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SMEs' Choice of Foreign Market Entry Mode: A Normative Approach

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Abstract

This paper develops a quantitative model for the entry mode choice of small and medium sized enterprises. Based on this model, we deduce several qualitative and quantitative propositions for decision makers, both in the companies concerned and in economic policy. In addition, we contrast our model and results with those of prior relevant works.

Key words: foreign market entry mode choice; international marketing; quantitative model; small and medium sized enterprises

JEL classification: M21; M31

1. Choice of Foreign Market Entry Mode—A Crucial Issue in International Marketing

The interest in foreign market entry mode choice (to simplify terminology we use "entry mode choice") originates from, among other things, the theory of multinational enterprises. Many economists and marketing experts have studied it as a crucial issue in international marketing. Wind and Perlmutter (1977), for instance, argue that the choice of market entry mode has a strong impact on international operations, and it can be regarded as a "frontier issue" in international marketing. Root (1994) claims entry mode choice is one of the most critical strategic decisions for multinational enterprises (MNEs). It entails a concomitant level of resource commitment that is difficult to transfer from one level to another, especially from a high commitment level to a low level (Zhao and Decker, 2004). Kumar and Subramaniam (1997), Chung and Enderwick (2001), as well as Nakos and Brouthers (2002) emphasize that the choice of an optimal entry mode is a critical strategic decision for companies intending to conduct business overseas.

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Being such an important issue, entry mode choice has attracted the attention of numerous researchers and has thus found expression in numerous theoretical and empirical studies in the past. The former can be divided into two sub-groups: qualitative theories and quantitative ones. Qualitative theories are primarily conceptual and abundant in the existing literature, whereas quantitative approaches are mainly game theoretical and rare. Theoretical studies can also be classified into content-orientated and process-orientated approaches. The former aims at the identification of the determinants of entry mode choice and their possible influences. The latter aims at the description of how this decision is actually made by following appropriate procedures. Empirical studies, on the other hand, often aim at the verification of presumed interrelations between the choice and its determinants by analyzing specific data. A deeper discussion on the classification of the relevant determinants and on the possible interrelations is presented in Zhao and Decker (2004).

However, the existing literature on entry mode choice primarily concerns MNEs. The activities of small and medium sized enterprises (SMEs) have received far less attention (Kumar and Subramaniam, 1997; Nakos and Brouthers, 2002). Meanwhile, the importance of SMEs' internationalization has increased tremendously in recent years (Nakos and Brouthers, 2002). As to be demonstrated in the following section, most of the existing theories are qualitative and content-orientated, and there is little congruence regarding the applicability of the available models to the entry mode choice decision. To our knowledge, hardly any of the existing models are explicitly tailored to SMEs.

The remainder of this paper is organized as follows. In Section 2, we present a brief overview of existing theories and models of entry mode choice and their strengths and weaknesses. Discrepancies are discussed as well. Starting from these considerations, a new quantitative model of entry mode choice focusing on SMEs is developed in Section 3. Practical implications and propositions for decision makers in the companies concerned and in economic policy, as well as some comparisons with prior research, are presented in Section 4. The paper closes with concluding remarks.

2. Description and Discussion of Established Theories

2.1 Quantitative entry mode choice models

The quantitative models dominating the existing literature are game theoretical. To our knowledge, there are two prominent branches of these game theoretical models. One branch is represented by Grossman and Hart (1986) and their followers, who motivate their models with the transaction cost theory of Coase (1937) and others. Buckley and Casson (1998) and followers represent the other branch, which bases its models mainly on internalization theory.

Grossman and Hart (1986) developed a two-period, two-player model to explain vertical and lateral integration as a problem of ownership allocation

efficiency based on the assumptions that asset specificity and ownership are the purchase of non-contractible rights. Optimal ownership is determined by equating the marginal benefits of one party's increased control with the marginal costs of the other party's loss of control. Later, many papers, such as Hart and Moore (1990), Feenstra (1998), and Feenstra and Hanson (2004), suggested fruitful models by referring to the ideas of the previously mentioned authors.

Buckley and Casson (1998) formulated a theoretical model investigating the choice between export, licensing, joint venture (JV), and wholly owned foreign venture (WOFV) in a two-firm economy. The optimal entry mode is selected by eliminating the dominated strategies, i.e., those higher in cost and lower in profit. Görg (1998), inspired by Buckley and Casson (1998), constructed a Cournot model to investigate the influence of market structure on entry mode choice in a three-firm economy. Müller (2001) constructed a two-period model for a two-firm economy. In the first period, the MNE decides to enter either by acquisition or by Greenfield investment or not to enter at all. In the second period, the MNE competes in price with the local firm in the host country if entering by Greenfield investment, or it operates as a monopolist in the host country if entering via acquisition. Eicher and Kang (2002) expanded on Müller (2001) to allow for international trade and transport costs.

The above game theoretical models represent entry mode choice as an optimization problem and enlighten the players' strategic interactions during the decision-making process. However, shortcomings arise from assuming a two- or three-firm economy. In such an economy, the environment in which the firms are embedded is easily ignored. Actually, SMEs do not act in such an abstract economy. They can neither compete as a duopolist when entering via Greenfield investment nor operate as a monopolist when entering by acquisition. The decision maker's influence on entry mode choice is usually ignored in the above models. Most of the existing quantitative models focus on the choice between acquisition and Greenfield investment, i.e., between two alternatives of direct investment (wholly owned ventures) (Görg, 1998; Müller, 2001). Very few quantitative models investigate the choice between JVs and WOFVs.

2.2 Qualitative entry mode choice models

Qualitative models are, to some extent, applications of or parts of a multinational enterprise theory that intends to explain why and how firms internationalize their economic activities. However, there is no established multinational enterprise theory (Buckley and Casson, 1991). The inefficiency of existing MNE theories induces the inefficiency of existing entry mode theories. Zhao and Decker (2004) indicated this idea by analyzing the strengths and weaknesses of existing models of entry mode choice.

Well-known entry mode choice models (see Zhao and Decker, 2004, for a deeper discussion) are the stage of development (SD) model (Johanson and Wiedersheim-Paul, 1975), the transaction cost analysis (TCA) model (Anderson and Gatignon, 1986), the ownership, location, and internalization (OLI) model (Dunning,

1977, 1980, 1988, 1995, 1998, 2000), and the organization capacity (OC) model (Madhok, 1998). However, these models have common weaknesses. They ignore the decision-making process, i.e., they are primarily content-orientated and ignore the role of the decision maker in the decision-making process. A process-orientated model worth mentioning in this context is the so-called hierarchical (H) model (Kumar and Subramaniam, 1997), which was empirically supported by Pan and Tse (2000).

Entry modes can be divided into equity and non-equity entry modes according to different resource commitment levels. Equity entry modes, for their part, can be classified into JVs and WOFVs, whereas non-equity entry modes can be classified into contractual agreements and exporting. Following the H model, a decision maker first chooses between an equity and non-equity entry mode, then selects a specific alternative at the sub-level. However, the authors themselves suggested that future research should be directed to determining how managers actually come to an entry mode decision (Kumar and Subramaniam, 1997). In particular, the H model does not provide an adequate answer to the question as to what kind of decision rules a decision maker might apply to make his choice at the individual level.

2.3 Some conflicting results

The main problems of entry mode decisions are their complexity, dynamics, and the fact that they are ill-defined (Kumar and Subramaniam, 1997; Young et al., 1989). In fact, this decision is a function of various factors and their interactions. Root (1994) identified altogether 22 factors influencing entry mode decisions, but one has to suppose that there are still more. Furthermore, some theories are inconsistent with each other and not all of them are supported by empirical studies. Moreover, some empirical studies are divergent with respect to what kind of influence individual factors might exert on entry mode decision making. For example, existing theories suggest that international experience is positively related to entry mode choice, i.e., the more international experience a company has, the higher its propensity to adopt a high equity entry mode (Davidson, 1980, 1982; Anderson and Gatignon, 1986). Other authors assume a negative relation, i.e., the more international experience a company has, the lower its propensity to adopt an entry mode with a high level of equity (Weichmann and Pringle, 1979). However, as shown in Table 1, empirical studies supporting both points of view can be found. This observed inconsistency also applies to other factors, such as cultural distance and firm size.

The existing inconsistencies, both in theory and empirical studies, indicate that content-orientated approaches can hardly be generalized. Moreover, people studying the problem with different expectations may arrive at different conclusions. Different samples selected, different time periods analyzed, different methodologies used, or even different skills of the analysts may induce conflicting results, especially in empirical studies.

Table 1. Conflicting Theoretical Interpretations and Empirical Results

	Factor	Positive relation	Negative relation	Irrelevant relation
Theoretical interpretations	Inter-national experience	Anderson and Gatignon (1986), Davidson (1980, 1982)	Weichmann and Pringle (1979)	
	Cultural distance	Hymer (1960)	Erramilli and Rao (1993), Gatignon and Anderson (1988), Kogut and Singh (1988)	
Empirical results	Inter-national experience	Evans (2002), Herrman and Datta (2002), King and Tucci (2002), Reuber and Fisher (1997), Agarwal (1994)	Chung and Enderwick (2001)	Brouthers (2002)
	Cultural distance	Anand and Delios (1997), Padmanabhan and Cho (1996)	Leung et al. (2003), Cristina and Esteban (2002), Evans (2002), Treadgold (1988), Gatignon and Anderson (1988), Erramilli and Rao (1993), Kogut and Singh (1988)	
	Firm size	Leung et al. (2003), Erramilli and Rao (1993), Kogut and Singh (1988), Caves and Mehra (1986)		Evans (2002), Reuber and Fisher (1997)

Summing up, we can conclude that an explanatory framework tailored for SMEs is still indispensable. The new model we develop in the next section provides concrete orientations for SME's entry mode decision, especially in a strategic respect. The model takes the decision maker, the organization, and the environment in which the first two are embedded into account. In this sense, our approach is a systematic analysis. Special attention is paid to specific characteristics of SMEs, such as their actual market position in the home and host countries and the limitations of their resources.

3. A New Model of Entry Mode Choice

SMEs differ from MNEs not only in structural aspects but also with regard to the entry mode choice (Erramilli and D'Souza, 1993). SMEs are relatively simple in

their organizational structures and objectives. Usually SMEs take the form of a private company, a partnership, or a joint stock company (Haahti and Pichler, 1995). Managers, who are identified in the following with the decision makers, are frequently the owners of the firms that take the first two forms. Therefore, we assume that the SME decision makers' objectives of entry mode choice are in line with those of the SME as a whole in our model. Fundamental objectives of firms are growth and development (Milgrom and Roberts, 1992). Therefore, SME decision makers are intentionally rational when they make their decisions. They adopt an entry mode by following the rule of maximizing the expected profit. At the same time, they face time, information, and resource constraints (Kumar and Subramaniam, 1997). Thus a full evaluation of the whole set of alternatives available at one time is hardly possible. Instead, they adopt a hierarchical decision-making strategy (Kumar and Subramaniam, 1997; Pan and Tse, 2000) and limit their sights to the most promising alternatives in each decision. This paper focuses on the choice between JVs and WOFVs, assuming that an equity entry mode was selected at the first decision level.

Starting from the above considerations, we can make the following assumptions to construct a simple framework for modeling entry mode choice.

1. The decision maker keeps the objective of his decision consistent with that of the company he represents, i.e., his behavior is a complete representation of the SME. The SME is intrinsically rational in maximizing the expected aggregate profit due to operating abroad and at home under budget constraints and any other constraints, such as policy constraints.
2. The difference between JVs and WOFVs is essentially the difference in ownership (Anderson and Gatignon, 1986; Grossman and Hart, 1986). To choose an optimal entry mode the SME decision maker has only to determine the endogenous optimal ownership ratio regarding the foreign country operation instead of comparing expected outcomes of different alternative entry modes. This ratio can be denoted θ, with $\theta \in (0,1]$. This means that there is no limitation on the ownership ratio θ in the host country, i.e., the policy constraint in the host country is trivial. If $\theta \in (0.95,1]$, the SME enters as a WOFV; otherwise, it enters as a JV.
3. The company has a simple production technology producing one output $q(x_1, x_2)$ with two inputs $x_1 > 0$ and $x_2 > 0$. The first variable (x_1) represents all capital inputs and the second variable (x_2) represents the monetary equivalent of all non-capital inputs. The first order derivatives $q_x(x_1, x_2)$ of the output with respect to each input are positive, i.e., output increases with increases in either input. The second order derivatives $q_{xx}(x_1, x_2)$ of the output with respect to each input are negative, i.e., the technology has a decreasing marginal productivity with respect to each individual input. For simplicity, we assume the two inputs to be perfect substitutes, i.e., $q_{x_1x_2}(x_1, x_2) = 0$. Furthermore, q^f, x_1^f, and x_2^f denote the output and the inputs of production in the foreign country. Variable

$x_1^f > 0$ might result from two sources, namely the investment of the SME (i.e., θx_1^f) and the investment of the partner in the host country (i.e., $(1-\theta)x_1^f$). Analogously q^h, x_1^h, and x_2^h denote the output and the inputs of production in the home country. In addition, r^f, r^h, w^f, and w^h represent the capital cost rates and the other input cost rates in the foreign and home countries respectively. Both foreign and home operations incur fixed costs of investment F^f and F^h respectively.

4. The company is characterized by a constant absolute risk averse (CARA) utility of the expected aggregate profit $U(R)$, where R is the expected aggregate profit of investing abroad and at home. It is also convenient to define now γ as the positive parameter of risk aversion. The selected form of the utility function guarantees a positive marginal utility of the net profit and a negative elasticity of the marginal utility.
5. Due to the size of SMEs, their markets for the outputs are competitive both at home and abroad. Therefore, the output price p^f in the foreign country is assumed to be a positive random variable with a normal distribution, i.e., $p^f \sim N(\mu,\sigma^2)$. Due to prior experience, the output price in the home country is given. The prices of inputs in the home and host country are given as well. The risk of operating abroad is then represented by the variance σ^2 of the output price.
6. The allocation of profits due to operating in the host country depends on the ratio of ownership θ. The profits made abroad and at home are taxed separately without any overlap. The income tax rates in the host and home country are denoted t^f and t^h, with $t^f, t^h \in [0,1)$. Finally, θR^f and R^h are the SME's profits of foreign and home investment respectively.

With the above assumptions, the decision-making problem can be described as follows:

$$\max \quad E\left[U(\theta R^f + R^h)\right] \tag{1}$$

$$\text{s.t.} \quad 0 < \theta \le 1\,, \tag{2}$$

$$\theta x_1^f + x_1^h = X_1\,. \tag{3}$$

Assume X_1 is the capital available for allocation between the home and the host country. In addition, the non-capital inputs x_2 are not restricted. Then we can specify θR^f and R^h as follows:

$$\theta R^f = \theta(p^f q^f(x_1^f, x_2^f) - r^f x_1^f - w^f x_2^f - F^f)(1-t^f)\,, \tag{4}$$

$$R^h = (p^h q^h(x_1^h, x_2^h) - r^h x_1^h - w^h x_2^h - F^h)(1-t^h)\,. \tag{5}$$

With the assumption that p^f is the only random (normally distributed) variable in (4), we can conclude that θR^f and $R = \theta R^f + R^h$ have normal distributions as well. Therefore, the mean and the variance of R are:

$$\bar{R} = \theta(\mu q^f(x_1^f, x_2^f) - r^f x_1^f - w^f x_2^f - F^f)(1-t^f) + R^h, \tag{6}$$

$$Var(R) = \theta^2(1-t^f)^2 q^f(x_1^f, x_2^f)^2 \sigma^2. \tag{7}$$

The assumptions of CARA utility and the normal distribution of the aggregate profit give rise to a mean-variance utility function in which the company's expected utility is a linear function of the mean aggregate profit and the variance of the aggregate profit (Sargent, 1987). Therefore, we have:

$$\max E\left[U\left(\theta R^f + R^h\right)\right] \Leftrightarrow \max\left[\bar{R} - \frac{\gamma Var(\bar{R})}{2}\right]. \tag{8}$$

The original optimization problem can then be reformulated as:

$$\max \quad \left[\bar{R} - \frac{\gamma Var(\bar{R})}{2}\right] \tag{9}$$

$$\text{s.t.} \quad \theta - 1 \le 0, \tag{10}$$

$$-\theta < 0, \tag{11}$$

$$x_1^h = X_1 - \theta x_1^f. \tag{12}$$

The corresponding Lagrange function is

$$\begin{aligned} L(\theta, \lambda_1, \lambda_2) &= \bar{R} - \frac{\gamma Var(\bar{R})}{2} - \lambda_1(\theta - 1) + \lambda_2\theta \\ &= \theta(\mu q^f(x_1^f, x_2^f) - r^f x_1^f - w^f x_2^f - F^f)(1-t^f) \\ &\quad + (p^h q^h(x_1^h, x_2^h) - r^h x_1^h - w^h x_2^h - F^h)(1-t^h) \\ &\quad - \frac{\gamma\theta^2(1-t^f)^2 q^f(x_1^f, x_2^f)^2 \sigma^2}{2} - \lambda_1(\theta - 1) + \lambda_2\theta, \end{aligned} \tag{13}$$

where λ_1 and λ_2 are non-negative Lagrange multipliers and x_1^h as well as q^h are implicit functions of θ since $x_1^h = X_1 - \theta x_1^f$ and $q^h(x_1^h, x_2^h) = q^h((X_1 - \theta x_1^f), x_2^h)$. Later on, we denote $q^f(x_1^f, x_2^f)$ and $q^h(x_1^h, x_2^h)$ as q^f and q^h respectively for simplicity. The first order conditions are:

$$\frac{\partial L(\theta, \lambda_1, \lambda_2)}{\partial \theta} = 0, \tag{14}$$

$$\frac{\partial L(\theta, \lambda_1, \lambda_2)}{\partial \lambda_1} = 0 \Leftrightarrow \theta^* = 1, \tag{15}$$

$$\frac{\partial L(\theta, \lambda_1, \lambda_2)}{\partial \lambda_2} = 0 \Leftrightarrow \theta^* = 0. \tag{16}$$

The solution $\theta^* = 1$ is the binding constraint in which the entry mode is defined as WOFV, whereas the solution $\theta^* = 0$ is not consistent with our assumption. Solving Equation (14), we obtain:

$$\theta^* = \frac{(1-t^f)(\mu q^f - r^f x_1^f - w^f x_2^f - F^f) - (1-t^h)x_1^f(p^h q_{x_1^h}^h - r^h) - \lambda_1 + \lambda_2}{\gamma(1-t^f)^2(q^f)^2\sigma^2}. \qquad (17)$$

The second order derivative of the Lagrange function with respect to θ is

$$\frac{\partial^2 L(\theta, \lambda_1, \lambda_2)}{\partial \theta^2} = (x_1^f)^2(1-t^h)p^h q_{x_1^h x_1^h}^h - \gamma(1-t^f)^2(q^f)^2\sigma^2. \qquad (18)$$

By referring to the above assumption, $q_{x_1^h x_1^h}^h < 0$, we conclude that the second order derivative is negative. Thus θ^* maximizes the overall utility. The Kuhn-Tucker theorem implies that $\lambda_2 = 0$ if condition (11) is satisfied. Then θ^* can be re-expressed as:

$$\theta^* = \frac{(1-t^f)(\mu q^f - r^f x_1^f - w^f x_2^f - F^f) - (1-t^h)(p^h q_{x_1^h}^h - r^h)x_1^f - \lambda_1}{\gamma(1-t^f)^2(q^f)^2\sigma^2}. \qquad (19)$$

With the assumption that θ is positive, we can explicitly conclude that θ^* is positive as well. This corresponds to the following relation:

$$(1-t^f)(\mu q^f - r^f x_1^f - w^f x_2^f - F^f) > (1-t^h)(p^h q_{x_1^h}^h - r^h)x_1^f + \lambda_1. \qquad (20)$$

4. Implications and Propositions

4.1 Comparative static analyses

The available formal relations provide a solid basis for practical implications that can be developed into concrete propositions to support real entry mode choice decisions. To answer the question to what extent interesting external factors influence entry mode choice, we have to look at θ^* and its relations to these factors more closely.

Let us start with the risk attitude of the decision maker. In fact, existing empirical results demonstrate that entry mode choice is related to risk aversion (Osland et al., 2001; Bhaumik, 2003). To go into this matter, we differentiate θ^* with respect to the risk aversion parameter γ and obtain:

$$\begin{aligned}\theta_\gamma^* &= \frac{(1-t^f)(\mu q^f - r^f x_1^f - w^f x_2^f - F^f) - (1-t^h)(p^h q_{x_1^h}^h - r^h)x_1^f - \lambda_1}{\gamma^2(1-t^f)^2(q^f)^2\sigma^2} \\ &= -\frac{\theta^*}{\gamma} < 0.\end{aligned} \qquad (21)$$

With the assumption that the ownership ratio θ is positive (see (2) above) we can conclude there is a negative relationship between risk aversion and entry mode choice. This qualitative result is widely accepted in the prior academic research as well as in practice. However, what about the sensitivity of the optimal ownership ratio with respect to risk aversion? To answer this question, we consider the elasticity of θ^* with respect to the risk aversion parameter γ:

$$El_{\theta^*\gamma} = \frac{\partial \theta^*}{\partial \gamma}\frac{\gamma}{\theta^*} = -1. \tag{22}$$

Obviously, a change in the risk aversion parameter γ leads to a proportional change in the optimal ownership ratio θ^* but in the opposite direction. With this specification of the qualitative relationship, we conclude the first proposition.

Proposition 1: Given a sufficient incentive to invest in the host country ($\theta^* > 0$), then the more risk averse the decision maker is, the less likely he adopts a high equity entry mode, such as a WOFV. A reduction of existing risk aversion, e.g., due to increasing experience of the decision maker or the replacement of the decision maker with a less risk averse one, leads to a proportional increase in the optimal ownership ratio θ^*.

The risk of an international engagement is represented in the model by the variance of aggregate profit from foreign and home operations, which is incurred mainly by the variance of the expected price in the host country market. To analyze this relationship, we differentiate the optimal ownership ratio θ^* with respect to the standard deviation σ of the price. Given $\theta^* > 0$ it is:

$$\begin{aligned}\theta^*_\sigma = & -2\frac{(1-t^f)(\mu q^f - r^f x_1^f - w^f x_2^f - F^f) - (1-t^h)(p^h q^h_{x_1^h} - r^h)x_1^f - \lambda_1}{\gamma(1-t^f)^2(q^f)^2\sigma^3} \\ & = -2\frac{\theta^*}{\sigma} < 0.\end{aligned} \tag{23}$$

To quantify this relationship we once again calculate the elasticity:

$$El_{\theta^*\sigma} = \frac{\partial \theta^*}{\partial \sigma}\frac{\sigma}{\theta^*} = -2, \tag{24}$$

which indicates that a change in the estimated operation risk in the host country leads to an over-proportional change in the optimal ownership ratio in the opposite direction. Accordingly, the decision of entry mode choice is sensitive to the estimated risk of the host country market.

Proposition 2: Given a sufficient incentive to invest in the host country ($\theta^* > 0$), then the higher the estimated operation risk in the host country, the less likely the decision maker adopts a high equity entry mode, such as a WOFV. A reduction in

the estimated operation risk in the host country, e.g., due to less uncertainty about the host country market as a result of learning effects or the maturity of the host country market, leads to an over-proportional increase in the optimal ownership ratio θ^*.

Existing papers (e.g., Müller, 2001; Eicher and Kang, 2002) postulate that expected profit affects entry mode choice. In the above model, the potential profit of investing in the home country is deducted from the expected profit of foreign operation. This is the so-called "opportunity cost"-adjusted expected profit, which equals the following expression:

$$R_{adj} = (1-t^f)(\mu q^f - r^f x_1^f - w^f x_2^f - F^f) - (1-t^h)(p^h q_{x_1^h}^h - r^h)x_1^f \quad . \tag{25}$$

The first term is the expected profit of foreign operation after income tax has been paid. The second term however needs more explanation. The partial derivative $q_{x_1^h}^h$ is the marginal productivity of the capital invested in the home country. Therefore, the whole term can be interpreted as the potential profit of investing x_1^f in the home country instead of the host country (i.e., the "opportunity cost" of investing x_1^f in the host country).

It is easy to see that the adjusted expected profit is positively related to θ^*:

$$\theta_{R_{adj}}^* = \frac{1}{\gamma(1-t^f)^2(q^f)^2\sigma^2} > 0 \, . \tag{26}$$

Furthermore, by calculating the elasticity of the optimal ownership ratio θ^* with respect to the adjusted expected profit R_{adj}, we can describe the quantitative relation between both:

$$El_{\theta^* R_{adj}} = \frac{\partial \theta^*}{\partial R_{adj}} \frac{R_{adj}}{\theta^*} = \frac{R_{adj}}{R_{adj} - \lambda_1} > 1 \, . \tag{27}$$

With $\theta^* > 0$ and $\lambda_1 > 0$, we get $R_{adj} - \lambda_1 > 0$ and $R_{adj} > R_{adj} - \lambda_1$, which leads to Proposition 3.

Proposition 3: The optimal entry mode choice is positively affected by the "opportunity cost"-adjusted expected profit of operation in the host country market. The higher the profit a SME can gain by investing in the host country compared with what it could earn by investing in the home country, the more likely a high equity entry mode is adopted. A change in the adjusted expected profit R_{adj} leads to an over-proportional change in the optimal ownership ratio θ^* in the same direction.

As postulated by the American Marketing Association, the profit potential inherent in the structure of a market or industry could be measured by the attractiveness of a market. In fact, many papers have studied, at least implicitly, the influences of market attractiveness on entry mode choice by examining those factors

that could be used to measure market attractiveness. Such factors include, for instance, market size (Chung and Enderwick, 2001; Nakos and Brothers, 2002; Eicher and Kang, 2002) and industrial barriers to entry (Siripaisalpipat and Hoshino, 2000; Chen and Hennart, 2002).

A close look at Equation (25) tells us that the "opportunity cost"-adjusted expected profit of foreign operation is positively correlated with expected price μ and potential sales q^f in the host country. On the other hand, it is negatively correlated with the income tax rate t^f, fixed costs of investment F^f, as well as cost rates r^f and w^f in the host country. Furthermore, the so-called "opportunity cost" of investing x_1^f in the host country is positively related to price p^h and marginal productivity $q_{x_1^h}^h$ of x_1^h; it is negatively related to the income tax rate t^h and capital cost rate r^h in the home country. Together with Proposition 3, we can conclude that the optimal ownership ratio θ^* is positively affected by those factors which positively contribute to the adjusted expected profit, in particular μ, q^f, t^h, and r^h. Furthermore, it is negatively affected by factors t^f, r^f, w^f, F^f, p^h, and $q_{x_1^h}^h$. Factors such as the potential sales, output price, income tax rate, and capital cost rate, together with the estimated risk, are meaningful measures of market attractiveness. Therefore, we can make the following proposition describing the impact of the market attractiveness on entry mode choice. Feenstra (1998) confirms this result by explaining American foreign direct investment (FDI) in China.

Proposition 4(a): The more attractive the host country market, the more likely a SME adopts a high equity entry mode; vice-versa, the more attractive the home country market in comparison with the host country market, the less likely a high equity entry mode is adopted.

However, to know that there is a negative relationship between the optimal ownership ratio θ^* and some observable factors, such as the capital cost rate r^f and the income tax rate t^f in the host country, is just half of the story. The crucial question, not least in view of strategic decision making in economic policy, is how sensitive the optimal ownership ratio is with respect to r^f and t^f.

By reformulating Equation (19), we can show that θ^* is a strictly downward-sloping linear function of r^f:

$$\theta^* = -\frac{x_1^f r^f}{\gamma(1-t^f)(q^f)^2\sigma^2} + \frac{(1-t^f)(\mu q^f - w^f x_2^f - F^f) - (1-t^h)(p^h q_{x_1^h}^h - r^h)x_1^f - \lambda_1}{\gamma(1-t^f)^2(q^f)^2\sigma^2} \tag{28}$$

To simplify this expression we let

$$a = \frac{x_1^f}{\gamma(1-t^f)(q^f)^2\sigma^2} > 0$$

and

$$b = \frac{(1-t^f)(\mu q^f - w^f x_2^f - F^f) - (1-t^h)(p^h q_{x_1^h}^h - r^h)x_1^f - \lambda_1}{\gamma(1-t^f)^2(q^f)^2\sigma^2} > 0$$

with $\theta^* > 0$ and

$$(1-t^f)(\mu q^f - w^f x_2^f - F^f) \geq (1-t^f)(\mu q^f - r^f x_1^f - w^f x_2^f - F^f)\,. \qquad (29)$$

Then Equation (28) can be formulated as $\theta^* = -ar^f + b$. Even though the slope of the linear function θ^* is constant, the elasticity varies along the respective curve (Perloff, 2001). Thus, we have three crucial cases:

a) If $r^f = 0$ then $\theta^* = b > 0$. This is the extreme when the other variables are constant. At point (0, *b*) we get $El_{\theta^* r^f} = (\partial\theta^*/\partial r^f)(r^f/\theta^*) = 0$, i.e., perfect inelasticity. A moderate change in the capital cost rate r^f does not induce a substantive change in θ^*.

b) If $r^f \to (b/a) > 0$ then $\theta^* \to 0$ given $a > 0$ and $b > 0$. If $r^f = (b/a)$ and all other variables are constant, we get $El_{\theta^* r^f} = (\partial\theta^*/\partial r^f)(r^f/\theta^*) \to -\infty$, i.e., perfect elasticity. Thus a small decrease in r^f induces a large jump in θ^*.

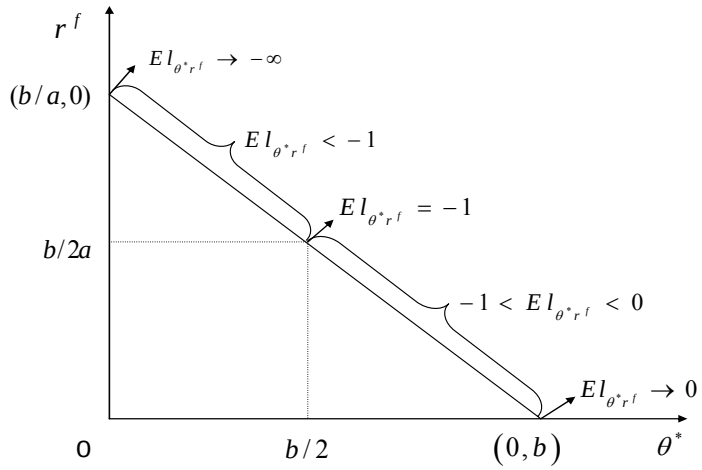
c) Given a) and b) there must be a particular r^f for which $El_{\theta^* r^f} = -1$. After some transformations, we find this occurs when $r^f = (b/2a)$ and $\theta^* = (b/2)$. Here a one percent increase in r^f induces a one percent decrease in the optimal ownership ratio θ^*.

The quantitative relationship between θ^* and r^f is depicted in Figure 1. The higher r^f, the more sensitive the optimal entry mode decision is and the more the SME decision maker should endeavor to prepare this decision accurately, e.g., by taking into account special market studies or by consulting appropriate experts, in order to minimize the risk of selecting a "wrong" mode. To avoid frustrating foreign investors, decision makers in economic policy in the host country should be very careful when thinking about increasing capital cost rates, i.e., interest rates. The "critical" r^f in this respect is where the elasticity is equal to −1 (see Figure 1). To exceed this critical value may induce fatal effects on the investment climate. Below this threshold, the choice of entry mode is less sensitive with respect to r^f, i.e., the SME decision maker can decide by concentrating on other factors. This leads to the following proposition.

Proposition 4(b): Within the interval $(0, b/a)$, the capital cost rate r^f —ceteris paribus—induces a varying sensitivity in the optimal ownership ratio θ^*. Meeting $r^f \in [0, b/2a)$ entitles the SME decision makers to deal with the choice of the entry mode more liberally due to the inferior elasticity. However, if $r^f \in (b/2a, b/a]$ the decision makers in SMEs as well as the economic policy makers of the host country are well advised to pay special attention to this factor due to its over-proportional

negative effect on the optimal ownership ratio θ^* and thus on the overall investment behavior of foreign companies.

Figure 1. Elasticity of Optimal Ownership Ratio θ^* with Respect to Capital Cost Rate r^f



In an analogous manner we can also investigate the dependency of θ^* on the income tax rate t^f. The basis is the following elasticity:

$$El_{\theta^* t^f} = \frac{\partial \theta^*}{\partial t^f}\frac{t^f}{\theta^*} = \frac{t^f}{(1-t^f)}\left[1-\frac{B}{(1-t^f)A-B}\right] = \frac{-A(t^f)^2+(A-2B)\,t^f}{A(t^f)^2+(B-2A)t^f+A-B}, \tag{30}$$

where $A=(\mu q^f - x_1^f r_1^f - w^f x_2^f - F^f)$ and $B=(1-t^h)(p^h q_{x_1^h}^h - r^h)x_1^f + \lambda_1$.

Having assumed that $t^f \in [0,1)$, we can check how changes in t^f within this interval affect the sensitivity of the optimal entry mode choice. Again, we have to consider three crucial cases:

a) If $t^f \to 1$ then $\theta^* \to 0$ and $El_{\theta^* t^f} \to -\infty$ (perfect elasticity). In this situation, the other variables being constant, the SME will not invest in the foreign country. At the same time, a small decrease in the current income tax rate might induce a considerable increase in the optimal ownership ratio θ^*. Consequently, countries with comparatively high income tax rates can affect the long-term willingness of SMEs to think about high equity entry modes by reducing the income tax rate, at least moderately.

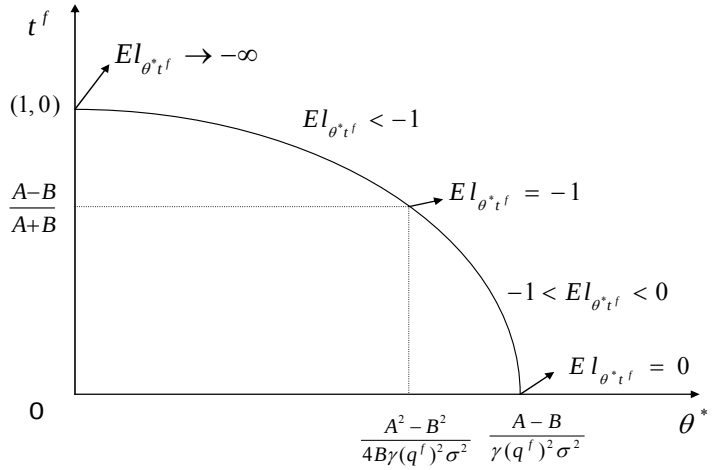
b) If $t^f = 0$ then $\theta^* = (A-B)/\left(\gamma(q^f)^2\sigma^2\right) \in (0,1]$ and $El_{\theta^* t^f} = 0$ (perfect inelasticity). If the income tax rate decreases to 0, the optimal ownership

ratio approaches its maximum. However, this maximum is not inevitably equal to 1. In fact, it depends on other variables such as the adjusted expected profit R_{adj}, the risk aversion parameter γ, the potential sales q^f, the estimated risk σ^2, as well as λ_1, which can be interpreted as the rate at which the expected utility changes with respect to changes in θ^*, i.e., the shadow price of θ^* (Sydsaeter and Hammond, 1995). If t^f is near 0, small changes in t^f do not induce appreciable changes in θ^*.

c) Given a) and b) there must be a particular t^f where $El_{\theta^* t^f} = -1$. This applies for $t^f = (A-B)/(A+B)$. From the assumption $\theta^* > 0$, we get $A - B > 0$ and can conclude that $t^f = (A-B)/(A+B) \in (0,1)$. The corresponding optimal ownership ratio is $\theta^* = (A^2 - B^2)/(4B\gamma(q^f)^2\sigma^2)$.

The quantitative relationship between θ^* and t^f is summarized in Figure 2 (for simplicity we ignore the concrete form of the curve with respect to t^f). The curve indicates that the higher the income tax rate t^f, the more sensitive the optimal ownership ratio is and the more SME decision makers should pay attention to this factor. When t^f approaches 1 neither JVs nor WOFVs can be considered, i.e., without any objectives besides profit maximization a SME would not invest in the host country. On the other hand, the lower t^f, the less sensitive the optimal entry mode is. Nevertheless, as shown above, $t^f \to 0$ does not imply that WOFV is the optimal entry mode. In this case, other factors have to be taken into account. This leads to our last proposition.

Figure 2. Elasticity of Optimal Ownership Ratio θ^* with Respect to Income Tax Rate t^f



Proposition 4(c): With other variables being constant, a change in t^f from 0 to 1 induces a varying sensitivity in the optimal ownership ratio θ^* with respect to t^f. In particular, if t^f is lower than the "critical" value $(A-B)/(A+B)$, the optimal entry mode is less dependent on t^f and more dependent on other factors, to which the

SME decision makers should pay attention. On the other hand, if t^f exceeds this threshold, one should be aware of the possible effects of t^f on the optimal entry mode. The same applies for economic policy in the host country regarding the implications for the foreign investment climate. Finally, when t^f takes a value close to 1, a non-equity entry mode should be taken into consideration, unless there are some relevant non-profit objectives.

4.2 Comparison with prior results

The present paper follows the prominent concept of understanding a firm's boundary issue as an optimal ownership allocation problem by taking into account both the benefits and the costs of control as suggested by, e.g., Grossman and Hart (1986), Hart and Moore (1990), and Feenstra and Hanson (2004). There are also other papers, such as the recent one by Helpman et al. (2004), which is based on Grossman and Hart's (1986) concepts too. However, some evident differences, especially those regarding the implications resulting from the respective models, are worth mentioning.

Hart and Moore (1990) based their model directly on Grossman and Hart (1986). The optimal allocation of assets ownership is analyzed in a two-period, two-player game theoretical framework under the assumption of non-contractibility of ownership in the first period. Actions, such as investments made non-cooperatively in the first period, influence production and trade decisions made cooperatively or non-cooperatively in the second period. The results with respect to the firm's boundaries decisions deduced from this approach mainly deal with the strategic interrelationships between two players. Due to its methodological specifications, it does not fit our context of SMEs in a competitive market.

Helpman et al. (2004) treated the choice between export and FDI as a proximity-concentration tradeoff problem, in the course of which the decision is made by comparing the relevant benefits and costs of each alternative. By assuming a simple constant elasticity of substitution (CES) preference form and unit wages in every country, the authors expressed the net profit of each alternative, namely domestic sales, export, and FDI. The equilibrium conditions in their context released the cutoff productivity points of each alternative, which explains why high productivity induces more FDI and less export (e.g., see the figure in Helpman et al., 2004, p. 302). Therefore, by means of comparative static analysis together with an empirical study, the authors concluded that high productivity, high trade friction, and high firm heterogeneity induce more FDI. In contrast to our approach, Helpman et al. (2004) started with the existence of different alternatives of conducting business: domestic sales, export, and FDI. However, the choice is made mainly between export and FDI. Our approach starts from an ex ante unclear form of doing business overseas which is explicitly determined by the ownership ratio. The focus of choice is on different FDI alternatives. However, our approach converges in that we apply concepts of cost-benefit analysis and equilibrium to structure and analyze the model. In fact, the results of Helpman et al. (2004) are more predictive in terms

of organization (e.g., productivity) and industrial structure, whereas ours are more predictive with regard to the decision maker and the country environment.

5. Conclusions

By analyzing existing theories as well as empirical studies on entry mode choice, we find an explicit need for models suited to support the respective decision of SMEs. Starting from relevant characteristics of SMEs we develop a simple mathematical decision-making model that indicates how the choice between JVs and WOFVs could actually be made. In this model, the decision maker maximizes his utility of decision making by choosing an optimal endogenous ownership ratio that defines the entry mode. Special attention was devoted to the investigation of qualitative as well as quantitative relationships between the optimal ownership ratio and other important factors. Different aspects of these factors are explored, in particular those of the decision maker, the organization, and the economic environment in which the first two are embedded.

In addition, in comparing the differences between our results and those of comparable models, we observe that the differences arise from different model structures and assumptions. Among other things, we are able to show the necessity of considering the so-called "opportunity costs" of an investment in the host country. By analyzing the quantitative relationships between the optimal ownership ratio and the factors considered, we are able to draw some useful conclusions for decision makers in economic policy in view of an active stimulation of foreign investments.

However, the explanatory power of the model strongly depends on the underlying assumptions. In this sense, it is more normative than descriptive. Relaxing one or more of our assumptions could possibly lead to additional or different implications. For example, if we relax the assumption that the decision maker's objectives are in line with those of the company that he is representing, then we have to consider managerial discretion. In addition, entry mode choice could be explained differently if we looked at it from a different perspective, for example, from the perspective of organizational structure.

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