series and *i* taking the value 1 if the periodicity of the data is annual, 4 if is quarterly and 12 if monthly. Logarithm transformation is helpful to rectify the asymmetry in the distribution data. On the other hand and more important, taking differences allows deleting both the linear trend as well as the seasonal components in the analyzed time series. Two reasons have been argued in favour of this basic and apparently innocuous transformation. Firstly, we obtain a time series with good statistical properties; specifically, we get a stationary time series which is a necessary requirement to apply some statistical techniques like ARIMA. Secondly, it is an extremely interesting variable for forecasters because it can be considered as growth rates. A general debate has emerged about the need of differencing the time series to be forecasted. Actually, one could think that working on differences or levels should not dramatically change the results. However, taking differences can increase the existing noise in the time series by destroying some predictable signal (Broomhead and King, 1986). Therefore, a methodological question arises in tourism forecasting, should forecasters work with the raw or with the transformed time series? Palmer et al. (2006) compared the results from working with raw and the transformed data and they verified that the best predictive result is obtained when the linear and seasonal components are previously eliminated. Therefore, it seems that working with differences allows researcher to get more accurate predictions. However, more research needs to be done to corroborate if this result can be generalized in tourism demand forecasting and, moreover, the statistical significance of the predictive gain must be also studied.

4. NEW LINES OF RESEARCH

4.1. Exploiting Synergic Predictive Effects Using Data-fusion

An interesting aspect that has been scarcely considered in the general forecasting literature is the possibility of exploiting the synergic effects that could exist among the different forecasting methods. This sort of analysis, known as composite forecasting or data-fusion, allows obtaining new predictions based exclusively on the combination of the forecasts obtained using different individual methods. Two basic reasons have been given for recommending the composite forecast method. First, each one of the various prediction methods proposed in the literature has its own peculiar advantages and they all reflect different sorts of information Combining forecasts should take advantage of each one and, therefore, improve the predictive accuracy. Furthermore, it should reduce the existence of any biases that might arise from the use of just one prediction method.

In tourism forecasting there are not many studies that fuse individual forecasts. Fritz et al. (1984) were the first in introducing data-fusion in tourism analysis. They concluded that combining forecasts could improve the accuracy of forecasting airline visitors to the state of Florida. However, this result is under suspect due to the presence of some econometric mistakes. Much more recently, Wong et al. (2007) examined whether data-fusion could improve the accuracy of predicting tourist arrivals to Hong Kong from different regions. The empirical results showed that the forecasts combinations do not always outperform the best single forecast. They checked that results could vary across origin countries and the different techniques used to combine. Certainly, it is crucial in this kind of analysis to find an optimal method to combine predictions. To be more specific, the goal of a data-fusion exercise is to discover a mathematical expression

$$\hat{A}_t = \gamma\left(\hat{A}_t^{Method1}, \hat{A}_t^{Method2}, ..., \hat{A}_t^{Methodm}\right)$$

which provides an optimal combination given a specific accuracy measure (i.e. NMSE). The already mentioned studies realized by Fritz et al. (1984) and Wong et al. (2007) employed a simple linear combination scheme

$$\hat{A}_t = \sum_{i=1}^{m} w_i \cdot \hat{A}_t^{Methodi}$$

where w_i are the weights assigned to each individual prediction. The weights can be established using different techniques such as taking the simple average, using the variance-covariance method or the discounted mean square forecast error method (Wong et al., 2007). However, assuming a linear perspective does not seem appropriate because it ignores the possible existence of non-linear relationships among individual predictions. Therefore, it is necessary to consider non-linear methods such as neural networks or genetic programming to carry out the combinations and test if a predictive gain is achieved.

4.2. Hybrid Methods: Evolutionary Neural Networks

Many new forecasting techniques have not yet been applied in tourism forecasting. As Cho (2003) already mentioned, more research will be focused to use sophisticated forecasting techniques using the latest technology. Therefore, it is possible that the application of these forecasting tools would be able to allow even more accurate predictions. In this regard, an open research line of research is focused on the so-called hybrid methods. These methods are built from the combination of two or more forecasting techniques. As Fernando (2005) highlighted, hybrid combinations among different forecasting methods have immense potential not only in tourism forecasting but also in other many fields of research. The author merged an artificial neural network and fuzzy logic to apply neuro-fuzzy models to predict tourist arrivals to Japan. He compared the neuro-fuzzy results with those obtained employing a neural network, error correction model, a basic structural model, ARIMA and naïve predictor. The comparison revealed that this hybrid method could be useful in tourism. Recently, forecasting approaches merging neural networks and evolutionary algorithms have received great interest in Computer Science. Combining learning and evolution generates systems, called evolutionary artificial neural networks, which show better effective and efficient adaptively to a dynamic environment (Yao, 1999). Álvarez-Díaz and Álvarez (2007) introduced the technique in finance and, given the good predictive results, an extension to tourism is expected in a near future.

4.3. Looking for Chaos in Tourism Time Series

The presence of chaos in a time series implies the existence of complex, abrupt and irregular deterministic dynamics. These dynamics look like random to the eye of the researcher and apparently, but only apparently, unpredictable. In general, researchers are extremely interested in discovering chaos because of two reasons. First, it is important to know more characteristics about the nature of the time series under analysis and include them in the theoretical models. And second and more important for practical proposes, chaos supposes the possibility of getting more accurate short-term predictions if appropriate forecasting methods are employed.

There has been in the last decades an explosion of papers searching for chaos in natural sciences (Elsner and Tsonis, 1992), economics (Apostolos, 1996) and financial time series (Frank and Stengos, 1988). However, the interest in tourism analysis has been practically null. The possibility of discovering and exploiting chaos in tourist data was proposed many times, but further research was not done. For example, Palmer et al. (2006) underline the ability of neural networks to exploit chaos and Burger et al. (2001) advocate the incorporation of chaos theory in tourism forecasting. However, no serious attempts were made to detect chaos in tourism research. Adrangi et al. (2001) investigated the possible existence of chaos in the demand for air-transport service. The authors found nonlinear structures in the analysed time series, but they did not discover conclusive evidences which supported chaos. However, these empirical results are under suspect because they employed a sample with only 249 observations. This sample size is too small to carry out a rigorous study to detect chaos. An accurate analysis would require an extremely high number of observations (Stengos, 1996).

Future research in tourism forecasting needs to treat in great depth the possible presence of chaos in tourist data. Different classical detection techniques such as the correlation dimension (Grasberger and Procaccia, 1983), the Lyapunov exponents (Eckman and Ruelle, 1992), the kolmogorov entropy (Grasberger and Procaccia, 1983) or the BDS test (Brock et al, 1987) must be applied. Searching chaos is still an unresolved matter that requires more attention and efforts by tourist forecasters.

5. CONCLUSION

The extraordinary growth of both the tourism industry and academic interest in tourism over the last decades has generated greatest interest in tourism demand modelling and forecasting. The tendency for researchers engaged in quantitative tourism modelling and forecasting to run many regression equations and try to choose the best model based on various parametric criteria has been widely criticised as failing to provide credible results. The aim of this chapter is to present the recent advances in new forecasting methods beyond the traditional econometric methodology within the context of tourism demand analysis using different techniques based on Computer Sciences.

Within this framework, artificial neural networks has been the most popularised alternative. The literature review reveals that they can be considered a very advantageous technique to predict tourism demand because general results show that neural network forecasts outperform traditional forecasting methods such as multiple regression, moving average, ARIMA or exponential smoothing. In spite of the main application of artificial neural networks, other new methods based on computer science like grey theory, fuzzy logic, neuro-fuzzy logic, support vector machine and genetic program are currently emerging. The overall results support the idea that computational techniques can be valuable tools to facilitate the managerial, operational and tactical decision making process.

Nevertheless, because tourism forecasters have recently incorporated all these techniques into their toolbox to analyze and predict tourism demand, some methodological practices, common in other disciplines, should be incorporated and generalized in their forecasting exercises. Then, first, although the MAPE has been the predominant measure in the majority of the studies and can be a good exploratory statistic, an additional effort in providing some tests to support the statistical significance of the predictions should be incorporated in future forecasting exercises. Second, using computational forecasting methods, the total available data should be divided into three sets (training, selection and out-of-sample), instead of only two (training and test). Only by this way, the overfitting problem can be avoided and the forecasting ability of the model can be really tested. Third, the general debate about the need of differencing and filtering the time series to be forecasted should be reopened in order to re-evaluate the pros and cons of these transformations in the context of computational methods.

New lines of research should explore the synergic predictive effects of using data-fusion in order to benefit from the particular advantages of the different methods and reduce the bias. On the other hand, other new forecasting techniques like evolutionary neural networks or the looking for chaos should be applied to tourism time series in view of the good results in terms of accurate predictions obtained in other disciplines.

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Chapter 7

ASYMMETRY IN TRANSNATIONAL ENCOUNTERS: ACCOUNTING FOR MBA EXPERIENCE THROUGH A CHINESE LENS

Qi Xu[1*] and Yanmei Zhang[2†]
[1]Nottingham University Business School, UK
[2]Executive MBA Programmes

ABSTRACT

This paper explores cultural interpretation in transnational encounters. It treats Chinese MBA students as non-western research subjects, and seeks to dispel plausible misconceptions about them. As such, what sometimes appears to be puzzling Chinese behaviour begins to make sense when interpretations are grounded in Chinese intellectual traditions. The empirical material is based on interviews with MBA students. The paper's contribution to the debate on the future of MBA programmes is twofold: critiques of mainstream thought are necessary but insufficient for overcoming asymmetry in transnational encounters. There is a need for work on the conditions for cross-cultural dialogue. It is suggested that an ethical consideration is integral to such conditions. In this paper, the Chinese students are no mere dispensable backdrop to the writing but inscribed in their terms. It is hoped that a positive message is brought to cross-cultural exchange to the extent that this paper serves as one step to overcome asymmetry in understanding. (155)

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[*] Email: qi.xu@nottingham.ac.uk. Dr Qi Xu is lecturer at Nottingham University Business School. She worked in the Chinese Government and as a project manager in the 1980s in Beijing. A graduate of Jiao Tong University, her research interests include cross-cultural dialogue in the global age, discursive formation of management knowledge, and treating management as a site for creative practices. Some of her work has been published in *Organization Studies*, *Organization*, *Academy of Management Review*, *Scandinavian Journal of Management*, and *Management Learning*. Email: qi.xu@nottingham.ac.uk

[†] Email: yzzhang_99@yahoo.com. Yanmei Zhang is Director of Executive MBA Programmes, Associate Professor at Lingnan (University) College, Sun Yet-sun University, PR China, and holds Masters' degrees from Leicester and Nottingham Universities in the UK. She teaches in both English and Chinese. Her research interests include management education in China, cross-cultural management, and teams. Email: yzzhang_99@yahoo.com

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"European thought is at once both indispensable and inadequate in helping us to think through the experiences of political modernity of non-Western nations, and provincializing Europe becomes the task of exploring how this thought – which is now everybody's heritage and which affects us all – may be renewed from and for the margins."
Chakrabarty (2000: 16)

INTRODUCTION

In recent years, Chinese students have expanded into a sizable group in UK-based MBA programmes. However, in-depth studies based on them are few and far between. This study aims to contribute to the debate on the future of the MBA programmes by concentrating on Chinese students and their interactions with their peers.[1] Rather than following a normative teaching and learning research route, the authors raise questions about transnational encounters, for example, questioning to what extent transnational exchanges, through research projects and seminars or supervision of international students, have been effective to those involved. In these settings, some awareness of barriers to communication is essential, and efforts to overcome them must be sought. In practice, the path to misunderstanding has no clear signpost. Often with good intentions, one may stumble, feel frustrated and occasionally is compelled to offer reasons but still miss the appropriate context. Everyday idiosyncratic versions of *Lost in Translation* may unfold, with less visual impact than Coppola's, yet with equal unease, complexity, texture, and spontaneity.

This paper highlights misunderstanding at source: the problem of asymmetry. It occurs when the context, in which meaningful action is largely determined, appears opaque to or ignored by one side. Indeed, what one may take as 'meaningful action' is often the effect of glossing over the right context by someone else. The paper illustrates this asymmetry by exploring efforts made in transnational encounters through multi-cultural MBA group projects. With interviews conducted with a recent MBA cohort, the paper sheds light on Chinese student experience. Specifically, the paper situates their perspective in traditional Chinese thought, and highlights their concerns. Doing so allows asymmetry to surface, which, for some, might have been an unsettling experience of confusion but was seldom taken further.

The paper unfolds as follows. It considers the merit of cultural assumptions in light of the relevant research. In order to address ethical considerations associated with asymmetry, the paper introduces postcolonial thought as one source of critique and for renewal. This enables the authors to provisionally spell out the challenge of overcoming the problem of appropriation in the discourse of comparative management. The paper then concentrates on a Chinese lens through concepts of *wu wei* and *li.* Their implications are considered. Having prepared the ground for a concrete encounter, the paper illustrates lacunae in understanding, and attempts a dialogue between the Chinese students and their colleagues. After the task of

[1] The commercial imperative of the MBA, though important, is not central to this paper. For those interested in this line of argument, see Sturdy and Gabriel (2000).

critique and in a spirit for renewal, the paper posits that integral to the conditions for dialogue is an ethical basis for relating to others. Without such basis, asymmetry will continue to perpetuate, which breeds mistrust and possibly subtle forms of domination. With an overdue appreciation of the source of misconception in transnational encounters, the authors hope to bring a cosmopolitan attitude, that is at once self-conscious and not dominating over others, to the debate on the future of the MBA programmes.

THE CONFUCIAN HERITAGE AND OTHER CONSIDERATIONS

Among sinologists who specialize in Chinese civilization and culture, the Confucian influence in regulating Chinese societies has been an enduring interest (e.g. Moore, 1967; Munro; 1985; Lee, 1992; Hsu, 2000; Fang, 2002). In order to decipher Chinese enterprises and human behaviours in them, it is customary to explore social practices, such as *guan xi* (literally 'interpersonal relationships', Yang, 1994). In Redding's (1990: 8) empirical study, he commented on the spirit of capitalism: there is "no capitalist development without an entrepreneurial class; no entrepreneurial class without a moral charter; no moral charter without religious premises." Redding delineated "religious premises" in the Confucian ethic and through "the role of Confucianism as the bedrock set of beliefs" (p.11) in his overseas Chinese entrepreneurs. In a similar vein, Xing (1995) expressed the impact of Confucian ideas to Chinese societies more generally as "an undeniable system governing nearly all aspects of Chinese life". Whilst it would be incredible to Chinese sensibility to ignore the Confucian heritage, it is prudent for researchers to be concerned with studies that imply a high level of its continuity, irrespective of different social contexts. The authors, despite being Chinese speakers, have no difficulty in heeding caution. This said, as in Redding (1990), the authors wish to acknowledge that concerns of this nature may be appropriately addressed, to the sensibilities of both Chinese speakers and non-Chinese speakers, through historical analysis. In Redding's words (1990: 9): "the understanding of Chinese capitalism" may be achieved through "the culmination of a set of processes which need to be seen historically. And that the beliefs and values of businessmen have a part to play in the understanding of it." For this study, we recognize that the behaviour and attitudes of individuals concerned can be accounted for in the light of the Confucian heritage to the extent that they constitute one plausible explanation.

Elsewhere, numerous researchers have made observations regarding the Chinese in work settings. One of these is that some Chinese, presumably depending on their degree and intensity of exposure to modern capitalist practices, seem to be driven more by their tradition than by global business dynamics and western ideas of economics (Wong et al, 1998). Those who have an active interest in the contemporary global economy would be aware that the Chinese economy has in the past decade increased its share considerably. Wong et al might intend to warn readers not to position 'tradition' against 'capitalist economic practices'. In other words, the relationship between tradition and modernization is complex, and deserves appropriate articulation. Indeed, Redding's (1990) insights on overseas Chinese businesses have to a large extent established positively that the Chinese tradition, in his terms "the psycho-social legacy of China", does play a part in the economic activities of overseas Chinese. One should also note that some Chinese have reservations towards western values.

Littrell (2002) holds that such values, for some at least, are embraced, more as cosmetics than a fundamental basis for thought and conduct. What Littrell may be suggesting is that, depending on one's needs at a time, for some Chinese, they may apply and change cosmetics far more easily than they could step outside their tradition. Elsewhere, caution is raised in Bond and King (1985) who insisted that, some Chinese, being somewhat 'Sino-centric', are quite able to adopt western practices, and regard themselves as being 'modern' without losing their identity. A further reason for paying attention to the Confucian heritage is that Confucian ideas have taken a deep root not only in China and in overseas Chinese communities but also in East Asian societies. This said, there are other intellectual currents among the Chinese, which will be introduced below.

While exploring conceptual barriers to transferring western management practice into China, Fan (1998) recognized a knowledge gap and called for 'basic research' in establishing the differences between Chinese and western management thought and philosophies. Fan had an implicit message: there is a need to examine the ground on which such differences are based. Fan reminded the reader of an ambivalent attitude of many Chinese towards western technology, embodied in a 19th century doctrine: '[to maintain] Chinese learning as framework; western learning as technology [for use]'. It was then advocated when China was forced to react to aggressions from western colonial powers. Historically, the Chinese regard those days as semi-colonial. The dilemma then was 'what to do' for China with indigenous knowledge when she was confronted by knowledge from an alien source. Fan noted Hofstede's (1993) proposal of 'dialogue between equals'. Upon close scrutiny, Hofstede's solution, in non-western contexts where westerners are 'expert in [western] technology' whereas the locals as expert in local culture, habits and feeling, is unsatisfactory. Hofstede's ethnocentric approach ignores the underlying anxiety of what [western] technology can do to a local system of thought over time. The aspiration for dialogue cannot begin without reflections on its possible conditions.

It is in historical studies one finds analyses of how changes occur in a system of thought. To this end, Young's (1990) critique of 'History' as powerful "white mythologies" begins questioning normative accounts of 'world history', showing how the west has made other peoples in its own image.[2] For Young, 'world history' has invariably inscribed the non-west as peripheral to Eurocentrism. Young insisted that if 'world history' is largely the consequences of European imperialist expansion through power and domination, then the project of decolonization, in its efforts to resist them by various means, is a just cause and a historical corrective. In postcolonial thought, Said (1978), demonstrated how the west has historically created an Oriental object of desire and knowledge, and others (e.g. Spivak, 1987; 1990) have marked the limits of western knowledge. In Chakrabarty (2000: 16), one finds an insightful assessment and clear statement on the role of the European heritage in relation to critique with a sense of purpose. Among other things, postcolonial thought confronts historical injustices made through colonization and domination by a powerful west, and makes a passionate plea for an ethical relationship between the west and the rest. This is getting close in spirit to a possibility of rewriting comparative management.

[2] It is worth noting that Young (1990) not only borrows the term 'white mythologies' from Derrida (1982), but also takes his project of deconstructing history with a similar uncompromising commitment as Derrida displays in deconstructing metaphysics.

Drawing from postcolonial thought, Westwood (2001) attempted a critique of comparative management. He exposed strategies by writers who portray non-western subjects not only as always being in the passive "suffering from a lack" (p.247) but as those to be homogenized, namely to be inscribed only in 'westernized' terms. While Westwood's effort is refreshing, his solution is not as productive as he may wish. One difficulty is that it rests on the same ground as that which his critique debunks. For instance, his position in "relocating self" (p.273 *vis-à-vis* a culturally different 'other') is problematic. Here, one discerns that this seemingly innocent 'self' is free from interrogation. Admittedly, this privileged self is, when identified with a dominant 'west', at odds with his postcolonial commitment. Westwood (2001) began demystifying comparative management. However, he offered little in the way of a viable direction for the future. Namely, where could researchers go after his critique? The authors shall return to this question later.

Accounts of the experience of MBA participants can be found, for example, in Collins (1996). Currie and Knights (2003) explicitly called for the need to reflect upon the ethnocentric nature of the MBA programmes. For instance, their study registered 'silence' as a form of exclusion and, at best, marginalization. As a way forward, Currie and Knights proposed that "cultural otherness" be allowed some intellectual space. This "cultural otherness" deserves close attention. First, one acknowledges there is conceptual difference between 'self' and 'other'. If one wishes to, one may find situations where such concepts are applied for analysis.[3] Second, as individuals, we choose to live with or ignore such difference by forceful or subtle means. A particular choice depends on how we feel and on power relations in specific social settings, and whether we are resourceful enough with difference mentioned above. Third, a major source of difference is socio-historical. The freedom and ease of movement of people across national borders creates life and work situations where such differences manifest. Some would welcome them as opportunities or challenges whilst others would see them as predominantly irritations or threats. In a spirit of dialogue with Currie and Knights (2003), the authors register "cultural otherness" not at the margins of writing but at a prominent location or, in Chakrabarty's (2000: 16) phrase, "for the margins".

THROUGH A LENS OF *WU-WEI* AND *LI*

The term 'theory', from ancient Greek, means 'to see'. To date, there is no management theory developed in the west that allows one see the Chinese through their lens. It is time that a Chinese source was sought. To do so, whilst recognizing space constraint, the authors introduce briefly concepts of *wu-wei* and *li* to indicate that they constitute one Chinese source for this paper.

[3] In postcolonial critiques, concepts of 'self' or 'same' and 'other' are used extensively for delineating how the west in its colonial days dominated and appropriated the rest. For Lele (1993: 45, 48), "Said's (1978) critique of Orientalism in the social sciences offer a number of insights on how and why systematic misconceptions and willful constructions of 'the other' perpetuate themselves under the garb of 'positive knowledge.' … the non-western world was kept as largely peripheral by the west except, at times, as a convenient mirror to assess or admire itself. There was neither the interest nor the cultural sophistication necessary for understanding the other in its own terms." Due to space constraint, an extended account must wait for another time. For those interested, see also Nandy (1983) and Fabian (1983); for philosophical texts, see Levinas (1969) and Derrida (1978).

A Mode of Being through Wu-wei

A common yet sometimes misleading assertion posits that the Chinese are preoccupied with continuity and therefore they must be risk averse. Further, due to rote learning, they seldom display creativity.[4] Such ignorant views are hastily drawn with little regard to history, to which Needham and others set out to fill that void with his formidable encyclopedia (Needham and Ronan, 1978). Also, an important Chinese source is called Tao (Merton, 1965). Over centuries, Tao's (*Way*) impact to scholar-artists has been profound, and is therefore worthy of careful consideration.

In Tao, there is one concept called *wu-wei*, literally 'no action' (Wu, 1991).[5] Before rendering it meaningful, one is reminded that the Chinese language, its written form inscribed with images, is suggestive and less precise than English. Without this caution, *wu-wei* can be wrongly interpreted as 'do nothing'. It does not mean 'taking no action' (Slingerland, 2003). Rather, one's cultivation of an awareness enables him/her to know *when* to act in the *right* way. *Wu-wei* therefore means that one takes no forced action - knowing what not (*wu*, non-), (so as to be set free) to do that which is worthy of doing (*wei*, do). Implicitly, one is aware when *not* to act, namely (learn to) wait for *that*. Indeed, acting at the right moment makes all the difference in effect. Necessarily, *wu wei* advocates a subtle form of action requiring an intuitive reading of given situations, holding back when need be. One may say that *wu-wei* is an antidote to acting upon forcefully implemented plans.

As a mode of being, *wu-wei* permeates mundane daily acts, as expressed by Lao Tzu (e.g. Kwok et al, 1993). Here are examples from Lao Tzu. On becoming a person of Virtue (Te), he said: "[The] sage … holds on to nothing, and so he never loses" (Kwok et al, 1993: 153). "[The] lesser man brags about how good he is - and isn't much good. A person of Te rules by wu-wei, doing nothing for and of himself" (p102). On how the act of talking relates to that of doing, he said: "[Those] who know seem not to know, and those who don't pretend they do. This is what it means to be flawed" (p170). "[If] you know what it is, don't talk it away. If you do, then you don't understand" (p138). On harmony from the source of nature, he stated: "[Act] calmly, not coldly. Peace is greater than anger. Tranquility and harmony are true order of things" (p117). On confrontation, he gave this advice: "[A] good fighter never confronts an opponent head-on: and those who know how to handle people do it humbly. This comes from the virtue of not-striving (*wu-wei*), and from knowing how to link with other people's energy" (p163).

To the habitual path of thought, the above Taoist sayings may appear paradoxical. Indeed, they are intended to throw one off-balance at the edge of his/her comfort zone between certainty and skepticism, when confronted with such expressions. They aim to undermine one's overconfidence which may come from inorganic thinking.

[4] The Confucian heritage has long been associated with an exclusive preoccupation with continuity. However, debate among sinologists has moved on. For a more nuanced examination, see Berthrong (1998).

[5] In the west, a similar notion is known as 'negative capability' (see Simpson et al, 2002).

Nature's Li (Patterning), Human li (Relationship)

Among other things, Taoist thinking concentrates on the intricate interplay of 'absence', which is expressed in *wu* which can mean 'space' where there seems to be paradoxically 'nothing' in it, and 'presence', expressed in *you* (a Chinese sound and concept) which can mean 'being' or 'articulation' or 'manifestation'. There is an important reason for paying attention to such interplay: it is in tune with creating something new out of seemingly 'nothing'. This is largely why Taoist thought is intuitively appealing to many Chinese scholars and artists. Another uniquely Chinese concept is called *Li* which, according to LaChapelle's (1992) careful delineation, means "patterns on jade". In Chinese thought, humans are part of Nature, and therefore should follow Nature's ways or its *Li*. In scholarly writings, this idea of following Nature's ways is often associated with Confucian teaching of *wu lun*, as one manifestation of human *li*, that regulates social interactions (e.g. Soles, 1995; Hsu, 2000; Fang, 2002).

Social Harmony

Wu lun literally means 'five relationships'. According to Confucius (551-479 BC), a stable society relies on reciprocally dependent relationships manifested through ruler-subject, father-son, older brother-younger brother, husband-wife, and senior friend-junior friend as prototypes of social roles. They need to be observed, and not violated for social harmony (Chung, 1991). On a hierarchical social order, Lee (1992) cautioned that some inequality may be unavoidable. Here, one must add a proviso - as long as reciprocity is maintained. To many in the west, the senior, manifested in 'leaders', in these pairings seems to assume 'more' authority than its nearest western counterpart. Indeed, an authority figure enjoys reverence, and is seldom challenged openly.

Nature's Li as Source

The ideal of social harmony is inspired by nature. While trying to decipher *I Ching* (*The Book of Changes*), LaChapelle (1992: 233) noted that the ancient Chinese seemed to "concentrate more on categories of relationship than on categories of substance." For him, the source of Chinese social harmony, as *li* or rites, follows the conception of *Li* as *relational patterning* in Nature, instead of conception of (natural) Law as it is deeply held in the west. The Chinese emphasis on relational beings is derived from the same source *li* in Nature. It would therefore begin to make sense that the Chinese are aware of their social positioning, and many would act as required by *li*. In light of this, direct conflict is incompatible with harmony; and, criticism, in the form of confrontation, can be seen negatively and is not to be offered lightly. In many situations, straight talking and assertiveness may be undesirable for some Chinese.

No 'Self' without Relatedness

In the Chinese tradition, 'self' makes little sense without its grounding in relatedness (Shun, 1991; Ames et al, 1994). In social interactions, the Chinese would frequently use 'we' instead of 'I'. In their studies of Chinese culture, Berling (1985) and Munro (1985) rendered 'self' and 'individualism', if one insists on using such terms, as relational to whole and holism. Crucially, rather than entity-based 'self', 'self' always relates. This is very close to

the Confucian notion 'I-and' (Bloom, 1985). Elsewhere, Lee (1992: 250) explained that "one's identity is achieved not by isolating himself from other beings, but by performing his proper roles in the inter-woven social nexus". For many Chinese, individuals exist for the benefit of a social unit primarily through family and in other forms of its extension. Where necessary, one must compromise personal interests for a given social unit.

A Moral Dimension of Face

Among most Chinese, 'face' initiates a moral overtone, as Cheng (1986) revealed in his rendering of a philosophical underpinning of the 'face culture'. Cheng discerned the 'face talk' as spatially defined through *lian* and *mian*. At one end, one maintains self-respect through *lian*. Should s/he fail in this regard, s/he degrades him/herself. The expression, that one has 'no sense of shame' (*bu yao lian*), captures the sentiment: one's conduct drops below acceptable standard. As such, *lian* serves as a regulating mechanism of conduct *from within*. Among many Chinese, to disregard *lian* is disorienting. At the other end, *mian* is a result of social interaction. For instance, to accept an invitation is to 'give face' (*gei mian zi*) to the initiating party. Some Chinese may restrain themselves in conduct, not necessarily because they are unwilling to 'take risks', as sometimes perceived, but due to a concern for 'losing face' (*diu mian zi*) for all parties involved. Face, like currency, is referred to in exchange terms: earned, saved, lost, given or taken away. To say one's *mian zi* is large implies some degree of influence, respectability, authority, and in the appropriate context even social grace. Oblivious of this overtone, it is not difficult to see why some Chinese are misunderstood by their western counterpart, as Pascale and Athos (1982) once remarked that in some societies "face-saving" is seen as "petty".

To many Chinese, educated or not, Confucian teaching, both as "deeply held but rarely articulated beliefs", as Redding (1990: 11) put it, and as a source of moral force in providing guidance in social conduct, are still relevant today. One may dispute the merits and wisdom in Redding (1990) for his extension of a Weberian theory, linking a Protestant belief system to capitalist development and progress, to overseas Chinese communities in his pursuit of a comprehensive explanation. We find Redding's attention to the Chinese tradition justified for understanding economic activities to which management studies are an integral part. Redding (1990: 41-94) usefully explored the legacy of China through fundamental beliefs and cultural values, and demonstrated their significance in his work. One conclusion from Redding (1990: 238-240) was that traditional thought has exerted a considerable influence to his Chinese entrepreneurs – beginning from their formative years through family and education to their business lives.

The above may serve as one heuristic in making sense of certain 'Chinese behaviour' in transnational encounters. This stated, the authors welcome insights from others on the 'Chinese behaviour' that may supplement the authors' account in this paper.

METHODOLOGICAL CONSIDERATIONS

Let us consider two empirical questions. What happens when Chinese students interact with their colleagues? If their behaviour is sometimes puzzling, can one make sense through their lens to solve the puzzle? In an effort to come up with some answers, the paper will

present and analyze interviews conducted in the following way. The section subtitled - A Preference for 'Light Touch' - gives an account of the views of our Chinese interviewees. This section serves as one voice in the concrete transnational encounter in their MBA project groups. The next section subtitled - Towards a Dialogue in Transnational Encounters – explores possible misunderstanding of Chinese colleagues by others. To demonstrate this, views on Chinese colleagues from non-Chinese participants were elicited. The latter's comments, based on observations and experience, are used as a point of departure for cross-cultural dialogue. Further, this section is where the authors, conscious of our desire to make our Chinese subjects less misunderstood, wish to move away from misconceptions in an effort to overcome asymmetry. Whilst the authors, who are bilingual, regard that we may be uniquely positioned to contribute to dialogue intended, our responsibility to all interviewees and to readers is of equal importance in so far as our analysis should be disciplined and measured. The authors acknowledge that, due to an experimental character of this paper, some points or issues raised might be far more complex, when probed, than can be satisfactorily addressed in one paper. Despite such difficulties, it is our intention that this paper serves as a useful marker for others to join in the dialogue.

The paper treats one MBA cohort as a site of transnational encounters. Through group projects, international colleagues are required to work together. Our interest lies in what happens, and what difficulties have arisen that can be addressed constructively. Those familiar with MBA group assignments know that such activities involve interactions to organize meetings, brainstorm and filter through ideas, make decisions on action plans, and allocate tasks among members. Indeed, project groups are required to do more than just completing tasks. Specifically, who volunteers to lead discussions? Some seem more at ease disagreeing than others do. How do researchers interpret discernible differences in their behaviour? Critically, to what extent is one interpretation credible and convincing to both parties in such encounters?

The empirical material presented here comes from a qualitative study of Chinese MBAs' experience in multi-cultural groups. Twenty-three, semi-structured, interviews were conducted towards the end of an intensive MBA period. Interviewees were asked to reflect on their experience with the benefit of hindsight, and possibly some distance. Prior to interviews, one female interviewer spent months interacting with the MBA participants in both academic and informal settings. Observations were made which helped modify research focus and questions, and put interviews in context. The interviewer is bilingual, and was able to talk to participants on many occasions in an unobtrusive manner, both before and after the interviews. By the time of the interviews, the interviewer and interviewees were not strangers. All interviews were conducted in a relaxed and open manner. Some acknowledged that they enjoyed the interview as it helped them evaluate their experience. Most interviews lasted for an hour; all were transcribed. The themes explored included: motivation, communication and roles played in groups, and attitudes towards conflicts. Due to space constraint, we choose to focus on perceived misconceptions.

Of 12 Chinese interviewees, 7 had previously worked in multinational companies. Five of them had over 15 years of work experience, whereas the rest had only worked for 2-5 years. This profile is not untypical of Chinese participants, which was about 30 as a cohort, in a total about 110 full-time participants for that particular year. It is worth noting that at the time the impression among colleagues was that the Chinese students tended to study their MBAs at a rather young age. Of the remaining 5 interviewees, 4 had worked in state-owned-enterprises

(SOEs) and the Government; one was self-employed. They came from Shanghai (6), Beijing (3), and provinces of Guangdong (1), Zhejiang (1) and Sichuan (1), all of which are places where economic transformation and exposure to western influences are most visible. Nine out of the 12 had previously worked with expatriates; only three ex-SOEs employees (2 from Beijing, 1 from Sichuan) lacked such experience. They were all university graduates. The gender breakdown was evenly distributed.

Of 11 non-Chinese interviewees, a matching profile to the above is sought, which is not untypical in an international MBA cohort in UK-based MBA programmes. Specifically, among 5 British students, 2 were women, and 2 had previously worked with East Asians. Only one British student described himself as having "much knowledge about China" whereas the rest had limited knowledge. The remaining interviewees were French, Russian, Thai, Sri Lankan, Jordanian and Indian. Interestingly, the Russian, the Thai, the Sri Lankan and the Indian described themselves as having previous work experience with East Asians and having "much knowledge about China". In this latter group, 5 were women. Of the 11 non-Chinese, 7 were women.

As customarily required, due diligence and considerations were given to conducting qualitative interviews. Here, the authors wish to highlight two of them: one on a concern for consistence and, the other, on the role of 'theory' in interpreting interviews. As earlier researchers noted, individual variation in attitudes and behaviour is likely to an extent that high levels of consistency remain a major concern. The authors anticipate that a similar concern may be raised for this paper. Given that there is reasonable amount of common experience during the MBA period, common cultural and educational background for most Chinese interviewees, "it should be reasonable to anticipate some tendencies to see the world in a particular light", as Redding and Hsiao (1993: 175) once put it. In so far as views expressed as 'Chinese', the authors mean a Chinese tendency, which implies only likelihood leaving room for other contingent factors to be considered in given situations.

On the matter of 'which theory', or 'whose theory', serves as a framework for interpreting interviews, the authors are careful in the light of postcolonial thought. Given that the paper seeks to account for Chinese students' experiences from their perspective, it is vital that an imposition of a western theoretical lens, or 'theory', is avoided through which empirical data are made sense of. Conscious of our choice, up to a point in theoretical terms, the path demonstrated by Redding, in his Weberian explanation of Chinese subjects, is not one the authors wish to embark. That is to say, this paper does not try to account for the Chinese students' experiences through a theory derived from western experience. Rather, our interpretation is, where appropriate and as much as we can, in Chinese terms. On balance, we regard our effort as a positive step towards 'dialogue between equals'. In the next two sections, unexamined views are laid bear for questioning. Whilst demonstrating gaps in understanding, the authors contemplate on necessary conditions for reducing them.

A PREFERENCE FOR 'LIGHT TOUCH'

How do the Chinese participants evaluate their experience? This section offers a sketch in discernible themes emerged from interviews. Firstly, they were overwhelming positive about group projects, taking the latter as an "*opportunity to learn and understand people from other*

cultures". They valued the exposure they would not otherwise have. Put succinctly, they aimed to *"acquire management knowledge"* and by working with others to *"understand their [British] way of thinking"*. Implicitly, they recognized that people think differently, and were interested in knowing how and why they do. To such difference their response was curiosity-driven and not defensive. For them, working out how others may think the way they do was equally important. Their appreciation was articulated as: in multi-cultural groups, members tend to consider an issue *"from different angles"*. *"When team members are from the same country, we [Chinese] may have limitations because our [cultural] influences are quite similar, we have a similar concept, [may] have neglected something important."* This line of reasoning indicated some degree of reflection and an awareness of the downside in a tendency to 'think in similar ways'. Approvingly, *"students from other cultures tend to argue with each other, and generate more creative ideas in the process."* Without hesitation, one interviewee stated that this was lacking among the Chinese students.

Secondly, Chinese students are reluctant to lead. They tend to listen, and not to put themselves forward. In discussing the concept of 'group leaders', some proposed the term "group coordinators" or avoided 'group leader' altogether, insisting that the members' experience removed the need to be led when groups were working together. These are interesting responses, implying the Chinese preference for 'light touch' for steering team activities. Through the Chinese perspective, leadership requires subtlety in dealing with people, as Lao Tzu would say: running a big country is like frying a small fish, handle with care. This is a practical embodiment of and the sentiment of Tao which was quoted earlier. Most Chinese interviewees found it hard to persuade others to accept their ideas or point of view. Often, British students took a lead. *"[It] seems more natural when he [a British student] takes a lead. Being Chinese, I have no choice. Frankly, it's quite difficult to lead a team. We come with different cultural, work and educational backgrounds, and have different perceptions and values on life. To be a competent team leader, you may have to be powerful in some way to influence and convince others, even [be] aggressive"*. It is possible to discerns an understated reckoning: when in Britain, you let the natives lead since you are on their ground. Most interviewees hold that to be convincing, credibility comes from experience and know-how. For most Chinese students, behaving forcefully or even aggressively would demand them to behave in a way that is at odds with their, some would say, largely Confucian norm of social interaction, which is based on mutual obligation and respect. Interestingly, one Chinese interviewee wondered whether their "personalities" have prepared them for the demands of their MBA activities. In a coded way, this speaker implies some mismatch. However, for another interviewee, taking a lead or not was a matter of responding to situations: *"[Sometimes] when there's no volunteer in the group, I would take a lead. If someone volunteers, I would definitely support him."* Conveying a sense of responsibility, this speaker positioned 'I' for the group, and was happy to lead when required. Here, the issue is not of one's competence but of group needs. Overall, the Chinese students saw language skills as a prerequisite for leadership. This view is reinforced by their willingness to lead Chinese-only groups. Nearly half of the interviewees would do so, since in this situation language would no longer be a barrier. A few also remarked that, in MBA groups, they became outspoken and did not conceal their ideas as they would normally do. There was a realization that *"speaking out is the best way to earn respect from non-Chinese colleagues"*. This can be a sign showing that some of them, at least, were prepared to adapt in their interaction with others.

Thirdly, the Chinese students tend to be cool-headed towards conflicts, avoiding them if possible. If they found themselves in disagreement with others, most would accept their group decisions. To some westerners, they may appear over-accommodating. In one tense situation, *"at that time, I just listened. It's normal to get into a conflict but it must not be allowed to get out of hand. There's that Chinese saying [that] 'you do nothing or shoulder everything.' So I did nothing. You can resolve [it] when asked to. You can give your view. It'll be resolved eventually."* This quote reminds us of *wu-wei*. One interpretation could be: You read the scene, but do not have to act immediately; conflicts can be distractions. However, when the right moment comes, you act whole-heartedly. The speaker was rather Tao-like: 'let events run their natural course'. Again, the sentiment is that a 'light touch' is required in the human interaction. However, they had a view on academic disagreement. Their consensus was that when dealt with care, academic disagreement could be beneficial for their groups.

On Chinese students' reaction to conflicts, evident is clear in another instance, where the speaker tried to mediate. *"[Conflicts] are bound to happen. I was quite calm when it broke out. Actually, [on that occasion] the leader did play a part in causing them. Working in groups means you have to balance everyone's objectives and expectations."* For this speaker, not only were conflicts anticipated, but diagnosis was used. A key consideration was how to get the right balance between, for instance, letting members have their say and reaching a compromise, which involved delicate negotiations. Interestingly, a sense of detachment was discernible. Many Chinese interviewees referred to instances of conflicts as if they were outsiders, implying their distance from such happenings. Only two of them recalled events where they were directly involved. One conceded under pressure; the other stood his ground but did not get very far with his ideas. This suggests that many among them were uncomfortable with confronting colleagues. Up to a point, their preoccupation with harmonious relationships was evident in how they handled tensions, succinctly put: when trying to calm a situation, avoid pouring fuel on the fire.

Lastly, the Chinese students felt strongly that their English language ability held them back. They *"could manage basic communication"*. However, when they needed to defend their case and persuade others, they were often ineffective. This was seen as *"a stumbling block"* and prevented them from proactive participation. One interviewee put it: when on familiar territories, most of us could manage. However, many found it hard to join in discussions. While listening, their 'inaction' could be read as 'not contributing'. Their predicament is: *"on the whole, we've been placed in a disadvantageous position by studying in English, whereas native speakers do have an advantage. They understand the structure [required] and ideas clearer [than others do]."* It is the authors' view that the Chinese students accepted that their English, far from competent for many among them, was part of their human condition for learning. They nonetheless expected themselves to succeed despite this handicap.

TOWARDS A DIALOGUE IN TRANSNATIONAL ENCOUNTERS

Having briefly described and discussed the Chinese students' experiences, it is now appropriate to turn to observations made by their colleagues. "Reluctant to talk" is a common

phrase.[6] One may assert that their participation is passive if one finds little evidence to suggest otherwise. Here caution is due. It is reasonable to assume that, for some people, their way of talking manifests to some degree their cultural norms. Accordingly, an interpretation through a Chinese lens is sought here. The paper confronts conventional views. In an effort for dialogue, the paper addresses the following two questions.

Why are they Reluctant to Talk?

Many Chinese colleagues kept quiet in discussions when they were expected to talk. This was puzzling to some colleagues. Often, Chinese students would wait for native speakers to initiate discussions, and only express their agreement near the end. This way of expressing themselves caused frustration to their British colleagues. *"[So] there was almost ratification of the decision rather than the creation of the decision. They lack contribution when you're trying to define what you're doing, where we're going. Here's a big black box. Come on! Complete silence. They go away doing the work they've been told of what's required. There seems to be no wish to initiate, [no] wish to drive. They kept silent as possibly as they could unless they had a very strong opinion, which is quite rare. …Obviously not always, but at the beginning they tended to keep silent. The more comfortable they were with the group, the more likely they were to say something."* The speaker could be saying: You should join in the discussion early. We are in this together. What is the point of holding back? Say something now! Let us have all the ideas on the table. We must know what to assess, and make our mind up to progress. Spell them out. They may not be strong views. Clearly, readers can tell some mismatch at timing in expressing one's views and how that is expressed between the speaker and her Chinese colleagues. The speaker's frustration is evident in this "black box" – why can't you be straightforward? Near the end, the speaker does signal an awareness of the conditions under which her colleagues would talk. Here, the authors can offer a plausible explanation from a Chinese cultural perspective. For many Chinese, as in most human affairs, you get to know whom you are interacting with before you can be effective in what you try to achieve with them. Put simply, for the Chinese, tasks at hand are secondary to the human relationship which sets the terms for defining, timing, and the means to accomplish a task. This resonates in our earlier discussion on human *li* that comes from Nature's *Li*.

In one twist, frustration became resentment upon the matter of exam results. Quite a few Chinese students received high marks but some of them contributed little in discussions. To put things in context, elsewhere in interviews there is consensus that Chinese colleagues are good citizens due to their high commitment to accomplishing set tasks. They are *"reliable, … smart, … know how to get the job done well before the deadlines"* and *"took their tasks seriously"*. The main objection was 'not actively contributing ideas in discussions'. If so, why did the Chinese students not exchange ideas?

[6] Some contextual information of the curriculum may help shed light on the response of our Chinese participants. The curriculum can be described as primarily Anglo-American in terms of textbooks, case studies material, and illustrations in lectures. In private and in their course feedback, some Chinese students remarked on the lack of examples of international companies. For instance, the UK firm Easyjet is unknown to most Chinese students. One lecturer used it for analysis in class. It was hard for them to comment in discussion without sufficient familiarity of the UK or European air travel market. Was the MBA in general Ethnocentric? Yes, and not international enough for their expectations. This said, in semester two, there was one elective module that covers East Asia. Less than twenty chose that module.

Interviewees toyed with speculations: some Chinese students avoid making mistakes; feel uneasy arguing or simply lack creative ideas. One cannot deny that each of these can sometimes be true. However, sweeping generalization is as unhelpful as recycling prejudices. A culturally sensitive interpretation is due.

Firstly, misunderstanding may arise from attitudes towards silence. Li and Tsui (1999) observed variations in Chinese and American tolerance of silence during team meetings. The Americans typically cannot tolerate silence of more than 15 seconds, whereas the Chinese feel at ease thinking for more than 30 seconds before speaking. The Americans may break the silence before the Chinese are ready, since 30 seconds is too long a time for 'nothing to happen'. In this scenario, the Chinese may feel frustrated because their 'waiting for the right moment' for achieving a desired effect, when practising *wu-wei*, is brought to an abrupt end. Put otherwise, a gap lies in that, for some, silence can only be 'inaction' and nothing else; and, for others, silence implies possibilities. Secondly, reticence from some Chinese implies a preference for moderation - a virtue to be cultivated from a Confucian source. Many Chinese loathe to be seen as superficial and ill mannered. Further, some Tao expressions quoted earlier imply disapproval of hasty judgments. Here, difference is clearly discernible: one insists on 'action now', the other practises *wu-wei* - taking timing and acting in the right way into account. The difficulty for both sides is that, those who prefer 'action now' may not be aware of *wu-wei*; and, those who prefer not to rule out *wu-wei* may not have realized that they are in a position to explain it to others. Thirdly, the Chinese participants, evident from our interviews, refrained from speaking because they may be thinking through priorities. While weighing up what is worthy of saying and deciding when to express that, others may be unaware that 'inaction' can be something other than being negative. A Chinese preference for harmony finds no expression in the MBA vocabulary, in which quick action is often rewarded with a premium.

In transnational encounters, there are dangers we must guard against. Namely, we are used to being preoccupied with demands for moving on at an ever faster pace than before, we may overlook other possibilities. In practice, an awareness of variations among colleagues from diverse background would be a good start for assisting both parties to gauge expectations of realistic adjustment over time. It is therefore hasty, perhaps unwise, to dismiss the punctuated silences examined above.

Indeed, *"[the] Chinese did express their opinions … a bit passively. They were very cautious, very careful, may be not in a straightforward way as westerners [normally are]."* This observation, when extended to East Asians, is summed up as: *"[The] Chinese and [the] Japanese are very proper, very correct. Wouldn't want to offend, would almost not do anything [rather] than make mistakes."* Careful readers may note a difference in priority here. For the former, relating to others comes first, whilst for the speaker, the focus is on tasks at hand, or in a do-something-now mode of being. For the former, groups are but one concrete site of social interaction. The Chinese students may be reluctant to venture into the unknown, as failure brings 'no glow to face' (*lian sang wu guang*). However, as discussed earlier, face implies more than a mere surface value. It is probable that East Asians are careful not to offend people by withholding certain views so that they are not the source of damage to 'face'. In contrast, for westerners, as Lee (1992) has noted, an adversarial conflict may be deemed as the dynamic force behind social progress and development. Indeed, some may say it is the basis of many western democracies. Let us look at this quote closely. What is implied is that some Chinese students, being mild-mannered, are 'yet to adapt' to the behaviour code

of open confrontation and adversary occasionally displayed and often encouraged in MBA groups. If, for some, aggression is met with aggression without much anxiety, it is because such behaviour is justifiable when associated legitimately with positive quality of 'being dynamic' and 'progressive'. Therefore, those who are somewhat 'slow' in exhibiting such quality, as East Asian students may do, are under pressure. There may be an expectation that it is the latter that should conform at least to the extent that non-conforming leads to negativity, negativity equates to weakness or even incompetence. Little thought is given to the possibility of resistance from those who are expected to adapt. No allowance is hinted at for the fact that what is implicitly expected of others ignores their familiar behaviour norms, in part derived from their cultural heritage. Critically, such expectation is firmly uni-directional: 'they' are the ones to change, preferably adapt to 'our ways'. In the right context, such pressure to conform can manifest a subtle form of power and domination, if not always exercised overtly.

On a positive note, a few commented that in the second semester, their Chinese colleagues expressed themselves a lot more. With hindsight, *"maybe that's a team building confidence, and [you're] confident to prepare to give your opinions more."* Such reading is valuable. Once colleagues accept this developmental process, making allowance for others to adapt to the required style of discussion would not be difficult. One interviewee recommended a proactive approach, as *"when the lecturer asked them [the Chinese to come forward],"* they took the opportunity. *"[So] I think they need encouragement from the leader."* From this, we consider that appropriate use of icebreaker from the start could help them find their feet, and set a congenial tone for interaction.

Is there More to English than a Language of Work?

Between native and non-native English speakers, one striking difference manifests asymmetry. Namely, some ignore the impact of proficiency in English for the non-natives. For many Chinese students, their inadequate English holds them back. In contrast, British colleagues were adamant that some Chinese colleagues avoided taking responsibilities, for instance, by choosing the easiest part of a project, and were relying on others to polish reports. In this scenario, a Chinese student may think: I have done what I can, with tasks allocated; since you write better English, you can take care of the writing. Though implicit, this can be interpreted negatively as "he knew the group would look after itself, so he didn't bother [to at least try to write well]". *Others saw their Chinese colleague's English as an exaggerated problem or a flimsy excuse for not participating. One British student concluded that* "[The] belief of many Chinese [is] that their English is not good enough. It's wrong because actually getting involved and taking part that's always going to get their English better than sitting quietly and not doing anything." *If the emphasis is on learning by doing, some members' 'inaction' (read: not doing) must be irritating. Such irritation was compounded by exam results, arguably: your English cannot be that bad when you have achieved high marks. This reasoning overlooks individual efforts. Knowing their handicap in English, many simply spent longer hours on revision. As one Chinese student reminded his British colleague,* "I know my English is not good so I spent two weeks on Marketing. You only had two days for it."

On one occasion, one British student remarked that: *"[It's] difficult to lead a team if you've got to shout down others, and English is your second language, … very difficult to assert your authority. Maybe there wasn't a full understanding of what needs to be done. It's hard to be assertive in a foreign language, especially if you're in a minority. If, say, we have one Chinese and three westerners, to be honest, it would be impossible for that person to lead three native speakers unless you're exceedingly intelligent. Even then, maybe not. So I think language would be the main obstacle."* His understanding was unsurprising due to his experience. He ran businesses in the Pacific region for over a decade, and had made numerous non-British friends.

Generally speaking, difficulties, arising from a lack of one's English proficiency, were equally apparent to other non-native speakers on the course. Upon reflection, a few agreed that English was a major barrier that deters non-native speakers from leading and participating more proactively than they would have liked. Put sympathetically, if not due to language, *"I can't really think of others [reasons]."* If there are other reasons, there seems little doubt that English ranks high alongside those.

It is a fact that few native English speakers have a good command of a second language. Therefore, one assumes that they lack a first-hand feel for the language experience of others. Many Chinese find that English spoken in Britain is different from theirs. When you concentrate on what is being said, the last thing on your mind is to argue with the native speaker. After all, English is their mother tongue! Why would you waste energy arguing? Furthermore, *"arguing in western style discussions"* relies on certain linguistic rituals to keep a conversation going. Such rituals are quite alien to many Chinese; most learn English by reading and passing exams. Due to limited exposure to live scenarios, their English is more 'knowledge' than 'practice'. Among many Chinese, their English is jokingly referred to as Chinglish, i.e. English spoken by Chinese understood among themselves! In effect, there is far more to English than a language of work if one accepts that language is more than representational, and constitutes the condition of possibilities for the very act of thinking. For them, English becomes not only an imperfect medium for communication, but serves as a kaleidoscope through which interconnected patterns of cultural manifestations require patient unpacking, delicate handling, and possibly constant re-arranging of familiar and fresh pieces in meaningful or less meaningful sense-making patterns. All of these play a part in the daily tasks generated in MBA activities. It should not be forgotten that, for them, where they get stuck thinking in English, they always have a fall back language in Chinese. The interplay and possibilities across two languages are perhaps unavailable to many who speak only one language.

To discount discrepancy in people's appreciation of language is to refuse to consider an indispensable 'human condition for learning' for non-native speakers. What merits our close attention, and should not be dismissed lightly, is a sense of unease in persistent misinterpretation. It is fair to say that signs of frustration and occasional mistrust come from both sides. The Chinese students were unhappy that the native speakers are uninterested in giving allowance to their "handicapped English". One may sense indifference. Let us imagine what happens if the table is turned. Suppose that a prestigious Chinese institution, for instance Beijing University, invites some British to study Chinese medicine in China in Chinese. Imagine some have taken the challenge, been to China, and survived their studies. Perhaps only then, when English speakers become non-native speakers, can they realize what it takes to operate in another culture, navigating through another system of thought. Only then, can

they tell what one must overcome to acquire a respectable degree of mastery of knowledge evolved from an intellectual tradition that is not of one's own.[7]

THE MESSAGE AND CLOSING REMARKS

We live in the age of global competition where instances of transnational encounter have become more common than at any time before. Underlying this statement is the agenda of an economic imperative, to which stakeholders must respond. This was true in the 1980s when the west desired to know what made the Japanese system of manufacturing work. Today, researchers need to be better informed about the Chinese than unwittingly treat them as, to borrow from Said (1978), another Oriental object of desire and knowledge. One can read miscommunication in Coppola's unfolding story in glittering Tokyo. She reminds us that the fact that speaking in the American and Japanese encounters does not prevent them from spinning into circles of vacuous gestures. In this study, we hope to break such circles. There is some inevitability about the contemporary human condition: whether we are equipped or not for transnational encounters, we will have more. Are we willing, able, and ready for the challenges before us?

Researchers can no longer afford to ignore frequent, and occasionally highly charged, transnational encounters, be that in educational settings or at the workplace. From time to time, moments of misconception of others arise due to differences in perspectives and their source in values, and the extent to which the context of meaningful action is rendered transparent to participants. In this paper, MBA groups are a site where human interaction is staged, with the tensions and drama of everyday life, in addition to complexities and challenges brought about by participants from diverse ethno-sociological contexts. The paper's message is twofold: a reflection on critique; and, articulating conditions for dialogue.

After Critique

In transnational encounters, misconceptions can be exposed. To do so, critique of orthodox thought plays a part. However, one must do so with critical reflection when Chakrabarty's (2000: 16 appearing at the beginning of this paper) timely caution on the limit of European thought, "both indispensable and inadequate", is heeded here. Earlier, we identified Westwood's (2001) critique of the discourse of comparative management and can now draw a lesson. Indispensable as it is, critique on its own cannot substitute for the need for another source of ideas, particularly when the subject of study is non-western. Regrettably, Westwood's concern for non-western subjects has not led him to reflect the problematic basis of a privileged self. Without a thorough examination of it, his questioning remains incomplete. To this end, the authors find hope in Chakrabarty's position of provincialising European thought. This position responds to the need to question and challenge the dominance of European thought. Chakrabarty's is undoubtedly a radical step with political ramifications. Accordingly, the authors contemplate the possibility of a ground, one that is

[7] For an interesting exploration of the attitude of the western medical establishment, 'Science', to Chinese medicine in the face of hard evidence primarily in China, see BBC2 "Chinese medicine: evidence", 24 Jan. 2006.

sufficiently open to non-European thought, on which understanding and knowledge are generated. In finding support for our argument regarding the need for reworking on the notion of self, one must move away from a privileged 'sovereign self', suggesting immunity from questioning, to a possible 'no self without relatedness' mentioned earlier. In all likelihood, a 'sovereign self' seems a poor candidate for establishing an ethical relationship with non-western research subjects.

Equally inadequate is a re-iteration of the power effect of marginalization by appropriation in the normative cross-cultural exchange, since reminding others that they have been marginalized offers little hope for changing their 'human condition'. To achieve the latter, justice and fairness must be on any action agenda. Arguably, action based on such principles would inevitably demand changes in the stakes currently held in vested interests. Hence, the task, after critique, must address concerns of and respect for the marginal or less privileged. One may ask: How do others see what is going on? What makes their reading of a situation plausible? How do we make sense of what we see if we attempt to see others through *their* lens? To these questions, the paper has provisionally accounted for the Chinese students experience with their cultural reference. Albeit still preliminary, we have shown a Chinese source of *wu-wei* and *li*. In the spirit of Chakrabarty, one may say: it is along the margins of unexamined views that fresh insights may arise for the purpose of renewal.

One insight is that the path towards understanding is not so straightforward. For instance, observations such as (the Chinese students) 'not contributing' and 'exaggerating language difficulty' lead us nowhere. Through their lens, the paper provides clues, as signposts, for understanding them a bit better than one without their lens. As such, their human condition is rendered indispensable. Accordingly, we now know that sometimes 'inaction' can be a *wu-wei* mode of being, i.e. not forced into talking when the timing is not right. For some Chinese, as it may well be the case in this study, not reading carefully their social settings, or discounting 'waiting for the right moment' as 'do nothing', is inappropriate or unwise. For some, when some Chinese students attempt to speak in their own terms, it may make life complicated. We may have to get ready and persevere if we wish to respond engagingly.

If we are capable of extending respect, we cannot do so without acknowledging the integrity of others. Arguably, to disregard such integrity is no less than exercising power and domination over them in whatever benign or subtle forms. As raised earlier, and other researchers have found it plausible, many Chinese students seek "international exposure" in UK-based MBA programmes, to supplement experience unavailable at home. Occasionally, however, this experience puts their confidence and sense of identity to the test. For instance, how should they conduct themselves in sometimes rather aggressive MBA scenarios. Indeed, they face a dilemma: to behave 'like them (westerners)', i.e. to conform to the macho MBA norm, wearing a mask of forced identity; or, to learn to survive their studies yet be at ease with themselves. For some of them at least, the aggressive and competitive ethos of an MBA education displays too much *yang force*, with limited room for *yin force* or the quality of water – a form of benevolence and wisdom - to find its expressions. Many Chinese understand that an imbalance of the two in Nature leads to disasters, and in human affairs to misfortunes or ill health.[8] If open displays of aggression are unappealing to many Chinese,

[8] Many phenomena manifested in the MBA can be viewed through Chinese conception of *yin-yang* balance. For an introduction, see Kaptchuk (1983). An analysis of the imbalance embedded in the MBA ethos and practices must wait for another space.

one should not be surprised that we find our Chinese students generally far less inclined to be confrontational. However, as raised earlier, this may be inappropriately interpreted as a weakness requiring correction or at least 'improvement'.

Through their studies, many Chinese students are informed about how a western knowledge system works, the basis of which is the European intellectual tradition. Their MBA experience may not convince them that what they have learned would work at home. Anecdotal evidence shows that privately they are skeptical, though seldom openly critical. They are likely to hold that a western knowledge system is worthy of their respect but its wholesale application in China remains a remote possibility. This view resonates and responds to an old Chinese concern from the 19th century mentioned earlier. The difference now is that more Chinese are better informed about the outside world than their parent's generation. Many accept that learning from the west and being adequately informed are part of an inevitable process and a positive sign of maturity of their own nation in the contemporary world. In pursuing 'management knowledge', the expectations of the MBA may well be instrumental in so far as they are a necessary experience of knowing others who may be different from themselves. After all, "know yourself; know your opponent", as Sun Tzu advocates, prepares you for a confident encounter.

Condition for Dialogue

Let us give some thought to difference. What takes us forward is a question of 'how'. On the condition of accepting difference, Reynolds (2000) turns to Giddens' (1994) possibility of 'dialogic democracy' through trust and a genuine appreciation of the integrity of the other with whom one is in dialogue. The authors agree that trust and such integrity are indispensable. A dialogue must have flows of ideas from two directions. One-way traffic, including the form of critique, is poor dialogue between the west and its counterpart. Heavy traffic in one direction, and light traffic in another is asymmetry. Talk of dialogue without letting your interlocutor speak in their terms is disingenuous.

In her postcolonial take, Shih (2002) illuminates how and when unequal efforts in understanding taking place between Chinese and American feminist intellectual exchanges. She coined the term 'asymmetrical cosmopolitanism'. It means that, to be considered cosmopolitan, the former must be knowledgeable about western cultures and crucially speak competently one cosmopolitan language (read: English). Whilst the latter can be 'cosmopolitan' and have no need to speak the language of the other, with whom such exchange is sought. This imbalance is symptomatic of asymmetry of power in subtle and/or less subtle forms, depending on one's location in such asymmetry. Albeit illustrative in presentation, this paper highlights a blind spot in the MBA debate. Asymmetry pinpoints uneven, if not unequal, efforts made in transnational encounters, and calls for reflection and, more importantly, change. We must ask: How is asymmetry maintained? Can it be overcome by following routine methods of research derived from mainstream anthropology?[9] A short answer is 'no'.

[9] See Fabian (1983) for a classic epistemological critique of Anthropology including the ethnographic method. He identifies the problem of "denial of coevalness" of the other, namely anthropological accounts are made possible by researchers' relegating their subjects in another space (secondary to anthropologists) and time (past vs. anthropologist's present).

In Said (1978), Fabian (1983), and Young (1990), a common aspect in their argument is power and domination of the west to others. For the current debate, our position is that a direction for the future of the MBA must consider how one relates to others in a less dominating or non-dominating way. To this end, therefore, reiterating an argument on power will not change the dominating character of this relationship. This is why, for us, a solution must take an ethical direction in the very relationship itself. On the challenge researchers could face, Shih (2002: 117) invites us to contemplate: "… how to imagine and construct a mode of transnational encounter that can be 'ethical' in the Levinasian sense of non-reductive consideration of the Other, for which the responsibility of the self (be it Chinese or Western) towards the Other determines the ethicality of the relationship". Here Shih comes to the crux of our concern: relating to others ethically, one must treat others non-reductively to oneself or without appropriation and show responsibility towards others. Shih insists that Levinas' "non-Hegelian insistence on the 'going out towards the Other', in which the other is not reduced to the object of knowledge, …" can serve as the basis for "rethinking a transnational politics of interaction, communication, and representation." One would not miss in Shih a political imperative. This is the task, if one wishes to think ahead, for transnational encounters in management studies, be it international business or comparative management. This "going towards the Other" requires more than a willingness, it is also about 'how' and possibly *wu wei* in the execution of 'how'.

From this paper, one may draw a lesson for 'theory'. The habitual exercise of applying theoretical constructs, exemplary in Redding (1990) with Weber's theory to his Chinese subjects, or 'theory' developed from western experience, while discounting others' own intellectual tradition sets us apart from genuine understanding. There are times when we can resist the temptation to set ourselves up as the sole spokesperson for non-western subjects. A normative research design easily marginalizes such subjects. For this reason, one resolves to 'a clearing operation'. Namely, one clears a space for others by stepping aside before others can speak in the discursive space of writing. In this sense, writing can be the name for a political economy of space where some have a bigger share of voice and benefits than others do. As researchers, it means that we 'apply theory' discriminately, questioning diligently and vigilantly the extent of its applicability and concrete human conditions in each application. Too often, as researchers are 'advancing theory', we neglect one critical question: who benefits far more than others do from such advances?

If for some of us, Chinese students have been visible but less often audible, this paper has attempted an articulation of them. The challenge ahead requires both the Chinese students and their counterpart to develop a cosmopolitan attitude as proposed by Shih (2002). Striving to act upon it is definitely demanding, the prerequisites of which must be open-mindedness, respect and long-term effort. If we do nothing to dispel misconceptions, we are unwittingly complicit in accepting unexamined views that fly in the face of cherished scholarly values. For future research, it is desirable to conduct bilingual interviews, as experienced by some of our interviewees. Some found it helpful to recall experience in Chinese. The horizon of insights from two language sources would enable researchers see what otherwise would remain beyond our immediate horizon due to researchers' limited language capacity. Regrettably, our inability in another language is our loss in understanding others in their terms. So long as such inability remains acceptable, one has no sound basis to claim mutual understanding. Looking ahead, the challenge of bridging diverse perspectives derived from socio-historical traditions is no less demanding than for earlier researchers. To paraphrase

Lao Tzu, the journey of a thousand miles – in a direction provisionally called postcolonial encounter in management studies - has merely begun with our first step.

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Chapter 8

LINKING OWNERSHIP ADVANTAGES, LOCATION ADVANTAGES AND FIRM STRATEGIES: AN EXTENSION TO OLI MODEL OF FOREIGN DIRECT INVESTMENT

Chung-Sok Suh*

School of Organization and Management, Australian School of Business, The University of New South Wales, Sydney, 2052 Australia

Yue Wang†

School of Strategy and Entrepreneurship, Australian School of Business, The University of New South Wales, Sydney, 2052 Australia

ABSTRACT

Dunning's ownership-location-internalization (OLI) paradigm is one of the earliest and most influential models that explain the phenomenon of foreign direct investment (FDI). However, partly due to its heavy focus on ownership advantages to the neglect of location advantage and partly because of the ignorance of the heterogeneous strategic motivations of FDI, the paradigm failed to explain many examples of upstream FDI entering the US and EU (initially from Japan and later from Asian newly industrialising economies) without substantial ownership advantages compared to the incumbent firms. This chapter aims to explain these seeming anomalies by developing a conceptual framework that extends the OLI model to link ownership advantages, location advantages and firm strategies together. In such a framework, ownership advantages are seen as a pre-condition as well as a product of FDI. By incorporating firm strategies as the fourth condition of FDI, our framework proposes that it is the *ex ante* firm strategies that lead to the *ex post* different configuration of ownership and location advantages. The framework helps us to understand that it is the match between the heterogeneous strategic motives of

* Phone: (61-2) 9385-4466; Fax: (61-2) 9385-5622; Email: c.suh@unsw.edu.au
† Phone: (61-2) 9385-4934; Fax: (61-2) 9385-5722; Email: yue.w@unsw.edu.au

firms and the location-specific advantages that explains many upstream Asian FDI entering the US and EU.

Keywords: Foreign Direct Investment (FDI), Dynamic OLI, MNE Strategy

1. INTRODUCTION

One of the most important and most researched questions in international business (IB) is what determines foreign direct investment (FDI) (Driffield and Love, 2007). Based on market imperfection approach (Hymer, 1976) and internalisation theory (Buckley and Casson, 1976), Dunning (1981, 1988a, 1988b) developed an eclectic theory of the multinational enterprises (MNEs), arguing that foreign productions by domestic firms would occur if and only if three conditions are satisfied. First, the firm must possess some specific advantage (ownership advantage) in serving particular markets. Second, the foreign location must offer some country-specific advantages (location advantages) which favour the foreign production. Third, due to transaction costs involved in international market, the location advantage of a nation (which leads to trade) is replaced by an ownership advantage internal to an MNE (internalisation advantage).

The eclectic paradigm not only attempts at answering the question of why firms produce abroad, but also the question of how firms are able to compete successfully with domestic firms and in which particular host countries MNEs produce (Dunning, 1988a). Because of intrinsic disadvantages associated with operating in a foreign country, a firm must possess ownership advantages to offset the liabilities of foreignness in order to compete successfully in a foreign market. The classic firm-specific ownership advantage involves some form of technological superiority which gives a firm competitive advantage over its rivals (Driffield and Love, 2007). On the other hand, internalisation advantages determine the choice of FDI over market-based options for entering foreign countries. Firms choose foreign production because of market failures in exploiting their firm-specific ownership advantages through exporting or licensing (Buckley and Casson, 1976, 1985). These two advantages are named the ‘why’ and ‘how’ approaches of FDI (Dunning, 1988b; Moon, 1997). Location advantages are the concluding part of the argument, which explains ‘where’ of FDI. Even if there are substantial ownership and internalisation advantages, the location factors of the host country must be suitable for FDI to take place. When all three conditions are satisfied, the firm decides to undertake FDI as long as financial resources are available to it.

Although all three advantages are regarded as necessary conditions of FDI, ownership advantage is regarded as the precondition of the other two in the eclectic paradigm (Dunning, 1995). Two implications can be drawn from this. First, firms must build up substantial ownership advantages through other activities before FDI takes place. In other words, the OLI schema can only explain FDI from an already established firm with a substantial competitive edge. Second, as the existing ownership advantages are the most important precondition for FDI, the OLI paradigm mainly explains downstream FDI, which represent the cases where the firms entering the market have superior firm-specific assets and which flows from a more developed country (MDC) to a less developed country (LDC).

However, there have been many counter-examples during the past 30 years. Many upstream FDIs (i.e. the cases where the firms making FDI have lower or no substantial level of firm-specific assets compared with the incumbent firms already operating in the market) have entered the US and EU, initially from Japan and later from Asian newly industrialising economies (NIEs). Recently, for example, many Chinese firms also undertook upstream FDIs in the US. Moreover, many of these Asian firms did not posses any substantial ownership advantages before they engaged in upstream FDIs in the more developed US and EU countries (Moon, 1997, 1999; Seo and Suh, 1999; and Suh and Seo, 1999). The failure of OLI model in explaining such upstream Asian FDIs in MDC can be partly attributed to its heavy focus on ownership advantages to the neglect of location advantages (Dunning, 1998) and partly because of the ignorance of the heterogeneous motivations of FDI (Head *et al*., 1995; De Mello, 1999; Chung and Alcacer, 2002). Dunning (1993) later added strategic motivations as a fourth condition for understanding a firm's engagement in foreign production. But he fell short in establishing the link between firm strategies and OLI advantages.

This chapter aims to explain upstream FDI from LDC firms with less firm-specific advantages by conceptualizing the dynamic links between ownership advantage, location advantages and strategic motivations of FDI. We argue that ownership advantages can be a pre-condition as well as a product of FDI and proposes that it is the *ex ante* firm strategies that lead to the *ex post* different configuration of ownership and location advantages. We show that it is the match between the heterogeneous firm strategies and the location-specific advantages that explains many upstream Asian FDI entering the US and EU.

In developing such a framework, section 2 first matches various types of location advantages with the heterogeneous strategic motives of FDI. Section 3 builds the dynamic link between ownership and location advantages. Section 4 advances the concept of duration of location advantages to further refine the framework. Section 5 applies the framework to explain upstream investments in MDCs by firms from LDCs. This is followed by some concluding remarks in Section 6.

2. MATCHING LOCATION ADVANTAGES WITH FIRM STRATEGIES

Fundamental to international trade theory, a location advantage is an advantage that is specific to a geographic region (typically a country) and may include both natural and created endowments of resources (Delios and Beamish, 2004). Location advantages may be broadly classified into home country and host country location factors. Home country location factors, however, can be incorporated into other advantages, as they generally contribute to the creation of ownership advantages and/or internalisation advantages. Vernon's product life cycle hypothesis (1979) and Porter's diamond (1990) are good examples. Therefore, location advantages hereafter in this chapter refer to host country location factors. Host country location factors that are compatible with the ownership and internalisation advantages reinforce a firm's decision to undertake FDI. But as pointed out by Delios and Beamish (2004), given the presence of OLI advantages, FDI must be consistent with firms' long-term strategy. All four conditions (OLI advantages and strategic motivation) must be present for a firm to engage in international production.

Dunning (1993) categorised motives of FDI into market seeking, natural resource seeking, trade seeking, efficiency seeking and strategic asset seeking. This is a useful starting point in analysing the match between strategic motivations and location advantages in a systematic way. Firms with different motivations for FDI will seek different location advantages from host countries. Following Dunning's typology, we identify five different types of location advantages to match the heterogeneous FDI motives: Market-Related Location Advantages (MRLA), Resource-Related Location Advantages (RRLA), Trade-Related Location Advantages (TRLA), Knowledge (Technology)-Related Location Advantages (KRLA), and Network-Related Location Advantages (NRLA).

Firms driven by market-seeking in FDI aims to protect existing markets, counter the moves of competitors and pre-empt or preclude existing and potential competitors from gaining a market (Dunning, 1993). For these firms, conventional location factors such as transportation costs and trade barriers of the host country, which can be labelled Market-Related Location Advantages (MRLA), are the most important. These MRLAs are important determinants that influence the choice between direct export and FDI. As such, they also contribute to transaction costs in the market and can be classified into the factors that create internalisation advantages. However, these natural and policy barriers are also location specific, which explains why a firm might choose FDI in one country, but choose other entry modes in another country.

Two additional MRLAs are crucial for accomplishing market-seeking strategies. The first is 'proximity to customers'. In a market where pressures for local responsiveness are high, a firm will find it easier to compete when production is undertaken in the host country. The second additional MRLA is 'first mover advantage' in a new market. The trend toward market liberalisation has been accelerated during the past two decades, along with the opening of the new markets in ex-socialist economies. When a new market is opened, the position of 'first mover' gives distinct advantages to a firm over time, even if it is not translated into an immediate financial return. Many firms from LDC entered Russia and Eastern Europe in order to gain from this advantage, and among them there were many with relatively less established ownership advantages as compared with western MNEs. Daewoo's investment in the motor vehicle industry in new markets such as Poland is a good example. This MRLA gave Daewoo a strong foothold to capture market share and compete against more established late entrants.

Resource-seeking firms may purchase natural resources at arm's length. But, even the market for natural resources is not perfectly competitive. This gives an incentive to a firm that places a high value on stability of supply to establish a foreign subsidiary to manage raw material procurement. In some cases, a firm might undertake backward vertical FDI due to high transport costs and contracting difficulties arising from asset-specific investment. FDI thus guarantee the exploitation of Resource-Related Location Advantage (RRLA) that cannot be realised through the market transactions (Hennart, 1982). MNEs aiming at exploiting this type of location advantage will establish a subsidiary in the host country for raw material procurement and/or the production of natural resources. Examples abound in oil, copper, bauxite, bananas and forest products industries (Dunning, 1993).

The principal motivation for trade-seeking FDI is cost minimisation in production. The most valuable location advantage for these firms is Trade-Related Location Advantage (TRLA). For example, a firm has been exporting its product to Country A. If the cost of production increases at home, then the firm will try to find a suitable location to reduce the

cost of production if it intends to continue its production and exports to Country A. Therefore, TRLA determines the choice between exports (to a third country), and a combination of FDI (i.e. production in the host country) and exports (to the third country). Many factors can be classified as TRLAs, such as highly motivated labour force, quality infrastructure, host country government policy, and host country economic conditions such as favourable exchange rates. However, one of the most critical determinants is the labour costs, which account for a major proportion of the production costs in trade-oriented FDI. Another factor idenfied is cultural affinity. Since the opening up of China to foreign investors, FDI from Hong Kong consistently accounted for a lion's share of the total inward FDI in China. Among other factors, cultural affinity with mainland China has been the most important underlying this phenomenon (Sung, 1995; Wang, 2005).

For firms motivated by seeking strategic assets in a host country, Knowledge-Related Location Advantages (KRLA) are most attractive. In Silicon Valley, Japanese firms entered in the 1980s and Korean firms entered in early 1990s did not possess substantial ownership advantages (Moon, 1997). Instead, they were mainly attracted by the technological spillover in the region. It was the match between the Japanese and Korean firms' strategies and the knowledge (technology)-related location advantages that led to their FDI in the region. The explanations of this type of firm strategies were attempted by the imbalance hypothesis (Moon, 1997, 1999). According to the imbalance hypothesis, it is not the best factor of production, but the worst or least competitive factor that determines the overall competitive position of a firm in the industry. Therefore, firms try to reinforce their least competitive area as a priority to catch up with their major competitors. The imbalance hypothesis can be extended to explain the match between firm strategies and other location advantages such as RRLA. Firms in need of natural resources overcome this weakness by investing in the country that has the resources. Similarly, LDC firms weaker in technological know-how try to acquire technology through FDI in MDCs. Licensing or franchising agreements with firms in MDCs might be alternative ways for a firm in LDC to acquiring technology. However, firms in MDCs are now much less willing to give out their technology (Suh and Seo, 1998).

Efficiency-seeking firms often engage in FDI to enhance a regional product rationalization strategy. The type of location advantage considered to be conducive to this kind of firm strategy is Network-Related Location Advantage (NRLA). For this reason, Hong Kong and Singapore have been favoured destinations for regional headquarters that co-ordinate the Asian operation of MNEs. NRLA can also serve the purpose of strategic asset seeking. Some MNEs establish a subsidiary (or even the headquarters) to access the capital markets of the host country. For example, Bahamas and Bermuda have been favourite destinations for the headquarters of some MNEs trying to take advantage of favourable tax policy in those countries. In these cases, international or regional headquarters are established in the host country, without establishing any production facility. The purpose here is to gain in efficiency in finance rather than production.

3. LINKING OWNERSHIP AND LOCATION ADVANTAGES

Dunning's eclectic paradigm assumes that ownership advantage is the most important component of OLI advantages. As such, ownership advantage is a pre-condition to location advantage and location becomes a neglected factor within the OLI paradigm (Dunning, 1998). Buckley (1992) critiqued that the relationship between Dunning's OLI advantages and their development over time are unclear and leave a classification that is bereft of a dynamic content. Consequently, a dynamic link between ownership and location advantage is not established and the explanation of FDI is often provided with a heavy focus on the ownership advantage, which as pointed out earlier, does not adequately address upstream FDI and FDI made by firms that do not possess a priori ownership advantages. This second part of our framework provides a close examination of the dynamic relationship between ownership and location advantages.

Table 1 summarises various types of location advantages identified in Section 2 and explains the dynamic relationship between ownership and location advantages. As represented by the arrows in the table, two types of relationships can be observed: first, O → L depicts that ownership advantage is a pre-condition of FDI and exists independently of location advantages, but location factors such as trade restrictions and transport costs induce a firm to choose one location over another. Second, L → O depicts a reverse sequential progress where location advantages in the host country can give rise to ownership advantages after the firm makes FDI in that country.

Table 1. Dynamic Relationship between Ownership (O) and Location Advantages (L)

Firm strategies	Location Advantage	Relationship between O and L
Market Seeking	MRLA 1) Transport Costs	O → L[a]
	MRLA 2) Trade Restriction	O → L
	MRLA 3) Close to Customer	**O ← L**[b]
	MRLA 4) First Move Adv.	**O ← L**
Resource Seeking	RRLA 5) Natural Resource	O → L
	RRLA 6) Stability of Supply	**O ← L**
Trade Seeking	TRLA 7) Labour Costs	O → L
	TRLA 8) Cultural Affinity	O → L
	TRLA 9) Government Policy	O → L
Knowledge Seeking	KRLA 10) Technology	**O ← L**
Network Seeking	NRLA 11) Infrastructure	**O ← L**
	NRLA 12) Tax & other policy	**O ← L**
	NRLA 13) Source of Finance	**O ← L**

[a] O → L depicts a sequential progress where ownership advantage is a precondition and the firm considering FDI considers location advantages in the host country

[b] O ← L depicts a sequential progress where location advantages in the host country can create the ownership advantages after the firm makes FDI.

The first type of O → L relationship indicates that the existence of ownership advantages plus the market failure across borders provide sufficient conditions for FDI to occur, and explains most of the traditional downstream FDIs made by firms from MDCs. Table 1 shows that a group of conventional location advantages discussed in the literature (MRLA 1, MRLA 2, RRLA 5, TRLA 7, TRLA 8 and TRLA 9) will not impact on the firms' initial decision to engage FDI. Firms from MDCs consider these location advantages in terms of their location choice after they make a decision to engage in downstream FDIs in LDCs.

The second type of L → O relationship indicates the sequential progress where location advantages in a host country can create ownership advantages after the firms make FDI in that country. A group of location advantages in Table 1 (MRLA 3, MRLA 4, RRLA 6, TRLA 10, NRLA 11, NRLA 12 and NRLA 13) are likely to give rise to new firm-specific advantages for firms engaging FDI in a particular location. For example, MRLA 3 is the location advantage arising from proximity to customers. Marred by the perception of customers in MDCs that the products imported from LDCs are of substandard quality, being close to customers (MRLA 3) can be an important factor for LDC firms to create a favourable product image and/or to improve the product substantially to meet the host country' standards. The result is therefore an upstream FDI to replace export. Good product image created in MDC markets through an upstream FDI can become an important source of ownership advantage for a firm from a LDC trying to compete in the international market. Thus, a location advantage (close to customer) can lead to an important firm-specific intangible asset (product image), which form part of the ownership advantages of the firm. However, this is an *ex post* ownership advantage, which can only be created or reinforced after the actual FDI has taken place.

A similar line of argument can be applied to explain the dynamic link between another important market-seeking location advantage (MRLA 4 first mover advantage) and ownership advantage created in a host country market. The position of first mover can give rise to important firm-specific advantages. A firm without substantial ownership advantage can enter the newly opened market, enjoying the usual benefits accruing to the first mover. For example, the Japanese domestic automobile market had been traditionally led by Toyota and Nissan on the basis of their extensive distribution networks with established positions. In comparison, Honda did not enjoy substantial ownership advantages than Toyota and Nissan. However, by entering the US market before Toyota and Nissan, Honda was able to create and enjoy substantial ownership advantages as the first Japanese car manufacturer producing in the US market (Kojima, 1978; Ozawa, 1979). Through FDI, ownership advantages can be created by the first mover as a foreign firm.

RRLA 6 refers to a special case to the more general case of RRLA 5, where a firm participates in the production of natural resources to seek the stability of supply, which can give the MNE a distinct firm-specific ownership advantage. The sequential progress here is from location advantage to ownership advantage, as this firm-specific ownership advantage can be enjoyed only after the actual FDI takes place. Japanese FDI in the resource industries in Australia and Southeast Asia after the international energy crises in the 1970s and Korean FDI in Australia in the 1990s fall mainly into this category.

The link between KRLA 10 (technology) and firm-specific advantages is explained by Moon (1997). A firm which may not have substantial technological advantage makes FDI in a more technically advanced host country to capture positive externalities (i.e. technological

spillover in the host country) and create its ownership advantage in technology. Hence, the sequential progress here also runs from location to ownership advantages.

The relationships between NRLAs (e.g. infrastructure and source of finance) and ownership advantages also require explanation. During the 1990s, the strategy in international business has become more complex than previous decades. As both cost and local responsiveness pressures have increased, firms started to shift their strategies from a multi-domestic or international to a global or trans-national strategy (Bartlett and Ghoshal, 1987), which created a need to establish a global and/or regional headquarter at a location suitable for achieving networking advantages. This location is not necessarily the home country. An appropriate choice of location for regional/global headquarters can result in an increase in the competitiveness of a firm. Therefore, the sequential progress is from location to ownership advantage.

In summary, this second type of L $\rightarrow$ O link implies that ownership advantages are not necessarily a pre-condition for FDI, but rather a product of FDI. That is, ownership advantages are created by the location advantages in the host country. This makes our argument fundamentally different from conventional explanations of downstream FDI within the OLI paradigm. One important question follows from this observation. Although examples were given for FDIs with the causal relationship running from location to ownership advantage, this is not a general pattern for all firms. If ownership advantages are created or reinforced only after FDI takes place, then whether the actual FDI will take place or not will depend on other factors as well. First, the firm's attitude towards risk is an important factor. Bold entrepreneurs are likely to take advantage of these types of location advantages, hence creating ownership advantages. Second, the length of the planning horizon of the company and the social discount rate will also play an important role in the decision making process. This partly explains why Japanese and Korean firms have made more technology seeking FDIs than firms from other countries.

Table 2. Firm Strategies, Ownership Advantages and Duration of Location Advantages

Firm strategies	Location Advantage	Likely to lead to ownership advantage?	Duration of Location Advantage
Market Seeking	MRLA 1) Transport Costs	NO	Declining
	MRLA 2) Trade Restriction	NO	Declining
	MRLA 3) Close to Customer	**YES**	Long
	MRLA 4) First Move Adv.	**YES**	Long
Resource Seeking	RRLA 5) Natural Resource	NO	Short
	RRLA 6) Stability of Supply	**YES**	Long
Trade Seeking	TRLA 7) Labour Costs	NO	Short
	TRLA 8) Cultural Affinity	**YES**	Long
	TRLA 9) Government Policy	NO	Short
Knowledge Seeking	KRLA 10) Technology	**YES**	Long
Network Seeking	NRLA 11) Infrastructure	NO	Variable
	NRLA 12) Tax & other policy	NO	Variable
	NRLA 13) Source of Finance	**NO**	Variable

4. DURATION OF LOCATION ADVANTAGE

Generally speaking, location advantages are created by the environment in the host country, not by investing firms. Therefore, it has been assumed in the literature that ownership advantages exist independent of location advantages. However, in the above analysis of the dynamic relationship between ownership and location advantages, we argued that some location advantages will lead to the creation of firm-specific ownership advantages. In this section, we propose that whether a certain location advantage will give rise to firm-specific ownership advantage is contingent upon the duration of the location advantage. Table 2 summarises the relationships between the duration of location advantage and the likelihood of leading to firm-specific ownership advantage.

Let us consider Market-Related Location Advantage (MRLA) first. Any firm entering the same host country can enjoy the benefit of a reduction in transport costs and trade restrictions in the host country. Location advantages based on natural barriers such as transport costs are long lasting, but both the weight to value ratio and transport costs can decrease slowly over time, along with technological development. The duration of location advantages coming from trade restrictions differs significantly across host countries. But, considering the global tendency to liberalise economies, the lifetime of location advantages solely based on trade restrictions is likely to decrease further. Moreover, these advantages provided by one location may not last long as other countries are competing FDI though reducing trade barriers etc. Therefore, these advantages are not likely to lead to firm-specific ownership advantages.

On the other hand, the lifetime of product image and first mover advantage are longer lasting. We can expect a gradual shift in MRLAs from natural and policy barriers to cultural barriers and first mover advantage (Suh and Seo, 1998). Hence, the product image created by a firm engaging FDI in a host country is likely to last long and provide firm-specific advantage. Early entrants are likely to create favourable product image more easily than late entrants. First mover is by nature firm specific.

The duration of Resource-Related Location Advantages (RRLAs) may or may not be long and therefore may or may not be able to give rise to firm-specific ownership advantages, depending on the nature of the resource market in the host country and also the nature of FDI. If security of supply is guaranteed by backward vertical FDI, then the duration of this location advantage is long. Naturally, resource poor countries with substantial manufacturing industry, such as Japan and Korea, would value highly security of supply of natural resources, and tend to participate in the development and production of resources through FDI. Firm specific advantages might be developed through learning by doing and reinforced through continuous improvement in the production process. If a subsidiary participates in the process of securing resources in a relatively competitive market, then it is not likely to create firm specific advantages due to the short-lived advantages in a competitive market. Hence, RRLA 6 (supply management) is likely to lead to firm-specific ownership advantage, whereas RRLA 5 is not (natural resource procurement).

Trade-Related Location Advantages (TRLAs) are mostly unlikely to lead to firm specific advantages. First, they are created by socio-economic conditions in the host country which are available for any foreign firms to utilise, such as government policy, infrastructure, the exchange rate and so forth, unless these advantages are rationed to early entrants or to selected firms. Second, the duration of TRLAs is generally short. As the standard of living

increase together with the industrialisation, wages in the host country increase and location advantages arising from cheap labour costs dissipate accordingly. Also, recently host country trade policies are scrutinised more thoroughly and frequently by their trading partners. Consequently, benefits such as subsidies and tax holidays granted by the host country are no longer freely available. Therefore, after a certain period, the headquarters will have to search for another host country with adequate TRLAs.

However, cultural affinity (TRLA 8) can be distinguished from other TRLAs. For example, FDI in China for the past two decades can be grouped into two categories: market seeking and trade seeking FDI (Sung, 1995). Most of the trade seeking FDI has been from Hong Kong and concentrated in the neighbouring Guangdong province. Small and medium sized Korean firms undertaking trade seeking FDI in China failed due to a lack of cultural understanding (Suh and Seo, 1998). Therefore, this type of location advantage is not available to all firms but to firms belonging to certain cultural blocks and long-lasting, hence more likely to lead to firm-specific ownership advantages.

Knowledge-Related Location Advantages (KRLAs) are likely to lead to firm specific advantages because KRLAs are long lasting, as long as the firm does not fall into complacency after the initial acquisition of technology. Even if technological spillover is available to all firms in the host country's market, the extent of absorbing positive externalities will be different. Once embedded in, the absorbed positive externalities become part of the firm specific ownership advantage.

Network-Related Location Advantage (NRLAs), however, may or may not be able to lead to firm specific advantages as the duration of such advantages are variable and often subject to host country's institutional environment. For example, firms cannot draw upon tax and financial system to develop long term firm-specific advantages as the system may change dramatically. Foreign firms moving out of Hong Kong to Bahamas and Bermuda before the 1997 handover indicates the fear of short-live nature of such location advantages.

When firms make FDI based on location advantages, they will prefer longer-lasting location advantages to short-lived ones. The duration of location advantage is determined by various factors such as technological development, change of government and/or international policy etc. Firms will try to choose longer lasting location advantages wherever possible. Suh and Seo (1998) made some observations related to the changes in the nature of location advantages in Asia-Pacific region. First, the lifetime of TRLA is generally short. As the macroeconomic conditions change, and the benefits from export promotion policy are diluted, FDI moves relatively quickly to the next group of countries. This type of investment has been termed as footloose capital. However, one exception is the FDI from Hong Kong and Taiwan to China. Culture affinity with mainland China makes it possible for firms from Hong Kong and Taiwan to develop firm-specific capabilities better than they can in other countries (e.g. Southeast Asian countries), and will therefore tend to be longer lasting. Second, among MRLAs, location advantages relying on natural and policy barriers are becoming less important than those relying on proximity to customers and first mover advantages. With the opening up of new markets in the region, this tendency was important in the 1990s. Thirdly, KRLA will continue to be utilised by firms in LDCs trying to catch up with firms in MDCs and develop core competence. Although KRLA has not been identified extensively among inward FDI flows in the Asia-Pacific region as yet, it is emerging rapidly in the computer software industry in India. Finally, as the global competition has been intensified since the 1990s, NRLAs have become more important than before. Considering the accelerated pace of

the globalisation of business, intensified international networks, and the rapid expansion of E-commerce, NRLAs remain an important area of study in international business.

5. DISCUSSION

In this session, we apply the framework to explain upstream FDI by matching heterogeneous strategic motives of firms with location advantages. Table 3 summarizes the explanation.

Table 3. Explaining FDI: Matching strategic motives with location advantages

Firm strategies	Location Advantage	Up/Down Stream	FDI in the US and EU	FDI in East and Southeast Asia
Market Seeking	MRLA 1) Transport Costs	DS/US	From DC & LDC	From DC and NIEs
	MRLA 2) Trade Restriction	DS/US	From DC & LDC	From DC and NIEs
	MRLA 3) Close to Customer	DS/US	From DC & LDC	From DC and NIEs
	MRLA 4) First Move Adv.	DS	N/A	From DC and NIEs
Resource Seeking	RRLA 5) Natural Resource	N/A	From DC & LDC	From DC and NIEs
	RRLA 6) Stability of Supply	N/A	N/A	From DC and NIEs
Trade Seeking	TRLA 7) Labour Costs	DS	N/A	From NIEs
	TRLA 8) Cultural Affinity	DS	N/A	From NIEs
	TRLA 9) Government Policy	DS	N/A	From NIEs
Knowledge Seeking	KRLA 10) Technology	US	From LDC	N/A
Network Seeking	NRLA 11) Infrastructure	DS/US	From DC & LDC	From DC
	NRLA 12) Tax & other policy	DS/US	From DC & LDC	From DC
	NRLA 13) Source of Finance	DS/US	From DC & LDC	N/A

DC = Developed Countries.
LDC = Less Developed Countries.
US = Upstream.
DS = Downstream.
NIE = Newly Industrialised Economy.

A firm from a LDC exporting a product to a MDC would serve the lower end of the market at the initial stage, with the upper end served by high quality outputs by firms of MDCs. This coincides with the explanations given in the Product Life Cycle Hypothesis. When exports from LDCs face various barriers, such as natural, policy and cultural, then upstream FDI will take place. If there are MNEs from other MDCs co-serving the higher end of the market, then FDI in the same industry from both LDCs and MDCs can co-exist. This explains why in the US and Europe we observe upstream FDI from LDCs and FDI from MDCs simultaneously. However, this does not apply to first mover advantage (MRLA 4). Obviously, a firm from a LDC cannot be the first mover in a MDC market.

Upstream FDI takes place based on KRLA and NRLA as well. Knowledge-seeking FDI is mainly upstream investment by nature, as the strategic motive is to acquire technology (or knowledge) which the firm is lacking. On the other hand, network-seeking investment can be either upstream or downstream. Production does not necessarily take place in the host country. Therefore, a firm from a LDC that adopts a global or transnational strategy can make an upstream FDI in a MDC. There may be knowledge spillover in this case as well.

Upstream FDI from a LDC to a MDC especially FDI from a firm with no substantial ownership advantages have puzzled scholars of international business. Treating ownership advantage as the most important pre-condition for FDI, the conventional OLI paradigm does not provide a satisfactory explanation to these upstream investments by LDC firms. We have shown in this chapter that these FDIs are not anomalies, but can be explained under an extended framework of the OLI paradigm, in particular by examining a dynamic relationship between location and ownership advantages. In such a framework, ownership advantages can be created and/or strengthened after FDI is undertaken. Therefore, ownership advantage is not only a pre-condition of FDI, but can also be a product of FDI. A profit maximising firm makes a decision to undertake FDI, based not only on current ownership advantages, but also on future competitive advantages. The framework helps us to understand that it is the match between the strategic motives of firms (notably knowledge seeking) and the location-specific advantages (KRLA and NRLA) that explains many upstream Asian FDI entering the US and EU.

6. CONCLUSION

Dunning's ownership-location-internalization (OLI) paradigm is one of the earliest and most influential models that explain the phenomenon of foreign direct investment (FDI). However, partly attributed to its heavy focus on ownership advantages in explaining FDI to the neglect of the second pillar location advantage and partly because of the ignorance of the heterogeneous strategic motivations of FDI, the paradigm failed to explain many examples of upstream FDI entering the US and EU (initially from Japan and later from Asian newly industrialising economies) without substantial ownership advantages compared to the incumbent firms. This chapter develops a conceptual framework that extends the OLI model to link ownership advantages, location advantages and firm strategies together. In such a framework, ownership advantages are seen as a pre-condition as well as a product of FDI. By incorporating firm strategies as the fourth condition of FDI, our framework proposes that it is the *ex ante* firm strategies that lead to the *ex post* different configuration of ownership and

location advantages. This chapter advances our knowledge of the dynamic links between ownership advantages, location advantages and firm strategies in explaining foreign direct investment.

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Chapter 9

WHAT ARE NATIONAL PARKS FOR? NEW CHALLENGES IN NATIONAL PARKS MANAGEMENT

Angel Bujosa-Bestard [*] ***and Antoni Riera-Font*** [†]
Centre de Recerca Econòmica (UIB · SA NOSTRA)
Ctra. Valldemossa km. 7.5, 07122 Palma de Mallorca, Spain

ABSTRACT

The protection and conservation of fragile ecosystems led, years ago, to the creation of the first national parks. The management of these areas had to do with conserving natural habitats, regulating natural hazards (droughts, floods, fire, etc.), reinforcing natural barriers against soil erosion, carrying out biological research, etc. Human activity in and around a national park was required to be minimal and unobtrusive. Recent years have seen an increasing demand for outdoor recreation in general and an interest in wildlife in particular, mainly caused by rising incomes (at least in developed countries), falling prices (e.g. cheaper air travel) and a higher public awareness of nature conservation among other factors. This new situation, characterized by a growth in the number of visitors to national parks, has created a new set of problems for their management (congestion, wildlife disturbances and ecodamage). In this context, there is one question about tourist recreation in national parks that makes it an even more interesting problem: What are the national parks for? Tourist recreation brings in revenue which may be important for a park's survival but in turn has serious implications (loss of biodiversity, degradation of habitats, etc.). The problem is that there is no market signal of these externalities, which could act as a constraint on economic activity in and around the park. To help guide decision making on the variety of available management options, improved valuation is needed. The plan of the paper is as follows. First, we analyze the various threats arise from human activity in and around the national parks. Secondly, we examine the use of a number of different non-market valuation techniques for the appraisal of both conservation and economic development projects affecting the

[*] Tel. +34 971 171381; Fax +34 971 172389; angel.bujosa@uib.es
[†] antoni.riera@uib.es

national parks. Finally, according to the findings, we indicate future issues that need further exploration in this field.

1. INTRODUCTION

When the first national parks were established, they were viewed as areas of wilderness and preservation. Some parks were created to preserve a single specie, but the overriding motive appears to be the preservation of wilderness, usually a recognized unique area of natural wealth. The wildlife of such an area is deemed valuable because of its intrinsic worth as wildlife. This value sometimes goes by the name of existence value (Krutilla, 1967, Fisher and Raucher, 1984, McConnell, 1983, Randall and Stoll, 1983).

In ecological terms, natural parks are considered a keystone because of their significant contribution to conserving biodiversity *in situ* (Davey, 1998), protecting wilderness, maintaining ecological services like water supply, flood control and mitigation of the effects of climate change and defending specific natural/cultural features (IUCN, 1998; IUCN, 2000).

In recent years, one of the many reasons for having and conserving a national park is that it provides recreational benefits to visitors. Although there are several dimensions of recreation in national parks (wilderness experiences, photography, learning and education, etc.) the primary one appears to be wildlife viewing. Inevitably, falling real travel costs, rising real incomes and a higher public awareness of nature conservation among other factors, explain that natural parks began to acquire recreational use values (Brown, 1984). Of course, apart from this tourist use value, national parks have other use values (human settlement, grazing, agriculture, research, education, etc.) and also option use value linked to the possibility of using them in the future.

Although human activity carried out in and around the national parks need not have any adverse effects on the environment or on economic agents, it usually does. Several types of adverse effects or externalities are possible. 'Reciprocal externalities' arise when separate groups of economic agents pursue similar economic activities and get in each other's way. In the field of environmental economics the concept of reciprocal externality is well illustrated by Hardin (1968) in the tragedy of the commons. Then, under pretty mild conditions, it is shown that profits per person in free-access equilibrium are not at the Pareto-efficient level. There is overexploitation of the resource in that a lower utilization rate would result in greater profits per person. When exploring the future consequences of human activities, we come up against the concept of 'time-unidirectional externality' due to the fact that overexploitation today will reduce the stock in the future, and if we analyze how human activity in an area affects an adjacent national park, the concept of 'spatial-unidirectional externality' appears. Finally, 'congestion externality' arises when there is too much economic activity in a national park.

It is important for a national park to have these externalities internalized because otherwise the habitat could be damaged, leaving a more impoverished environment for future generations. A list of the major problems now facing a national park includes: poaching wildlife, wood and grass cutting, cattle grazing in and around the park, excessive tourism, air, water and litter pollution, deforestation and desertification. In this context, there is one

question about management of national parks that makes it an even more interesting problem: What are the national parks for?

Within the IUCN (1994), natural parks are in fact managed for different objectives and recreation and tourism is likely to occur as a management purpose. Tourist recreation brings in revenue that may be important for a park's survival but in turn excessive tourist numbers can have serious implications (disturbance of wildlife, loss of biodiversity, degradation of habitats, etc.) and other damaging consequences due to the violation of park rules or congestion among tourists themselves.

The problem is that there is no market signal of these externalities, which could act as a constraint on tourism activity in and around the park. Two fundamental characteristics of the resource in question underpin the result: non-exclusivity and rivalry. Then, other means have to be employed to internalize these externalities such as a single manager, private property rights, community property rights, system of quotas, tradable licenses and taxes.

This paper examines whether the rigorous application of economic valuation to land-use decisions and policy and project analysis could result in an optimum (or at least, an increased) level of conservation of national parks. Next section suggests that these techniques are able to capture a range of economic values that are central to policy conservation. While economic valuation is relevant, section 3 shows that it is necessary to improve the existing valuation methods and put them into practice more and more.

2. THE ROLE OF ECONOMIC VALUATION IN INFLUENCING WILDLIFE CONSERVATION POLICY

National park functions contribute, directly or indirectly, positively or negatively, to people's welfare. In fact, these functions, and therefore the assets which provide them, are economic goods or services because their provision, maintenance or conservation entails giving up the production of some alternative goods or services.

Due to the fact that market transactions for an environmental 'commodity' are not possible, economist recommend employing a decision support-technique called cost-benefit analysis (CBA) as a way to guide decisions. A basic presupposition for environmental CBA is that although we cannot introduce all ecological goods and services into actual markets, it is nevertheless possible to extrapolate in various ways from actual market transactions so as to get an estimate monetary value of some environmental goods or measure the costs of some environmental damages. Environmental goods or damages may be assessed in terms of their impact on other sectors of activity or there may be assessed on the basis of substitute or complementary goods that have a price.

In practice, environmental damage can be approached in monetary terms by estimating the economic costs that are or might be incurred in abating or repairing the damage. Additionally, the monetary value of the loss caused by the environmental damage in goods or amenities can be estimated. This section offers an overview of the major methods that have been used by environmental economist to put a 'price' on damages caused by environmental degradation or, conversely, value the benefits from an increase in the level of an environmental service or resource. In addition, because of their relevance to the issue at hand, some empirical works are also presented.

2.1. Methodologies

Mitchell and Carson (1989) proposed the most used classification of economic valuation methods, based on two characteristics: the observed-hypothetical nature of the data and the direct-indirect nature of the methodology. On the one hand, economic valuation techniques are classified depending whether the data come from observations of people acting in real-world settings (revealed preference methods) or come from people's responses to hypothetical questions (stated preference methods). On the other hand, it is considered whether the method yields monetary values directly or whether monetary values must be inferred through some indirect technique based on a model of individual behaviour and choice. Following this criterion four different groups can be identified (see table 1).

Although there is a wide range of alternatives to undertake a valuation exercise, in the context of national park management, two methodologies –contingent valuation and travel cost method– have become the most known and used instruments to estimate economic values associated with these natural assets.

The travel cost approach (TCM) was the earliest valuation method employed by environmental economists. It has been used chiefly in studying the demand for, and value of, national parks used as inputs in 'producing' outdoor recreation activities. The basic premise of the travel cost method is that the time and travel cost expenses that people incur to visit a national park represent the 'price' of access to the site. Thus, TCM explores the fact that visitors reveal their valuation of national park services through their actual consumption behaviour. People's willingness to pay to visit a national park can be estimated based on the number of trips that they make at different travel costs (money and time). This is analogous to estimating people's willingness to pay for a marketed good based on the quantity demanded at different prices. The earliest study using the method is Clawson's (1959) work on Yosemite, Grand Canyon, Glacier and Shenandoah National Parks and this was followed by Knetsch's (1964) study of the Kerr Reservoir in Oregon for Salmon-Steelhead. Since its appearance, more than 40 years ago, the TCM has naturally been refined and expanded to deal with more complex situations than in its initial applications. To summarize: TCM affords a basis for deriving use values of environmental amenities and it can be applied to estimate economic benefits or costs resulting from changes in access conditions, environmental quality attributes or from the elimination or addition of a new national park.

Table 1. Non-market valuation methods classification

	Observed behavior	**Hypothetical behavior**
Direct	Direct observed:	Direct hypothetical:
	Market price	*Contingent valuation*
	Simulated markets	*Bidding games*
	Real referendum	*Contingent referendum*
Indirect	Indirect observed:	Indirect hypothetical:
	Travel cost method	*Hypothetic travel cost*
	Hedonic property values	*Contingent ranking*
	Avoidance expenditures	*Contingent activity*

Source: adapted from Mitchell and Carson (1989).

There may be situations where data necessary to apply TCM to derive use values are either lacking or difficult to obtain and, more importantly, there is the case of non-use values, which are not associated with the actual use. In these situations, contingent valuation methods (CVM) invoke a framework of a hypothetical or contingent market, through which it seeks to elicit valuations directly from individuals for recreational and ecological services provided by national parks. Since the original work of Davis (1963) on the Maine Woods, different contingent valuation approaches have been developed using a wide range of elicitation instruments (open-ended, bidding game, payment card, dichotomous or discrete choice questions) in order to capture a wide spectrum of benefits from environmental improvements, ranging from improvements in water quality or visibility for recreation, to non-use benefits in preserving endangered species and biodiversity. In essence, contingent valuation attempts to elicit from respondents what they would be willing to pay under a certain hypothetical market situation affecting national parks. The are two primary assumptions of the CVM. The first is that the consumer is the best judge of his best interests, and the second is that the consumer's ability to rank preferences is both rational and knowledgeable. Therefore, special attention must be paid to the design of any CVM.

Although the CVM has made substantial inroads during the past 40 years into mainstream environmental economic research, doubts remain with respect to the reliability of direct valuation, mainly of the presence of strong hypothetical underpinnings. Yet the hypothetical nature of the CVM, and the fact that it depends on sample survey data, could weaken the assumption of rational and knowledgeable consumers and give rise to a number of biases. In this sense, the fact that contingent valuation is based on what people say they would do, as opposed to what people are observed to do, is the source of its greatest weaknesses and its greatest strengths. Finally, the CVM has played a major role in the debate on non-use benefits.

Nevertheless, very recently the CVM has been favourably reviewed by a panel of highly respected economists, co-chaired by two Nobel laureates, Arrow and Solow (Arrow et al., 1993) and lots of studies have been published in order to evaluate the reliability of the method (Cummings et al., 1986; Mitchell and Carson, 1989; Arrow et al., 1993).

2.2. Empirical Evidence

The vast literature using these methodologies in the valuation of goods and services of national parks shows that both methods satisfy the requirements that park managers demand in order to guide and justify their decisions. In this context, and considering the wide range of problems that valuation studies deal with, three different groups of studies can be identified.

The first group of studies, concerned with park funding, has shown the necessity of finding additional sources of income to maintain natural parks in a context where government financial support is decreasing around the world (White and Lovett, 1999). Many authors defend the use of user fees for recreation services in order to both capture recreational benefits from visitors and increase park funding (Moran, 1994; White and Lovett, 1999; Eckton, 2003; Mmopelwa et al., 2007; Sattout et al., 2007). Lee and Han (2002) present the case of Korean national parks, where two-thirds of the total budget is provided by the government, as an example of the necessity of increasing user fees. In their study, they point out that the maintenance cost of Korean parks is around $3 per visitor while the admission fee

is only $0.83. Additionally, these authors use contingent valuation to show that those parks generate a use and conservation value exceeding the current fee of the parks. To be more precise, recreational value was estimated in a range of $4.8 and $14.3 per visitor and the preservation value between $10.6 and $13.5 per visitor, proving that current entrance fees to the park could be increased.

Anyway, benefit estimations will be site-specific, that is, recreational value measures will vary from one study to another due to the differences between each valuation exercise, not only in terms of methodological issues but also in terms of the different characteristics of the good being valued. Looking at the literature, some examples of this variation can be found in the field of general recreation. In this way, Garrod and Willis (1992) estimate for the visitors to national park forests in the UK a per trip value between $0.02 and $5.26 per visitor, but Englin and Shonkwiler (1995), for the Lake Champlain in the United Sates, estimate a higher per trip value between $40.98 and $59.17. More recently, Fix et al. (2000) estimate the value of a recreational trip to Moab, Utah, to be even higher, $135 per visitor. As a result of this variation in the benefit estimates, the fee structure of the park will have to be site-specific in order to adjust the fee with the willingness to pay of the visitors for the recreational services provided by that specific park.

Additionally, other works have focused on the use value provided by specific recreational activities. The estimation of these values could be used for setting down a charge-fee for undertaking the activities analysed or for limiting the number of users that will be undertaking that activity avoiding congestion problems. In this line, Kealy and Bishop (1986) estimate the value of a recreational fishing day in Lake Michigan, Wisconsin, showing a value of $19.54 per visitor.

However, all these values could seem to be insignificant from the point of view of a park manager, but when the aggregated value of recreational services is calculated for these natural areas, important quantities are obtained. Some studies have reported this kind of aggregated estimations, for instance, Beal (1995) reports that the recreational value generated by the visitors of Carnarvon Gorge National Park, Australia, is of $2.4 million per year. In reference to recreational activities undertaken by tourism, Riera (2000) estimates $190 million per season to be the value of ten natural areas in Mallorca, Spain. At the same time, Zawacki et al. (2000) obtain a higher amount for the recreation in the United States forests ranging between $5.8 and $66.4 billion.

Another important question concerning park management refers to the number of people allowed to get into the park. Although a higher number of visitors suppose more economic funds to the park, as it has been stated above, an excessive number of visitors can cause negative impacts on the ecosystems due to congestion-related externalities, even to the point that park users can also be negatively affected. Walsh and Gilliam (1982) estimated through contingent valuation that a visitor to the Indian Peaks wilderness area, in Colorado, would pay $7.40 per day in order to reduce the congestion in the park. More recently, Timmins and Murdock (2007) have set this value on $0.97 per visit using the travel cost method on the Lake Winnebago, Wisconsin. Subsequently, this kind of economic valuation can help park managers to balance the positive and negative effects derived from recreational visits to the park in order to obtain the necessary funding for the park at the same time as guaranteeing the quality of the recreational experience of visitors.

The second group of studies, dealing with land-use policies, have analysed the alternative uses that can be conferred to the land in and around the parks. Due to the scarce economic

resources available, park managers can be tempted to allow the economic development of part of the park in order to obtain additional funding from other economic activities such as urban development (Walpole et al., 2001), timber production (Lockwood et al., 1993), tourism development (Nunes, 2002), mining activity (Greenley et al., 1981), etc. These activities can yield an important income to the park, but, at the same time, they will reduce the protected area and will generate negative impacts in the area ecosystems reducing the environmental quality and threatening the survival of many species.

Walsh et al. (1984), focusing on the preservation value of protected areas, examine the wilderness area that has to be protected in the State of Colorado taking into consideration the preferences of the local population. Their results show that residents may be willing to pay for the preservation of unique natural environments and that their option, existence, and bequest values should be added to the consumer surplus of recreation activities to determine the value of wilderness to society. If these values are not considered, Walsh et al. remark that the public land allocated to wilderness protection will be insufficient and that the development may irreversibly degrade natural environment.

Landscape management represents another important issue to take into consideration within land-use policies. In some circumstances, park managers will have to face decisions affecting the landscape composition of a park in order to decide the kind of vegetation that has to be preserved. Willis and Garrod (1993) and Bateman et al. (1992) studied the preferences of people in England in order to help in the decision making concerning landscape management. They found an individual WTP among $158.28 and $172.58 for conserving and preserving the Norfolk Broads habitats from their transformation to other non-traditional landscapes.

Finally, a large number of studies have attempted to value programs oriented to the preservation of individual endangered species (Loomis and White, 1996; Rubin et al., 1991; Lindsey et al., 2005; Tisdell et al., 2005; Ojea and Loureiro, 2007), the preservation of wildlife (Greenley et al., 1981; Walsh et al., 1984; Stevens et al., 1991) and biodiversity (Hanley et al., 1998; Horton et al., 2001; Ojeda et al., *in press*; Spash et al., *in press*). Although there are conservation programs focused on specific species, there is a growing consensus that it is preferable to move away from individual species and concentrate on the wider notions of habitat and biodiversity. Unfortunately, few valuation studies focusing on biodiversity analysis can be found. One of the first attempts to apply these valuation techniques to biodiversity was undertaken by Kramer et al. (1992) for a program of rain forest habitats conservation. In a context where deforestation was threatening tropical forests, these authors found that the household willingness to pay in the United States for preserving a portion of the world's tropical forests lies between $24 and $31. Therefore, the amount of money that people were going to pay could be compared with the cost of the preservation program and an efficient decision could be taken guarantying the survival of world's tropical forests and other important ecosystems.

3. NEW CHALLENGES

Economists can contribute to decision-making in national parks in ways that are theoretically sound, practicable and politically relevant. However, despite the advances in valuation techniques made over the past 40 years, these techniques have not been routinely incorporated into the decision-making process. There is a gap between academic studies and practice.

Maybe the reason is related to the fact that most of this research adopts an environmental economic approach which is based upon neo-classical economics and although it is able to place values on various environmental costs and benefits that were traditionally excluded from economic valuation, there is a strong resistance to attaching money values to intangible environmental benefits arising from the conservation of wildlife. It is often asserted that the value of biodiversity is infinite or that there are some things in life which should not be valued in money terms for moral, philosophical or other reasons.

Although this is perfectly defensible, it is important to remember that any decision must be made using some criterion, explicitly or implicitly, for ordering the competitive uses. Any decision which allocates funds to conservation takes them away from other uses. Priorization decision-making tacitly attaches price tags to the selected choice.

If the monetary measures are not the problem, what is the reason for not using the results of environmental valuation techniques in the decision making process? While it is not possible to provide complete answers, the reason seems to be related to the fact that economic approach maintains a utilitarian perspective. National parks are considered by economists in terms of the goods and services they can offer to people, both now and in the future. This underlying basis of value is radically different from a conservationist's point of view where habitats and species in national parks have intrinsic value in their own right regardless of their usefulness.

Economists concerned with estimating the intrinsic value have made widespread use of the concept of non-use values. Individuals might value a natural resource for many reasons unrelated to its current use, such as option, bequest and existence values. This leads us to believe that conservation and non-use values are linked. Although the efforts made by economists to address individuals' use and non-use values more efficiently by assigning monetary values to a range of preservation and ecological services values, there is no consensus in the literature about the theoretical basis for aggregating individuals' use and non-use values and also integrating them into cost-benefit analysis. This suggests that, greater understanding of the differences in value systems is required and that further work needs to be done before conservation value can be meaningfully measured.

For instance, there are a number of ecological concepts which have not featured in economic analysis. Economists don't consider the potential impact of catastrophic events and thresholds which when reached may result in damaging consequences (maybe irreversible). They consider risk and uncertainty of ecosystems simply as a market imperfection and include highly questionable ecological assumptions which limit the usefulness of their results. Uncertainty regarding the habitats and species of national parks would make such analysis unfeasible for the foreseeable future. Whether seeking to improve and develop these techniques with a view to measuring the total economic value (use and non-use value) is a fruitful exercise, remains questionable.

In addition, while there may be a reasonable degree of congruence between scientific assessments and public perceptions of conservation value, what the public values as a desirable environment may conflict with the ecologically preferable management strategy for a specific national park. Rational policy decisions affecting the management of national parks should include not only public preferences values but also elements of scientific analysis.

In practice, for management purposes, the conservation of national parks needs to be considered with a range of social (education, recreation, etc.), economic (community development goals, unemployment, etc.), scientific (resilience, etc.) and other ecological factors (diversity, rarity of species, etc). The problem is the lack of a theoretical framework on which to base priorities and not having no common currency with which to assess the importance of these different factors. The refinement of existing techniques and the development of new ones to accommodate a wider range of values is a major challenge to economists.

Environmental economics techniques are relevant both to evaluating a national park on the basis of its benefits to individual users, taking into account the use-related problems, and to consider the most effective ways of allocating limited public sector resources to conservation. They allow for an analysis of the spatial and temporal distribution of costs and benefits, and for a distinction between private and social interests. Furthermore, the methods enable a meaningful interaction with ecologists regarding the basis for priority setting.

All these arguments highlight the fact that environmental valuation techniques have greater influence if they are undertaken in response to a specific policy decision that considers specific uses alternatives. For example, what are nationals park for? For safari hunting or for wildlife viewing? For wildlife viewing or for wildlife preservation?

National parks face economic pressures due to the demand for use, the opportunity cost of land and the limited availability of public sector funding for conservation. Then, they can be considered as an economic resource in which the public and private sector may choose to invest in order to earn a return. Economists suggest that some form of commercial use should be permitted in order to raise revenues and incentives for conservation (Barbier et al., 1990). However, national parks are threatened by commercial pressure to convert land to uses incompatible with wildlife conservation. The tensions are marked by an increased awareness of conflicts between human activity and wilderness conservation.

There are also specific management questions related to access conditions, design and administration of licenses, dealing with excess demand, guaranteeing levels of visitor satisfaction, removing or introducing a specific species into a national park, etc. that require environmental valuation techniques as the only way to ascertain the recreation demand curve. In the absence of precise knowledge of the recreational demand curve, what can management do?

In this context, it seems clear that it is necessary to improve the existing valuation methods and put them into practice more and more in order to have any influence on changing land-use patterns. There is a need for a better understanding of the economic features that influence private and public decisions. Although historically decisions regarding protected areas have not been analyzed in this way, there is increasing interest both in demonstrating that wildlife conservation can be an economically viable investment option and in guaranteeing private sector and community optimum decisions.

4. CONCLUSION

Many national parks in the world are proving to be major tourist attractions, which is not altogether surprising in view of their flora and fauna. Clearly, their potential use value is great, but in a context of free access it can be dissipated, primarily, due to congestion and disturbance.

From an economic perspective, the conservation of national parks is thought to be declining because the real value of wildlife resources is not adequately reflected in the market place. This chapter has examined whether the rigorous application of economic valuation techniques to national park management could result in an optimum (or, at least, an increased and more targeted) level of conservation. It suggests that these techniques are able, albeit to a limited extent, to capture a range of considerations that are central to managing the conflicts that are emerging between priorities based upon conservation value and those based upon economic use value.

This approach is probably not the most effective way of contributing to wildlife conservation in natural parks because priorities calculated on the basis of environmental economics may be in accordance with or in conflict with those based purely on conservation interests. Therefore, while economic valuation is relevant, it represents only one of a range of considerations that need to be taken into account, suggesting that more integrated approaches are needed.

However, the current pressure on national parks, as a result of their greater use, requires a fast reaction from park managers. Although more effort must be made in order to develop new approaches for dealing with the preservation of ecosystems, park managers should make use of current valuation studies in order to guarantee the provision of the different national parks' functions. The development of new valuation exercises in the field of national park management can fill the current gap if new studies are aimed at solving specific problems with relevant implications for park management decision-making.

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