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1

Introduction

BEATRICE: (*off stage*) Thank you, Truffaldino.

TRUFFALDINO: (*shouting off L.*) Everything all right, sir?

FLORINDO: (*off stage*) Thank you, Truffaldino, that was delicious.

TRUFFALDINO: (*to audience*) I've done it. Served two masters at the same time and neither of them knows the other exists. And now for me pudden. (He goes to pudding and takes off cloth, tying it round his neck like a napkin. To pudding.)

Carlo Goldoni, *A Servant of Two Masters*

Introduction

The big questions in international business are related to transactions and negotiations crossing national and cultural borders. Managerial decisions transferred to an international level have to tackle uncertainties about the impact of geographical and cultural distance. It can be regarded as a special dimension which creates tension between the players. Thus, international business research needs to address these problems and to emphasize solution concepts on an abstract level in order to show the mechanisms at work. This research monograph considers international business as a field which should combine various theoretical concepts from other well-established disciplines to provide a robust tool for real life problems and their solutions. The author wants to encourage the reader to start a journey into the abstract world of economic theory with the aim to disentangle complex real life scenarios. It is, therefore, important to draw attention to an attractive way of dealing with problems by playing games. Games were, historically, a miniature of life, take monopoly or chess. A complex decision-making scenario, such as in business or

war, transferred to an abstract level, empowers the players to analyze an inherent mechanism. These games offer the possibility to tackle difficult problems and find solutions in a playful and entertaining way. Focusing on chess, the strategist thinks in terms of plan rather than in single moves. He can decide how he would like his position to improve over the next few moves, he sets sub-goals, then begins to think about how to reach those end points. The art of planning ahead to obtain those positions where the tactics will be likely to decide matters in one's favor. The analogy of such a strategic game translates well into the strategic decision-making of international business. Though we can assume that the rules of the game are clear to every player, the uncertainties about crucial features determined by incomplete knowledge about specific factors need to be addressed. Thus, another analogy from the opening play of chess can be taken to the international business setting. Each separate opening should be looked upon as a plan for the development of the pieces. Within the broad framework of that plan, there is always room for flexibility, for innovation and improvisation. The naming of chess openings is a colorful area. Some are named after their inventors or popularizers and others after their countries or cities of origin (English opening, Dutch opening, Sicilian Defence, Vienna Game etc.). Uncertainties about strategic behavior in the international context could be analyzed by using game theoretical reasoning with regards to opening the black box of decision-making on an international level. The appropriate example is an international equity joint venture which combines resources from firms across borders. The success and failure depends on strategic factors and the ability to anticipate risks and opportunities. A compact way of analyzing this is based on the strong tool of a game theoretic perspective.

What is an international joint venture?

Compared to domestic joint ventures, international joint ventures are formed with the intention to facilitate the penetration in new markets and to reduce risks of cross-border transactions. Another distinction between the two types is that the latter consists of a small number of parent firms with different sizes and a less balanced distribution of equity (Valdes Llaneza and Garcia-Canal, 1998).

Reducing risks and getting access to new markets are major goals of international co-operations such as mergers, strategic alliances, contractual forms of co-operation and international joint ventures (IJVs).

Table 1.1 Domestic versus International Joint Ventures

Domestic Joint Venture	International Joint Venture
To seek collusive practices,	To facilitate the penetration in new markets,
To get access to the know-how of the others,	To develop a new product and/or production process,
To penetrate new sectors	To reduce risks of cross-border transactions,
More than one partner	Small number of partners
Partners have similar size	Partners have different sizes
Greater predominance of equal equity	Less balanced distribution of equity in IJVs – particularly in LDCs

Source: Valdes Llana and Garcia-Canal, 1998

To focus on equity IJV, this special type of a multinational enterprise is a company being formed by two or more firms in two or more countries (Beamish et al, 1994; Kogut, 1988a). The entry rationale of this endeavor lies in acquiring technical know-how, raw materials access, production equipment, distribution facilities and/or capital endowment furthermore in developing a new product or production process (McConnell and Nantell, 1985). Since different cultures, management techniques, legal systems and logistic issues occur in an IJV, the complexity of such a company dealing with asymmetries between the parent firms was investigated by lots of empirical studies.

The international management and business literature captures various definitions of international joint ventures (IJVs). Shenkar and Zeira (1987) pointed out that a clear definition has not been found until the late eighties and they came up with the following definition (p. 547): 'An IJV is a separate legal organizational entity representing the partial holdings of two or more parent firms, in which the headquarters of at least one is located outside the country of operation of the joint venture. This entity is subject to the joint control of its parent firms, each of which is economically and legally independent of the other'. The authors developed their definition by elaborating on the notion of 'parents'. This notion is essential in characterizing IJVs, since parent firms feature 'both the independence of the JV as a separate legal entity as well as its partial dependence on those parties for raw materials, know-how, capital, trademarks, resources, markets, political support or personnel' (p. 547).

An International Joint Venture (IJV) can be defined as a newly formed company by two or more enterprises in two or more countries.

The purpose of an IJV is to acquire technical know-how, production equipment, distribution facilities and/or capital endowment as well as to develop a new product or manufacturing process (Beamish, Killing, Lecraw and Morrison, 1994; Kogut, 1988a; McConnell and Nantell, 1985).

IJVs and game theory

Why is it important to apply game theory to the IJV? How can we translate IJV characteristics into the game theoretical notation and terminology? Which games can be or will be played in an IJV? These problems will be handled in two steps by the general definition of game theory and by the application to the IJV situation in particular. Firstly, game theory provides solution concepts for situations of cooperation and conflict. Under the assumption that human behavior is rational, the players' actions and their pay-offs lead to a description of multi-person decision-making. We can distinguish between 'non-cooperative' strategies, which means that the players' choices are only based on their self-interest and 'co-operative' behavior, which develops axioms to capture the idea of self-interest, fairness and binding agreements (Fudenberg and Tirole, 1991). Secondly, in game theory special rules are used to describe a game. The description of a game should include at least the players, the strategies and the pay-offs. Essential elements are the information structure, outcomes, equilibria and the time structure. Thirdly, there are two ways of presenting game theory: the extensive form (a game tree as an equivalent to a decision tree) and the strategic or normal form which shows the pay-offs in a matrix (Gardner, 1995; Gibbons, 1992; McMillan, 1992; Myerson, 1991; Rasmusen, 1994).

The two classic games are chess and poker. The rules of chess are, for instance, relatively simple, yet the complexity of the game is derived from the contingencies of strategic reasoning which leads to a game of alternating moves represented best in a game tree. The structure of the game contains different openings, middle games and endgames. Thus, the link to the life cycle of an IJV can easily be drawn. The game can be solved by following the path which leads to find out who wins and how. As far as games of complete and incomplete information are concerned, there is either common knowledge or uncertainty about the player's preferences or pay-offs. Games under incomplete information such as poker are characterized by introducing nature, which is a dummy player and draws the type of player randomly. The types can

have different features with respect to the special stage of the game. Since an IJV has to deal with strategic reasoning in the various stages of the life cycle like in the foundation, the management and the termination period, game theoretical reasoning offers a tool to multi-person decision-making processes. Furthermore, like in poker, several situations in an IJV occur in which the information is incomplete, or the players are lying or embezzling. Depending on the setting of the IJV, the firms play certain games. The problems are either related to finding out the right strategies or to disclosing hidden information and action. In the following chapters, the IJV scenarios are analyzed following the assumption that parent firms have to anticipate co-operation and conflict of the players involved during the life cycle. The underlying concept can be seen as a framework for multi-person decision-making in an IJV.

Ghemawat (1997) pointed out several problems for the use of game theory in business strategy and divided it in supply and demand side of the critique. On the supply side, the amazement that ‘despite the works of Von Neumann and Morgenstern (1944), Schelling (1960), and their successors, the sorts of “strategic” (self-consciously interactive) considerations emphasized by game theory have not resonated more with strategists who must anticipate business competitors’ moves’.

On the demand side, Ghemawat (1997) refers to Rumelt, Schendel and Teece (1991, pp. 18–22) in which several specific problems were cited:

- a) Knowledge about the strategic phenomena to be studied is outside the scope of game theory and game theorists are (asserted to be) generally unwilling to learn much about business, leaving a leading role for scholars (presumed to be strategists rather than economists) who identify phenomena worth studying.
- b) Game-theoretic analyses focus on explaining the possible existence of interactive effects rather than assaying their practical importance, which hurts predictive power.
- c) Game-theorists model strategic phenomena piecemeal, in a way that focuses on a minimal number of economic variables to the exclusion of others – psychology, political, organizational, technological, and even economic – which limits both scientific testability and practical utility.
- d) Game-theoretic equilibrium may be an unreasonable outcome to expect to observe in practice because of the information and the degree of rationality required to get there.

- e) While game-theoretic models of industrial organization focus on external interactions, the roots of competitive advantage may be internal.

While there are these valid problems, it is important to point out that game theory offers a prescriptive approach to managerial problems. Myerson (1991) states that the range of applicability of expected-utility maximization in real decision-making is important. Thus, 'we must remember that any model of decision-making can be used either descriptively or prescriptively. That is, we may use a model to try to describe and predict what people will do, or we may use a model as a guide to apply to our own (or our client's) decisions. The predictive validity of a model can be tested by experimental or empirical data.' (Myerson, 1991, p. 22). The next step of a theoretical perspective is the testing of the hypothesis derived from the propositions tackled on the abstract level.

The abstraction of a problem can lead to solutions which would otherwise either not be seen or discussed away. Especially, the dismal view of the economics perspective in game theory can help to avoid a rosy picture shown by other disciplines which lack rigor. Thus, a robust way of analyzing and tackling problems in complex business settings not only helps to find the needle in the haystack, but also helps to strengthen a discipline which would otherwise end up in the muddy waters of illogical waffling.

This monograph provides an abstract approach towards the complex management of an IJV and it uses game theory for real life problems. Since the IJV literature and the international business material was thoroughly studied the critics of game theory mentioned in (a) can not be applied in this respect. Furthermore, the variables chosen are based on the IJV problems and applied to the specific context – a richer approach towards pay-offs could be found. Overall, this monograph wants to develop a robust analysis to complex problems in IJVs by looking at the static and the dynamic nature of a co-operative venture during the life cycle. This can only be tackled in a compact outlet and therefore the monograph was chosen over a journal article. Even though, journal articles are now much more popular to disseminate knowledge, there is a need to publish research monograph in order to generate knowledge for complex phenomena which need to be embedded in the relevant literature of the theory and the particular strategic subject. Thus, the conclusion deals with the theoretical contribution and the managerial implications.

MNEs and foreign alliances – the 'co-opetition' perspective

The combination of co-operation and competition in International Business was already used in a monograph written by Luo (2004) who investigates 'co-opetition' of multinational enterprises (MNEs) and their stake holders among them foreign alliances. This leads to the study of international alliances which contains equity joint ventures and collaborative agreements. The term 'co-opetition' shows the interplay between co-operative and competitive strategies between the players. Therefore, it seems important to contrast Luo's monograph to this research monograph.

Luo's monograph deals with MNEs and its alliance partner in the co-opetition sense of an institutional approach. His understanding of control (used as competition in this context) and co-operation is a coupling between these two notions. He views them as 'two simultaneously existing and mutually interactive processes embedded in repeated economic exchanges between alliance partners' (p. 102). Luo dissects control into private and collective control. Thus, the chapter deals with private and collective control in combination with co-operation. The outcome is a framework of typologies which should lead to better understanding of questions such as what are typical conditions or features shared by each typology identifier, what are strategic responses from alliance partners under each typology identity that can yield highest possible unilateral or joint gains and how relational characteristics influence the control-cooperation dualism. The chapter is concluded by a case study of the alliance between DAEWOO and General Motors.

Compared to Luo's monograph, this research monograph uses co-operation and competition in the game theoretical sense of coalitions and non-cooperative games. The author wants to emphasize that the control types are, furthermore, endogenously given and considered as strategic archetypes of parental control within an IJV. The co-operative arrangements, therefore, take shared management, dominant and independent IJVs into account. Control mechanisms are critical to both majority and minority owners. Equity control is a crucial mechanism of exercising managerial control. Another managerial control mechanism can be seen as occupying key functional management and controlling key technological resources. These co-operative arrangements include IJV configurations such as R&D laboratories, joint production development, co-production, joint marketing and shared distribution services. The typology aims at the combination of strategic

archetypes with IJV configurations. This should help to design games and develop contracts for each type.

The following chapters are structured in the way that the cooperative and non-cooperative games being played in an IJV can be tackled on an abstract level and prescriptions for managerial problems can be found. Since information economics (adverse selection, moral hazard and signaling) deals with incomplete information or behavior under uncertainty, the structure of the chapters shows the static and the dynamic approach towards information asymmetries. It is more important whether the players (firms) play games with each other than what kind of structure and control mechanism they show. Thus, this monograph takes the notion of 'co-opetition' further and shows games being played in an IJV.

The structure of the book

The book is about the strategic relationship of foreign firm, local firm and IJV management in a collaborative international joint venture. It is embedded in a theoretical analytical tool – game theory and its application – to offer a means of analysis which is compact and connects various stages of an IJV with information asymmetries. With regards to theoretical underpinning, the uncertainties between the players in the periods of an IJV are analyzed and solutions are offered to avoid conflict.

The first chapter of the book is an introduction into IJVs and game theory. The game theoretic perspective and its applications are the focus of chapter two. This part should give the reader the opportunity to position game theory in the context of economics, management and international business. The assumption is that game theory is not just the Prisoner's Dilemma, but also a useful tool to tackle information asymmetries. The applications of game theory are far-reaching and normally not covered in an in-depth analysis in International Business. Therefore, a monograph offers a unique possibility to use a complex theoretical tool to analyze a complex business phenomenon.

The third chapter uses the rules of the game as a structure to research the literature on IJVs and position players, their actions and strategies, the pay-offs and the timing of the game.

The fourth chapter is designed to introduce the notation of the later chapters and the general framework of an IJV life cycle theory based on game theoretic reasoning. Various criteria to structure IJVs are shown. This should help to position IJVs in terms of strategic interaction and the combinations of IJV configurations.

The fifth chapter deals with the static common agency problem which was already derived in the theoretical underpinning chapter. The start of the chapter gives an introduction into the typology of IJVs used in the rest of the monograph. The static view of an adverse selection and moral hazard problem in IJVs is used to show the games which can be played due to information asymmetries during the set-up phase of an IJV. It is important that the assumption that the players have private knowledge about the quality of their contribution affects their behavior in the next stages. It is, therefore, important to analyze the information asymmetries about knowledge and effort in the IJV management. Since the IJV management is a combination of representatives of both parents (foreign and local firm), the uncertainty about the quality of the management has an impact on the duration of an IJV. This chapter analyzes the contingencies of uncertainties, offers pay-offs for the games being played and the order of the play in these games. Thus, the theoretical approach helps to visualize the problems of co-operation and conflict in IJVs. The adverse selection problem is generally known as the 'lemon problem' and derived from the 'uncertainties in the used car market'. It is important that contracts are offered *ex ante* to enhance truth-telling. In a moral hazard context, the players are considered to cheat after the signing of the contract and this problem finds practical relevance in the insurance industry.

The sixth chapter deals with the dynamic perspective on the adverse selection scenario and the possibility to signal the type of the player. The signaling is considered a dynamic process since it implies that the other players can update their beliefs about the type of the informed agent.

The seventh chapter provides another dynamic common agency approach – the repeated game. This time it is the moral hazard problem which is analyzed in a dynamic context as the repeated moral hazard. Besides this dynamic approach, the termination scenarios in IJVs are used to show the possibilities of planned and unplanned terminations, the friendly and unfriendly relationship of the parents in this respect and finally, the cheating or co-operating behavior of the agent. The termination scenarios are leading to the typology of the IJV and the repeated moral hazard problem. Therefore, we have covered the uncertainty about knowledge and effort over the duration of an IJV.

The conclusion provides theoretical contributions and managerial implications to show the robustness of the findings in the monograph. This was the first time that the complex phenomenon of IJVs

was embedded in a rigorous way of analysis to show the importance of tackling uncertainty about ability and effort in cross-national collaborative enterprises. The monograph, though, a more and more unpopular means of disseminating knowledge was chosen to look at the problems of complexity, uncertainty and duration in an IJV.

The mathematical appendix provides the models for the mathematically interested reader. The monograph is intended for international business scholars and uses therefore a mathematical appendix to provide the strength of the theoretical tool.

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