NEGOTIATING REAL OPTIONS WITH LOCAL PARTNERS: DO ENTRANT FIRMS PURSUE CALL OR PUT OPTIONS?

ABSTRACT

The literature on local partnering and real options emphasizes that in order to make economic sense the entrant firm and the local partner(s) must differ either in terms of their valuation of the real options or as to the specific assets that the partners intend to invest in the joint venture. When partners are having basically the same valuation of the future joint venture gains and also are intending to make comparable joint venture specific investments the negotiations about a pre-specified price of acquiring all joint venture assets become a zero-sum game and, as such, appear pointless. In this paper we go through various asymmetries suggested by scholars in order to justify real options economically. In particular we discuss if any of these asymmetries associate entrant firms with a call or put option *specifically*. We find that only in regard to risk preference asymmetries can we, as a general rule, expect entrant firms to negotiate call options rather than put options. This is because entrant firms tend to hold a more diversified business portfolio than do local partner firms and therefore are more risk tolerant. As a result, entrant firms prefer the uncertain – but potentially higher – income of a call option. We present a risk preference simulation model illustrating how the choice between call and put options depends on the entrant firm's risk tolerance relative to the local partner firm.

Key words: Entrant firms, real options, call options, risk preferences, entry mode

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1. Introduction

The literature on local partnering and real options emphasizes that in order to make economic sense the entrant firm and the local partner(s) must differ either in terms of their valuation of the real options (Hennart, 1982/1988; Hill, 1992; Balakrishnan and Koza, 1993; Chi and McGuire, 1996) or as to the specific assets that the partners intend to invest in the joint venture (Hennart, 1982; Chi, 2000). In situations where the partners are having basically the same valuation of the future joint venture gains and, moreover, are intending to make comparable joint venture-specific investments the negotiations about a pre-specified price of acquiring all joint venture assets become a zero-sum game and, as such, appear pointless.

In this paper we go through various asymmetries that scholars have brought forward to justify real options economically. In particular we discuss if any of these asymmetries associate entrant firms with a call or a put option *specifically*, that is, if entrant firms want to have an option of purchasing or selling joint venture assets at a pre-specified price. To our knowledge this call-or-put option question has never been addressed directly in the IB literature. Some entry modes, such as turnkey and Build-Operate-Transfer (BOT) projects, include elements of put options in the sense that the entrant firm – unless the project fails - hands over the assets of the project to a local partner at an agreed price (which may be zero) and future time. In the numerous studies on equity joint ventures as real options (see e.g. Kogut, 1991; Chi and McGuire, 1996; Folta, 1998; Chi, 2000; Reuer and Leiblein, 2000) the call-versus-put option issue is touched upon but mainly indirectly inasmuch as most of these

studies apply a contingency approach where the call-or-put preference of the entrant firm is basically circumstantial.

Hence, the literature does not inform us well as to whether entrant firms *in general* would prefer call or put options. Although this generalization question eventually has to be resolved through empirical studies we would like to take a first, deductive step towards clarifying the issue, simply by asking: among the various asymmetries justifying real options economically would any of these associate entrant firms with a call or a put option *specifically*?

If this is not the case it would seem pointless to carry out empirical studies with the aim of establishing whether entrant firms in general have preferences for call or put options. On the other hand, if we logically can associate asymmetries with entrant firm preferences for either call or put options this would not only encourage empirical studies testing such logics, but may also push the real option literature in the direction of a more prescriptive theory with greater appeal to managers of international firms. With this aim in mind the paper is organized as follows:

In the next section (section 2) we provide a definition of real options as used in this paper and point at two basically different explanations of why firms evoke real options: namely, market-related uncertainty as to the profitability of further investments and safeguarding against partner hold-up of prospective, asset-specific investments. In section 3 we outline and discuss the various reasons that are mentioned in extant literature for the existence of asymmetries between partners in terms of real option valuation and asset specific investments. We discuss if any of these asymmetries would associate entrant firms with a call or a put option specifically. In section 4 we look at a particular type of asymmetry, namely divergent risk preferences of partners. This kind of asymmetry, we argue, holds the potential

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of associating entrant firms with call options specifically, because entrant firms tend to have a more diversified business portfolio than local partner firms and therefore are more risk willing/tolerant. As a result, relative risk averse, local partners have a preference for put options because they constitute a certain and fixed payoff. Conversely, entrant firms prefer the uncertain – but potentially higher – income of a call option. We present a risk preference simulation model illustrating how the choice between call and put options depends on the entrant firm's risk tolerance relative to the local firm. Section 5 concludes.

2.   Definition of real options

A real option is the right—but not the obligation—to undertake some business decision; typically the option to make, or abandon, a capital investment. For example, the opportunity to invest in the expansion of a factory, or alternatively to sell the factory, is a real option.

In contrast to a financial option, a real option is not often tradable — e.g. the factory owner cannot sell the right to extend his or her factory to another party, only s/he can make this decision; however, some real options can be sold, e.g., ownership of a vacant lot of land is a real option to develop that land in the future.

Real options reflect wait-and-see tactics through 'platform investments' (e.g. Rivoli and Salorio, 1996; Kogut, 1991; Chi and McGuire, 1996). In its original meaning real options are the rights to expand the venture. As such, no investments are made until the option is exercised. However, as an alternative to this approach, transaction costs economics (TCE) also refers to real options, but here as an instrument to safeguard intended specific investments against partners' inclination to expropriate the quasi-rent resulting from the specific investments (Hennart, 1982; Williamson, 1985; Chi and McGuire, 1996; Chi, 2000). Hence, different from the conventional real option approach related to market uncertainty

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(and the unknown future profitability of the venture) the TCE approach relates real options to hold-up risks (Williamson, 1985). By pre-specifying the price of anticipated specific assets the party undertaking the investments in these specific assets is guaranteed against partial or complete expropriation of the quasi-rent by the joint venture partners. In contrast to the market uncertainty approach where the exercise of the real option awaits reduced uncertainty about joint venture profitability and *precedes* (further) investments the TCE approach implies that the exercise of the real option *succeeds* (specific) investments already undertaken (and safeguarded by the pre-specified price of the specific assets). As such, a narrow definition of real options − linking it closely to the rights to extend a venture - would dismiss the TCE approach as belonging to a different stream of literature (Adner and Levinthal, 2004).

Irrespectively of whether we apply a market uncertainty approach or a TCE/safeguarding approach, we confine ourselves only to look at real options negotiated *ex ante* - not ex post. Ex ante real options are negotiated before the uncertainty about the profitability of an extension of the joint venture is reduced, or − in the case of the TCE-approach − prior to undertaking joint venture-specific investments. In practice, ex ante real options are negotiated and agreed upon as the parties are entering the joint venture. It is only ex ante real options that make sense when applying a TCE approach; ex post real options in a TCE perspective, that is, real options negotiated *after* the undertaking of specific investment, would leave the investor vulnerable to a hold-up by the joint venture partner(s) and therefore worthless. This is in contrast to the market uncertainty approach in which negotiations of a real option ex pos (i.e. ex post to market uncertainty reduction) at least in some instances make sense − namely in those instances where, for example, the market uncertainty is asymmetrically reduced among the joint venture partners.

The market uncertainty approach has dominated the real option studies (for important exceptions, see Chi and McGuire, 1996; and Chi, 2000) – also in an international business (IB) context. In the IB literature, real options have been characterized by three necessary - but not sufficient (see later) - conditions that together compel a "wait-and-see" strategy. These conditions are: (1) High uncertainty about market attractiveness (payoff) at entry; (2) Expectations that this uncertainty about market attractiveness (and resulting joint venture profitability) diminishes over a period of time; (3) High degree of irreversibility of the foreign direct investment – including the assets invested in a joint venture.

In this paper we are specifically focusing on real options in relation to international joint ventures (both equity and non-equity joint ventures). For entrant firms joint ventures can be seen as platform investments (Kogut, 1991), insofar as: (a) A joint venture with a local partner involves less FDI than a wholly-owned subsidiary; (b) A joint venture with a call option for assuming ownership of all joint venture assets (or a put option for divesting the assets) is effectively a real option; (c) The joint venture partners differ as to their ex ante valuation of the joint venture – otherwise the negotiations resembles a zero-sum game. The valuation difference is imperative for considering joint ventures as real options in an economic sense. Without such a difference – or asymmetry – the real option has no economic rationale. A key question is therefore: for what reasons may entrant firms value the venture differently from local partners? In other words, what kind of valuation asymmetries may exist? We address this question in the next section.

3.   Various types of asymmetries

The real option literature points at four reasons why the entrant firm may value the venture different from the local partner:

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I. Information asymmetry as to the true values of the assets provided by the joint venture partner (the 'lemon' problem) (Hennart, 1988; Balakrishnan and Koza, 1993; Chi and McGuire, 1996);

II. Misappropriation of the JV partner's proprietary knowledge (Hennart, 1982; Hill, 1992; Chi and McGuire, 1996);

III. Differences as to the magnitude of specific investments that the partners intend/want to undertake in the joint venture (Hennart, 1982; Chi, 2000).

IV. Differences as to the risk preferences of the partners (Reuer and Koza, 2000; Folta and Miller, 2002).

I and II are explanations of ex post rather than ex ante differences, and neither of the two explanations establish whether the entrant firm or the local partner, as a general rule, are likely to exercise a call or a put option. Explanation III refers to ex ante differences and may very well justify real options economically. However, it is difficult make any generalizations as to whether the entrant or the local firm would undertake more specific investments. Local firms are typically making investments in introducing the products of the joint venture to local customers, whereas the entrant firm may invest in educating and training the employees of the local partner in producing, marketing and selling the products of the joint venture. These investment are equally specific and of comparable order of magnitude. Thus, it seems impossible to associate this type of asymmetry to call or put options specifically. Entrant firm may pursue both.

Explanation IV focuses on partner asymmetries in relation to their risk preferences – for the following reasons: One may assume that entrant firms in general are larger and more geographically diversified than their local partners. Following agency theory (e.g. Jensen and

Meckling, 1976) we further assume that entrant firms in general are more risk tolerant than local partners because the latter are less diversified in their business operations. To the extent that diversified entrant firms are able to calculate an average attractiveness of foreign markets the perceived net present value of a call option is higher than that of the local partner who will prefer a relatively low, but certain/fixed income (= the price of the call option 'sold' to the MNE). In other words, the risk averse local partner is better off selling a call option to the MNE at market entry rather than having an option for a larger, but uncertain future income. Hence, risk preference differentials do not only qualify as an economic efficiency explanation of real option use, but also as determining whether entrant firms will prefer call or put options.

4.   A risk preference simulation model

In the previous section we recognized risk preference asymmetries between entrant and local firms as not only being a plausible economic incentive for negotiating real options ex ante, but also being an asymmetry to which one – with some degree of generality – presumably can assign call and put options to entrant and local firms, respectively. In order to harness and consolidate this recognition in more formal terms we will present the findings of a model that simulates entry mode and real option implications – including choices between call and put options - of risk preference asymmetries between an entrant and local firm. First, we account for the assumptions on the basis of which the simulation model is made.

Assumptions

The model builds on the classical microeconomic risk preference theory. Both the entrant firm and the local partner firm thus have Von Neumann Morgenstern utility functions given by

$U_i = \sqrt[r_i]{10 + V}$, where 10 are the firms' base profit, V is the gain from participating in the venture (set to 0 if the firm does not participate), and r_i is firm i's risk tolerance parameter (where $r_i = 1$ characterizes a risk-neutral firm and $r_i < 1$ a risk-averse firm). The venture yields a total revenue of either +20 or 0, each with 50 per cent probability which is only resolved after one or both firms have implemented it. It requires up-front investments of 9. The total payoff is therefore either +11 or -9. With an expected value of +1, the venture is actually slightly better than a fair gamble. However, because of the chance of a large negative payoff, a risk-averse firm might prefer not to undertake the venture, as we shall see is indeed the case.

It follows from the above that the local partner firm's utility from staying *out* of the venture is $U_2 = \sqrt[r_2]{10}$. When the entrant firm strikes a deal with the local firm, the local firm therefore has to get at least the same utility in order to willfully participate. This is the local firm's *participation constraint* which requires that $U_2 > \sqrt[r_2]{10}$. We assume in the simulation (without loss of generality) that the entrant firm has all the bargaining power (because, for example, it possesses the unique intangible assets that are necessary for the business opportunity and perhaps can choose between multiple local partners). The local firm therefore gets terms that exactly fulfill its participation constraint, while the entrant firm extracts all gains from cooperation.

The entrant firm chooses the largest expected utility among 6 options:

1)   Stay out. This gives expected utility $U_1 = \sqrt[r_1]{10}$.

2)   Wholly-owned subsidiary. This secures the entire payoff from the venture for an expected utility of $U_1 = \frac{1}{2}\sqrt[r_1]{21} + \frac{1}{2}\sqrt[r_1]{1}$.

3) Joint Venture with no options: $U_1 = \frac{1}{2}\sqrt[r]{15\frac{1}{2}+P} + \frac{1}{2}\sqrt[r]{5\frac{1}{2}+P}$, where P is the price that the entrant firm charges the local firm for the opportunity to participate in the venture—or, if it is negative, the payment to the local firm for participating in the venture (and sharing some of the risks). This price, like all prices in the simulation, is negotiated such that the local firm's participation constraint is exactly fulfilled.

4) Joint Venture with a call option: $U_1 = \frac{1}{2}\sqrt[r]{21+P} + \frac{1}{2}\sqrt[r]{5\frac{1}{2}+P}$. The entrant firm can take over the local firm's investments at cost value if the venture goes well. It thus gets the full +11 payoff for itself. If the venture goes badly, both parties keep their stake and the losses of -9 are thus shared. P will be negative and lower than in 3) because the entrant firm must compensate its partner for the loss of the upside of the venture.

5) Joint Venture with a put option: $U_1 = \frac{1}{2}\sqrt[r]{15\frac{1}{2}+P} + \frac{1}{2}\sqrt[r]{10+P}$. Then entrant firm can sell its investments to the local firm at cost value if the venture backfires. This secures it a +0 payoff while leaving the full loss of -9 to the local firm. If the venture succeeds both partners keep their stake and share the gains of +11. Again, P will be negative and lower than in 3) because the entrant firm must compensate the partner for taking on the entire downside risk.

6) Licensing: $U_1 = P$. The local firm takes on all the risk and return in exchange for a fixed price.

Results

As shown in Figure 1, the two parties' risk preferences determine the optimal entry mode:

- If both firms are very risk averse, the venture is not worth undertaking and the entrant firm stays out of the market (beige coloured area in the figure).

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- If one firm is *much* more risk-tolerant than the other, that firm will undertake the venture on its own, either through a wholly-owned subsidiary (if it is the entrant firm) or a licensing arrangement (if it is the local firm)--the navy blue area and the mauve coloured area, respectively.
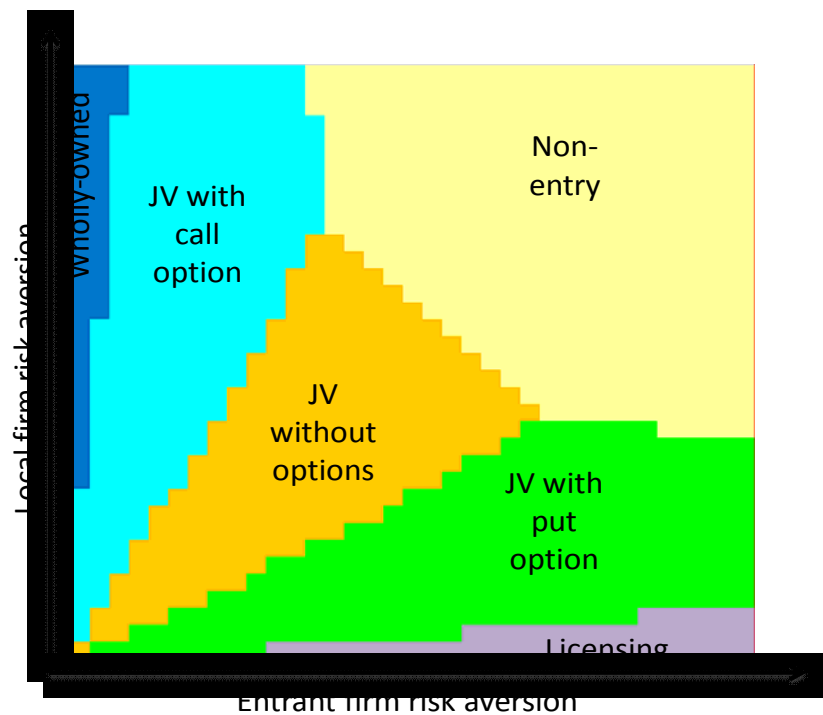

Figure 1: *The risk preference simulation model*

- If both firms have similar risk preference and are not too risk averse, it will be optimal to share the risk in a joint venture, rather than having one firm take on all the risk. The two firms will form a joint venture with either call or put options (yellow area).
- If the entrant firm is slightly more risk averse than the local partner firm it may prefer a put option (which decreases its risk and return)—the green area in the figure.

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- Conversely, if the entrant firm is slightly more risk-tolerant, it may go for a call option (which increases both its risk and expected return). Hence, the turquoise blue area in Figure 1 indicates the presumed general case with a relatively risk averse local operator.

5.   Conclusions

In this paper we have – to our knowledge as the first ones - addressed the research question: do entrant firms - when negotiating ex ante real options with local partnering firms - in general have preferences for call or put options? Over the years, IB scholars have provided convincing economic rationale for firms to put in place (ex ante) real options when forming international joint ventures, but have so far kept aloof from predictions of which of the joint venture partners would go for call options and which for put options. Among the various asymmetries that scholars have highlighted as making real options economic beneficial to both/all parties involved in (international) joint ventures, we recognized risk preference asymmetries as being not only a plausible economic incentive for negotiating real options ex ante, but also being an asymmetry to which we – with some degree of generality – could assign call and put option preferences to entrant and local firms, respectively. In order to harness and consolidate this recognition in more formal terms we presented a model simulating entry mode and real option implications – including choices between call and put options - of risk preference asymmetries between an entrant and a local firm.

Our conclusions, though, warrant some cautions since they only hold to the extent that our basic assumptions are true:

First, we assume that risk preferences asymmetries prevail between entrant and local firms. They might, but we don't know. Risk preferences may appear to be miniscule and of minor importance compared with other asymmetries.

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Second, risk preference asymmetries may prevail, but our assumption that entrant firms in general are the more risk tolerant compared to local firms is not based on empirical evidence, but on a mix of theoretical insights (mainly from agency theory) and plain intuition. One may both challenge the agency theory assumption (that risk preferences is exclusively determined by business diversification) and our postulate of entrant firms being more diversified than local firms. International joint ventures are not *always* alliances between large (diversified) multinational firms and (focused) local SMEs. Sometimes, the opposite relationship applies.

Third, even though our basic risk preference assumptions are fulfilled an implicit assumption of full rationality (no information constraints) may not hold true: do managers realize extant risk preference differences in relation to partner firms - and, moreover, do they know *how* to take advantage of these differences? The question of contract design capabilities (Argyres and Mayer, 2004; Mayer and Argyres, 2007) – including abilities to design, draft and enforce real option clauses ex ante - has not even been touched upon in this paper.

In general, we know surprisingly little about the actual occurrence and prevalence of ex ante real option clauses in international joint venture contracts. So, not only does our theoretical assumptions need empirical scrutinizing, so does also the presumed phenomenon – or theoretical construct – of ex ante real option thinking as an underlying rationale of forming international joint ventures.

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