



Turning the Tables: The Relationship Between Performance and Multinationality

Alice Schmuck¹ · Katarina Lagerström¹ · James Sallis¹

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Abstract

The abundant research on the multinationality-performance relationship has yet to provide cohesive findings concerning the nature and shape of the relationship. This paper joins a small, but growing body of research considering the effect of performance on multinationality. Drawing on resource-based theory and prospect theory, the authors develop competing hypotheses for the impact of performance on multinationality. Using non-linear ordinary least squares regression on unbalanced panel data for 2066 firm-year observations of Swedish publicly listed firms over 12 years, the authors find strong support for a positive U-shaped relationship. The foremost contribution is that performance drives internationalization, much more than vice versa. The model for the traditional causal direction from multinationality to performance explains less than half the variance, has marginal significance on key variables, and has an illogical outcome. Another contribution is how risk-taking attitudes, in accordance with prospect theory, explain a high level of internationalization when performance is negative. As performance rises towards zero, internationalization drops to an inflection point, where in accordance with resource-based theory, the degree of internationalization begins rising. This debunks the prevalent view that internationalization is contingent upon positive performance and abundant resources.

Keywords Performance · Multinationality · Internationalization · Prospect theory · Resource-based view

✉ Alice Schmuck
alice.schmuck@fek.uu.se

Katarina Lagerström
katarina.lagerstrom@fek.uu.se

James Sallis
james.sallis@fek.uu.se

¹ Department of Business Studies, Uppsala University, Box 513, 751 20 Uppsala, Sweden

1 Introduction

For over 40 years, the multinationality-performance relationship has been one of the most researched and debated topics in the international business domain (e.g., Click & Harrison, 2000; Contractor et al., 2003; Doukas & Kan, 2006; Kim et al., 1993). Overwhelmingly, researchers share the same underlying assumption: multinationality affects performance. They apply different theoretical perspectives and conceptual arguments, yet there are no conclusive findings concerning the form of the relationship (Hennart, 2011; Nguyen, 2017; Verbeke & Forootan, 2012). Clearly, the relationship is important, yet with such disparate findings it is time to fundamentally question the assumption of performance being the outcome, the dependent variable, of internationalization. Classical economic theory of the firm assumes that in competitive markets production will be organized within firms when the costs of organizing are lower than using the price mechanism in markets. Firms exist when efficiencies allow for profits (Coase, 1937). Behavioral management theories recognize that managers have other self-interest motives than firm profit maximization (Eisenhardt, 1989; Williamson, 1979), yet implicitly there is an assumption that through organizing, governing, and motivating, firms will be more efficient (profitable) than doing the same activities in the market. Cyert and March (1992) argue that profitability is one of the major goals of a firm, and within the domain of internationalization, researchers who stand central to the topic conclude that the internationalization process has a positive impact on performance (e.g., Barkema et al., 1996; Delios & Beamish, 2001; Johanson & Vahlne, 2009; Li, 1995; Luo & Peng, 1999; Vahlne & Johanson, 2017). Add to this that most managers are held accountable for performance, the predilection with modeling performance as the dependent variable is understandable. Only a handful of studies have empirically investigated the reverse relationship (Grant et al., 1988; Hong Luan et al., 2013; Jung & Bansal, 2009; Sun & Lee, 2013).

In this paper, we join with Rugman et al. (2016) and turn the tables to investigate the effect of firm performance on multinationality. The form of the relationship – positive or negative – is debatable in this reverse stream as well as in the mainstream research. Some studies argue in favor of a positive relationship, saying that firms only go abroad once their performance enables the necessary and often costly investments (Bilkey, 1982; Eriksson et al., 2015). Others argue that firms with negative financial results, to some extent, are forced to internationalize in order to find business opportunities in new markets (Nummela et al., 2004; Wolff & Pett, 2000).

In order to explain the performance-multinationality relationship, we use two research traditions that address responses to organizational performance. Both traditions rest on behavioral and bounded rationality arguments, yet they predict opposite outcomes. The first tradition builds on arguments from the resource-based view (Barney, 2001; Penrose, 1959) and the Uppsala internationalization process model (Johanson & Vahlne, 2009; Vahlne & Johanson, 2017). Internationalization is, in this tradition, seen as an asset exploitation or resource-gaining

opportunity. Firms with good performance have the necessary resources to permit internationalization (Barney, 2001; Penrose, 1959). Accordingly, the better the financial performance, the higher the degree of internationalization. This also means that when performance is negative there are no accessible resources to support expansion into new markets (Tseng et al., 2007).

The second tradition takes its point of departure in *prospect theory* (cf., Kahneman & Tversky, 1979), where a firm's performance is negatively associated with risk-taking behavior. Internationalization is seen as a risky endeavor rather than a resource-gaining opportunity (Jung & Bansal, 2009). Accordingly, the better the financial performance, the lower the degree of internationalization as satisfaction with the existing performance leads to risk avoidance to conserve earned gains (Sitkin & Pablo, 1992).

In this article we address the research question: What is the nature of the relationship between performance and multinationality? The principal contribution of the study is to, in contrast with the vast majority of existing studies, theorize and test the performance-multinationality relationship. By adopting two different perspectives on managerial decision-making, the paper contributes to an improved understanding of a firm's resource use and risk-averse behavior with regards to internationalization activities. We purposely avoid introducing contextual factors behind internationalization that can moderate the performance-multinationality relationship. While there is a plethora of moderators being tested, with no consensus concerning their role, we choose not to cloud the issue and stick to testing the relationship in its most simple form.

In order to test the relationships, we applied ordinary least square regressions with fixed effects estimators to an unbalanced panel of Swedish publicly listed firms for the period from 2001 to 2013. The results show a U-shaped relationship between firm performance and multinationality, with the inflection point near zero performance. This implies that when firm performance is very negative, internationalization is high. As performance increases, internationalization drops to the inflection point near zero performance, and then it starts to rise as performance increases. Prospect theory provides the rationale that firms with negative performance will risk going abroad to achieve growth and profitability. As performance rises, the incentive to internationalize drops. At around zero performance, in line with the Uppsala model and resource-based theory, managers feel constrained by low performance, and thus limited resources, to finance internationalization. Accordingly, as performance rises, so too does the degree of internationalization. Consequently, by combining the theories we explain why firms internationalize at different level of performance, taking into account managerial risk perceptions.

The remainder of the paper is structured as follows. First, we provide a conceptual overview by reviewing the existing literature on the relationship between firm performance and multinationality. The resource-based perspective on internationalization and prospect theory are discussed next, which respectively make up the foundations for the hypotheses. In the methods section, we describe the data collection and analysis. Then, the results are presented. Finally, we discuss the implications of the results, limitations of the study, and possible future directions for research.

2 Conceptual Overview

2.1 Extant Research on the Multinationality-Performance Relationship

In the internationalization literature, empirical research has mainly focused on the underlying assumption that multinationality has an impact on firm performance. A large majority of authors have followed this logic and empirically investigated the shape of a hypothesized causal multinationality-performance relationship. Almost all empirical aspects and circumstances of this relationship are covered in previous studies and summarized in multiple meta-analyses (e.g., Bausch & Krist, 2007; Geleilate et al., 2016; Kirca et al., 2011, 2012a, b; Marano et al., 2016; Palich et al., 2000; Yang & Driffield, 2012). Kirca et al., (2012a), for example, have conducted a thorough meta-analysis on drivers of firm multinationality and Hitt et al. (2006) provide a detailed summary on previous research. Yet in spite of this, no consistent results have been found.

Given the large variety in results and the often contradictory findings, a clear statement about the nature and shape of the multinationality-performance relationship is difficult to make without considering the different research contexts. Rugman et al. (2016), as well as Hennart (2007), offer strong theoretical arguments for questioning the existence of a systematic relationship between internationalization and performance. To sum up, the search for a generalized multinationality-performance relationship remains elusive (cf., Verbeke & Brugman, 2009).

It is important to keep in mind that the primary emphasis of previous empirical research has been on the performance *outcomes* of internationalization, and considerably less focus has been on considering performance as the *antecedent* of internationalization. According to Verbeke and Forootan (2012), only five out of the top 12 most cited studies on the multinationality-performance relationship have considered the possibility of reverse causality (cf., Dowell et al., 2000; Grant, 1987; Lu & Beamish, 2001, 2004; Morck & Yeung, 1991). While these studies raise the idea of the reverse relationship, they do not test it. None of the aforementioned meta-analyses have raised this issue, and only a handful of empirical studies have actually investigated and tested for either a dual or reversed causality.

In 1988, Grant, Jammine, and Thomas conducted a thorough investigation of simultaneous relationships between internationalization and performance, and were thereby probably the first researchers to specifically investigate the causal direction. Their main conclusion was that there is a strong two-way relationship between multinational diversification and profitability. It took 25 years before Hong Luan et al. (2013) addressed the endogeneity bias from preceding studies that arose from the simultaneity between multinationality and performance. In their study, they again found a simultaneous relationship between the two main variables, degree of internationalization and firm performance. Table 1 provides an overview of the dependent and independent variables and the identified shapes of the multinationality-performance relationship for the individual studies.

Table 1 Dual causality of performance and multinationality

Author(s) and Year	Dependent variable	Independent variable	Relationship
Grant, Jammine & Thomas (1988)	ROA	Index of product diversity, index of multinational diversity	Simultaneous relationship
Hong Luan, Singh & Hua (2013)	ROA	Number of foreign subsidiaries	Simultaneous relationship
ROA, return on assets			

To date, there are only two papers that solely consider performance to be the antecedent of internationalization (see Table 2). Their main argument concerns the risk of internationalization where possible losses outweigh possible gains. Jung and Bansal (2009) found an inverted U-shaped relationship between a firm's relative performance and its degree of internationalization using historical performance. They used relative performance, which is a firm's historical performance relative to its industry, reasoning that the studies they reviewed using actual performance had insignificant results. The findings were later confirmed by Sun and Lee (2013), who, based on the strategic management literature, argued that managers are likely to behave according to the threat-rigidity perspective and perceive the risks of internationalization as larger than the benefits. Our research uses actual performance, which is more in line with the mainstream studies modeling multinationality to performance.

The key question of interest is how positive and negative performance, respectively, affect multinationality? Our theoretical point of departure is in behavioral theory (Cyert & March, 1963; March & Simon, 1958) as it takes a management decision approach on economic phenomena (Gavetti, 2012). By emphasizing the intellectual processes among managers, behavioral theory focuses on managers and their behavior within the firm in a decision-making process such as internationalization.

Decision making is often subject to bounded rationality, meaning that the rationality of the individual is limited (Argote & Greve, 2007), and that managers trust in heuristics when evaluating different options and making decisions (Bazerman & Moore, 2009). In this paper, we specifically make use of two threads of behavioral theory to explain opposing views of when a firm internationalizes; a resource-based perspective on internationalization (Barney, 1991; Johanson & Vahlne, 1977; Vahlne & Johanson, 2017) and a prospect theory-based view (Kahneman & Tversky, 1979). The two theories that at first might be seen as non-complementary actually both take their point of departure in behavioral explanations of managerial decisions, characterized by uncertainty, in relation to, for example, firm internationalization. Prospect theory places greater emphasis on the human complexities of decision making and risk perception as well as aspects connected to managerial evaluations of potential risks versus potential rewards (Kahneman & Tversky, 1979). Consequently, we argue that by anchoring our study in these two different but still complementary theories to build two competing models to test the causal relationship between firm performance and multinationality allows for a better understanding of resource-allocation decisions under uncertainty in firm internationalization. We

Table 2 Reverse causality between performance and multinationality

Author(s) and Year	Dependent variable	Independent variable	Relationship
Jung and Bansal (2009)	Number of countries and number of subsidiaries	ROA	Inverted-U
Sun and Lee (2013)	Number of foreign subsidiaries	ROA, Tobin's Q	Inverted-U

ROA, return on assets; Tobin's Q, sum of the market value of equity and the book value of debt divided by the book value of assets

thereby propose to be able to contribute to a deeper and more nuanced understanding of the relationship between multinationality and firm performance.

2.2 Resource-Based Perspective on Internationalization

From a resource-based perspective, managers identify a firm's internal capabilities, competencies, and assets. Seeing the firm as a collection of resources (Penrose, 1959), the resource-based perspective focuses on the firm's resource heterogeneity, rather than the external environment (Barney, 1991).

Concerning internationalization, the resource-based perspective suggests that foreign market entries are being, "pulled by the resource capabilities of firms abroad as well as being pushed by the firm-specific advantages," (Barney et al., 2001, p. 630). Because the initial steps of internationalization are connected with an increase in costs, firms need to attain resources and allocate them strategically. Many firms also tend to finance internationalization internally, meaning they need slack internal resources. In lieu of internationalization, firms will seek alternative investments for slack resources (e.g., Barney, 2001; Grant et al., 1988; Hong Luan et al., 2013; Johanson & Vahlne, 2009; Sun & Lee, 2013; Vahlne & Johanson, 2017). Internationalization, requires that firms perform relatively well, and the better the performance the more assets available to internationalize, which in turn can be argued to benefit the firm-specific advantage (Tseng et al., 2007). Besides financial resources, experience and knowledge are seen as crucial resources for internationalization, not the least in the Uppsala internationalization process model (Johanson & Vahlne, 1977; Vahlne & Johanson, 2017). These resources are built up through a gradual and incremental internationalization, which is also premised upon firms needing to perform in one market before extending into new markets. The experiential knowledge developed through the internationalization process contains not only knowledge on the firm's international operations, but also has the embedded capability to take advantage of this knowledge in an effective way (Brock & Yaffe, 2008).

When resources are scarce, firms need to strategically assess their position in the market and carefully consider future strategic moves. Since allocating new resources is cost-intensive, poorly performing firms will first focus on allocating resources internally to sustain current operations and focus on more prosperous activities to remain competitive. International expansion is risky and requires costly investments that come with high learning costs (Barney et al., 2001). In addition, it generates a more complex and culturally diverse organization that is difficult to manage (Lu & Beamish, 2004). The firms will, therefore, postpone internationalization plans until slack financial resources become available. This implies that as long as firm performance is negative, internationalization plans are put on hold.

On the other hand, once the firm performs well enough, resource-gaining opportunities become important to sustain future growth. Since positive performance provides slack resources, expansion plans in terms of internationalization become interesting. Well-performing firms, therefore, have the strategic interest in and necessary resources to enter new foreign markets. To sustain growth and expansion, it is of core interest to a well-performing firm to seize resource-gaining opportunities. This

implies that as long as firm performance is positive, a firm will continue to expand internationally. We therefore hypothesize the following:

Hypothesis 1: Performance has a positive linear relationship with internationalization.

2.3 Prospect Theory

Prospect theory has, according to Levy (1992), enormous potential for explaining a wide range of internationalization behavior, and numerous arguments provide sound explanations for observed behavior. One key contribution of prospect theory is its approach to understanding firm performance (Jung & Bansal, 2009), by taking decision-makers' minds and biases into consideration. It proposes an evidence-based explanation to choices under conditions of risk (Jegers, 1991). When performance is below a given target decision makers are risk-seeking, and when performance is above the target they are risk-averse (Jegers, 1991). Therefore, we turn to prospect theory (Kahneman & Tversky, 1979) in order to explain the relationship between firm performance and degree of internationalization.

Prospect theory is seen as the best available theory for explaining how people evaluate risk, even though there are relatively few applications of the theory in different settings (e.g., Barberis, 2013). In short, prospect theory suggests that manager's decisions arise from the potential value of losses and gains rather than the outcome. Managers are, in general, more sensitive to losses, even small ones, than to gains of the same magnitude (Barberis, 2013). When a firm achieves or surpasses its performance goals, the managers become content with the chosen strategies and focus on avoiding risk to conserve gains (Ketchen & Palmer, 1999; Sitkin & Pablo, 1992). An extension of this is that troubled firms are more prone to take larger risks than firms that are doing well (Fiegenbaum & Thomas, 1988). In other words, in financially sound and profitable firms, management is less likely to engage in risky activities such as seeking new strategic challenges, performing mergers and acquisitions, as well as investing in foreign markets (Hong Luan et al., 2013; Singh, 1986). Correspondingly, empirical results from Fiegenbaum and Thomas (1988) show evidence that poor performing firms attempt to improve their position by adopting new, unproven, and risky strategies (Ketchen & Palmer, 1999). This is done in an attempt to recover the firm's recent losses, and as losses escalate, so does the level of risk propensity (Jung & Bansal, 2009; Kahneman & Tversky, 1979). Firms will engage in relatively risky behavior in order to avoid or recoup even small losses (cf., Jervis, 1992; Levy, 1992).

In contrast, profitable firms are considerably less likely to engage in risky activities. They are prone to be more committed to existing technologies and market approaches, and thus, existing markets. Accordingly, management is considerably less likely to seek new strategic challenges (Barberis, 2013; Ketchen & Palmer, 1999). There is, from a managerial perspective, no need to dramatically change what appears to be a valid and working strategy for the firm so long as it is doing well (Hambrick et al., 1993; Ketchen & Palmer, 1999). This implies that a firm's performance is negatively associated with risk-taking behavior. Furthermore, in line with

Fiegenbaum and Thomas (1988) and prospect theory, we can assume risk-seeking behaviors at low (including negative) performance levels, and risk-averse behaviors at high performance levels.

By extending prospect theory reasoning to explain the strategic behavior of firm internationalization, it is reasonable to argue that internationalization is a risky strategy for growth (Caves, 1996). In general, firms have limited knowledge of new international markets and in order to succeed they have to acquire knowledge of not only customers, suppliers, and competitors, but also about the institutional setting. The acquisition of knowledge is thus a means to reduce the perceived risk associated with entry into a new market (Mtigwe, 2006). Besides being a time consuming and costly process, the likelihood of failure as a result of the lack of knowledge is always a considerable risk that firms experience (cf., Hong Luan et al., 2013; Jung & Bansal, 2009). It is also substantially more difficult to learn about foreign markets than to learn more about new strategic moves in the home market (Jung & Bansal, 2009). To circumvent the lack of knowledge, one option is to merge with or acquire another firm. However, this is considered to be a risky undertaking as these strategies are usually less known than other options for firms in general (Greve, 1998; Palmer & Wiseman, 1999). To summarize, entering new foreign markets is associated with high risk as the consequences of the entry and expansion are unknown. Based on prospect theory, with low (including negative) performance, we expect high internationalization; and with high performance we expect low internationalization.

Hypothesis 2: Performance has a negative linear relationship with internationalization.

Considering the resource-based perspective (Hypothesis 1) or prospect theory (Hypothesis 2) in isolation from each other suggests an opposing relationship between performance and multinationality. It is impossible for both hypotheses to be supported because they are contradictory, which is precisely our point with contrasting the two theoretical perspectives. It is only through combining the theoretical perspectives that we can understand the form of the relationship.

3 Methodology

3.1 Sample and Data

The data comes from a manually compiled database of Swedish annual reports for publicly listed firms. Collecting the data manually allowed for high control and accuracy in defining variables. No publicly available databases offer the level of detail captured in this dataset. After excluding financial firms, investment firms, and real estate firms, as well as firms with only non-Swedish operations and firms that stated a different home market than Sweden, the sample had 2066 firm-year observations for 244 unique firms, forming an unbalanced panel for the years 2001–2013. Compared with similar previous studies (e.g., Jung & Bansal, 2009), we have a broader sample by including service firms.

Despite having a relatively small economy, the use of Swedish data benefits the analysis in several ways. The Swedish stock exchange is large relative to the Swedish economy and has a large proportion of highly internationalized firms. All else being equal, the degree of internationalization depends on the size of domestic markets (Glaum & Oesterle, 2007). For example, approximately 32% of the Swedish GDP is export, compared to 9% in the United States. Annual reports in Sweden are exceptionally transparent, informative, and accurate, including detailed data on internationalization (La Porta et al., 1999; Leuz et al., 2003).

Given that the paper considers the effect of performance on the degree of internationalization, 116 firms with no foreign sales were filtered out. While there could be some firms in this group that have not yet internationalized, most are likely to be firms that are inherently domestic. Including these firms in the analysis shifted the entire regression curve down, while keeping the almost identical shape, so the question of whether or not to include these firms was deciding on which was the most correct estimate of the intercept.

To establish temporal priority of the independent variables we lagged the dependent variable by one year. In other words, the dependent variable was measured 1 year after the independent variables. This reduced the sample by 261 observations. This is common practice in international business panel studies (Grant et al., 1988; Jung & Bansal, 2009; Lu & Beamish, 2004), to account for the time-lag between performance and internationalization. Though not shown, we tested different time-lags (e.g., two and three years, and an average of three years). Results did not substantively change, so we focused on one-year lags in line with previous research. Finally, based on univariate and multivariate analysis of outliers, nine cases were removed for their extreme residual values and inordinate influence on the parameter estimates (Aguinis et al., 2013). The dataset used for hypothesis testing had 1680 observations.

3.2 Model

The estimated regression equation between performance and degree of internationalization is:

$$DOI_t = \beta_0 + \beta_1 PERF_t + \beta_2 PERF_t^2 + \sum (\beta_c Control Variables_{ct}) + \varepsilon_t$$

where DOI_t represents the degree of internationalization; $PERF_t$ represents firm performance; $PERF_t^2$ is the square of $PERF_t$ to test for a curvilinear relationship; $ControlVariables_{ct}$ are Age, Size, Industry, and Year; and t denotes the time period. To test the model, we applied ordinary least squares regression with fixed effects. As a robustness test, we also estimated the model using generalized least squares (Jung & Bansal, 2009; Park, 2009). The Hausman test suggested us to estimate the fixed-effects model (Hausman, 1978). Jung and Bansal's (2009) results suggested the random-effects model. Therefore, to be thorough, we estimated both random and fixed effects models. Both models led to the same conclusion, in line with our OLS results, so we have chosen to only show the OLS results.

To address heteroscedasticity inherent with panel data, robust standard errors were calculated (Hayes & Cai, 2007). Multicollinearity is often addressed by mean-centering the non-linear independent variables, including the linear and non-linear terms (Hsu et al., 2013; Lu & Beamish, 2004). However, it remains a hotly debated topic where researchers vehemently disagree (cf., Iacobucci et al., 2016; Irwin & McClelland, 2001; McClelland et al., 2017). Even without mean-centering, the regression tests for multicollinearity shown in Table 4 are well within accepted limits, so non-mean-centered results are shown.

3.3 Measures

Degree of Internationalization. To measure multinationality, we operationalized the degree of internationalization by using the ratio between foreign sales to total sales (*FSTS*). When coding the data, 285 annual reports only reported a category for Nordic sales, or in a very few cases, European sales. For these observations it was assumed that 40% of Nordic sales related to Sweden and 20% of European sales related to Sweden. *FSTS* is the most frequently used measurement for the degree of internationalization and well established in the research on the relationship between internationalization and performance (e.g., Benito-Osorio et al., 2016; Bobillo et al., 2010; Ruigrok & Wagner, 2003). All firms included in the study are domiciled in Sweden and therefore define Sweden as their home market.

Performance was measured by the return on assets (*ROA*), and was defined as the averaged ratio between net income to total assets. *ROA* is a widely used measure of performance in previous studies on the relationship between internationalization and performance (e.g., Contractor et al., 2007; Kirca et al., 2016; Lu & Beamish, 2004). Although criticized for only capturing one aspect of performance, (Hult et al., 2008), it nevertheless indicates how the benefits of internationalization have been achieved through economies of scale and scope (Kim et al., 1989). “*ROA* is a relevant measure since the investments in foreign subsidiaries are reflected in the assets of a firm and the possible dividends, royalties and management fees paid by foreign subsidiaries as well as increases in patrimonial value in its income statement” (Shin et al., 2017, p. 872).

ROA is an accounting-based measure, while an alternative market-based measure is Tobin’s *Q*, defined as the ratio of assets divided by the replacement value of assets. However, it is criticized for suffering from measurement error, and thus biased beta coefficients when modeled as an independent variable (Lu & Beamish, 2004). As such, we chose not to use it.

Control variables. To account for possible alternative explanations and to improve estimating unbiased beta coefficients, we included four control variables. First, we controlled for firm size (*SIZE*), measured as the natural logarithm of total assets measured at the end of the calendar year. As a robustness test we also tested the number of employees instead of and together with the total assets’ variable. It had no substantive effect on the results so we have not included it in the regression analysis. Second, firm age (*AGE*) was controlled for by measuring the logarithm of the number of years since the firm was founded. When the founding year

was unknown, we used the year the firm was first listed on the stock exchange. Third, we controlled for possible effects of manufacturing versus trading/services (*INDUSTRY*). Last, we included year-effects (*YEAR*) by employing a set of dummy variables.

4 Results

In Table 3, we report Pearson correlations for all variables, including controls, except for the year dummies. Given the fairly large sample size, the power resulted in even small coefficients being statistically significant. From a substantive perspective, correlations below an absolute value of 0.3 are quite meaningless. The highest absolute value year dummy correlation is -0.12 ($p=0.00$) between ROA and Year 1. Presenting a table with so many small correlations does not add value to the paper. Let it suffice to say that all year dummy correlations were very small and mostly insignificant. The FSTS column shows correlations between the independent variables and the dependent variable. Most noteworthy are the relatively weak correlations for ROA and ROA². They explain less variance than the controls, size and age, which is common in similar studies. The rest of the correlations are between independent variables where we are concerned about multicollinearity, especially between ROA and ROA². All correlations are below the suggested absolute value of 0.9, indicating no problems with multicollinearity (Hair et al., 2014).

Table 4 shows descriptive statistics for all variables except year dummies and industry because they are dichotomous. Of particular note are the high skewness and kurtosis for the ROA variables. This is not surprising for ROA², given that it is

Table 3 Pearson correlations

Variables	FSTS	ROA	ROA ²	Size	Age
ROA	0.13 (0.00)				
ROA ²	-0.09 (0.00)	-0.52 (0.00)			
Size	0.55 (0.00)	0.27 (0.00)	-0.22 (0.00)		
Age	0.24 (0.00)	0.18 (0.00)	-0.14 (0.00)	0.42 (0.00)	
Industry	0.09 (0.00)	0.04 (0.11)	-0.08 (0.00)	0.22 (0.00)	0.26 (0.00)

p-value for a two-tailed test in brackets

Table 4 Descriptive statistics

Variables	Mean	Std. error of mean	Standard deviation	Median	Skewness	Kurtosis
FSTS	0.61	0.01	0.29	0.64	-0.32	-1.11
ROA	0.03	0.00	0.17	0.06	-2.03	9.77
ROA ²	0.03	0.00	0.09	0.01	7.31	67.31
Size	3.26	0.02	0.85	3.11	0.58	-0.26
Age	1.42	0.01	0.50	1.38	-0.14	-0.23

the square of ROA. The rule of thumb cutoff in SPSS for normality of skewness and kurtosis is an absolute value of 1. However, in ordinary least square regression there is no requirement for normally distributed variables. There is an assumption of normally distributed residuals for hypothesis testing, reported below.

Table 5 shows results for three hierarchical regression models starting with control variables (Model 1), the control variables plus the performance variable, ROA (Model 2), and finally, the control variables plus ROA and the nonlinear performance variable, ROA². The R² change (Δ) indicates a significant, yet small, increase in explained variance with each added parameter.

Given that this is panel data with risk for heteroscedasticity, we estimated robust standard errors. The highest variance inflation factor in the non-linear regression was 1.81, indicating no problem with multicollinearity. Residual analysis for the model including ROA and ROA² showed a skewness of -0.22 and a kurtosis of -0.33, and a histogram of standardized residuals for the dependent variable had a distinct bell-curve, indicating normally distributed residuals. Overall, the results of the regressions are robust.

Figure 1, shows a regression line for estimates of \hat{Y} for the range of X. The Y-axis is the degree of internationalization (FSTS), which can range from 0 to 1. The X-axis is performance (ROA), which in our dataset has a range of 1.91, with a minimum of -1.08 and a maximum of 0.83. The thick portion of the line shows degree of internationalization within the range of our performance data. The thin line extends to higher, respective lower, levels of performance not in our data.

The interpretation is as follows. When performance is at its lowest point, the degree of internationalization is high. As performance increases, the degree of internationalization decreases exponentially to an inflection point where performance is 0.04, at which point the degree of internationalization begins to exponentially rise.

Table 5 Regression with degree of internationalization as dependent variable

Variables	Model 1				Model 2				Model 3			
Constant	β	0.21			β	0.19			β	0.15		
Size	β	0.11	t	14.09	β	0.12	t	15.25	β	0.12	t	16.24
	se	0.01	p	0.00	se	0.01	p	0.00	se	0.01	p	0.00
Age	β	-0.01	t	-0.78	β	-0.01	t	-0.49	β	-0.01	t	-0.39
	se	0.01	p	0.44	se	0.01	p	0.63	se	0.01	p	0.69
Industry	β	0.19	t	13.92	β	0.18	t	13.74	β	0.19	t	14.41
	se	0.01	p	0.00	se	0.01	p	0.00	se	0.01	p	0.00
ROA					β	-0.18	t	-3.51	β	-0.02	t	-0.30
					se	0.05	p	0.00	se	0.05	p	0.76
ROA ²									β	0.62	t	7.22
									se	0.09	p	0.00
Adjusted R ²		0.25				0.26				0.28		
R ² Δ					F	0.01	p	0.00	F	0.03	p	0.00
F-value	F	40.7	p	0.00	F	39.8	p	0.00	F	42.4	p	0.00

β , unstandardized beta coefficient; se, robust standard error; t, t-statistic; p, p-value; F, F-statistic

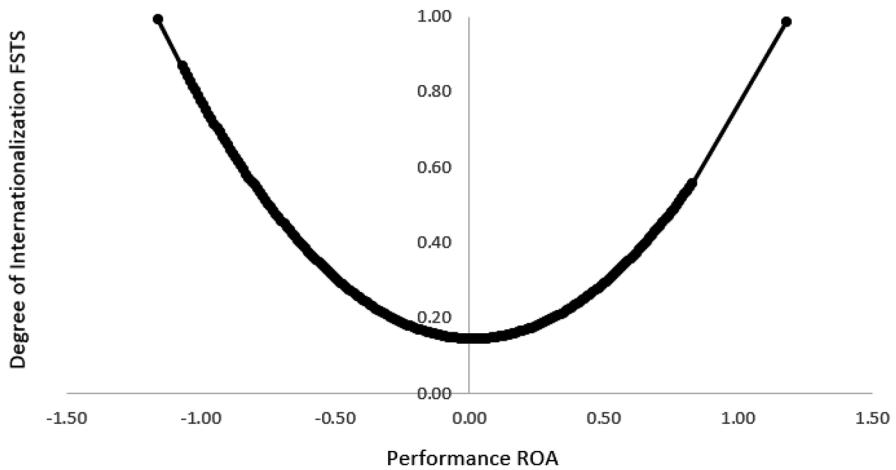


Fig. 1 Regression plot for predicted degree of internationalization

This mirrors Lu and Beamish (2004), who tested the multinationality-performance relationship and found that the linear term of internationalization was negatively related to performance, while the squared term of internationalization was positively related to performance.

In the introduction, we said that the vast majority of researchers hypothesize and test the causal multinationality-performance relationship. As a robustness test of the performance-multinationality model we tested the reverse relationship with performance as the dependent variable. Applying the same, but opposite lagging process as we did for performance to multinationality, from the original dataset of 2066 observations, the performance measure ROA was lagged by one year. This reduced the sample by 261 observations. Filtering out firms with no foreign sales reduced the sample by a further 114 observations. Multivariate outliers related to ROA were more problematic with this dataset. Through residual analysis, 25 outliers were removed to achieve a somewhat normal distribution of residuals. The analysis sample size was 1666. The residual analysis for the regression on this dataset including the linear and squared FSTS variables, had a skewness of -1.02 and a kurtosis of 3.61, with a reasonably bell-shaped histogram. This indicates the presence of some outliers on the tails of the curve. However, OLS regression is robust against deviations from normality, so we decided to not remove any more outliers.

The same modeling procedure was used with performance as the dependent variable. For the sake of space, the year dummies are not shown in Table 6. The explained variance ($R^2_{\text{adj.}} = 0.13$) is substantially lower for the non-linear regression (model 3) with performance as the dependent variable, when compared to model 3 with internationalization as the dependent variable ($R^2_{\text{adj.}} = 0.28$). In the non-linear model, the linear coefficient for FSTS is not significant, and the non-linear coefficient is only marginally significant with a p-value of 0.06 (two-sided). The R^2 change (Δ) is also only marginally significant with the addition of the non-linear

Table 6 Regression with performance as dependent variable

Variables	Model 1				Model 2				Model 3			
Constant	β	-0.13			β	-0.12			β	-0.14		
Size	β	0.04	t	8.65	β	0.04	t	8.65	β	0.04	t	8.29
	se	0.00	p	0.00	se	0.01	p	0.00	se	0.01	p	0.00
Age	β	0.02	t	3.46	β	0.02	t	3.46	β	0.02	t	3.51
	se	0.01	p	0.00	se	0.01	p	0.00	se	0.02	p	0.00
Industry	β	-0.02	t	-3.52	β	-0.02	t	-3.52	β	-0.02	t	-2.22
	se	0.01	p	0.00	se	0.01	p	0.00	se	0.01	p	0.03
FSTS					β	-0.04	t	-2.56	β	0.05	t	1.15
					se	0.02	p	0.01	se	0.05	p	0.25
FSTS ²									β	-0.08	t	-1.94
									se	0.04	p	0.06
Adjusted R ²		0.12				0.12				0.13		
R ² Δ					F	0.01	p	0.00	F	0.00	p	0.04
F-value	F	16.9	p	0.00	F	16.6	p	0.00	F	16	p	0.00

β , unstandardized beta coefficient; se, robust standard error; t, t-statistic; p, p-value; F, F-statistic

effect. All in all, the performance-multinationality model substantially outperforms the multinationality-performance model.

As a final robustness test we lagged the dependent variables for both models by three years, and then repeated the regressions. For the multinationality-performance model, results changed very slightly, so there are no substantive ramifications to the change in lag from one to three years. For the performance-multinationality model, the results with respect to the hypothesis tests are identical, meaning that the shape of the curve remains stable. The major change is in the depth of the U shape. The three-year lagged unstandardized beta coefficient for the ROA² variable is 0.34, and for ROA is -0.02. For the one-year lag they are 0.62 and -0.02, respectively. In other words, the ROA coefficient remains the same, while the ROA² term is about half as large in the three-year lag model. This means that the short-term (one-year) impact of performance on internationalization is substantially greater than the long-term (3-year) impact.

5 Discussion

The aim of this paper is to improve the theoretical understanding of the relationship between performance and multinationality, and through competing models, test the causal relationships. Although a variety of studies have investigated the effects of multinationality on performance (e.g., Contractor et al., 2003; Grant, 1987; Kim et al., 2004; Pangarkar, 2008), little research has investigated a relationship where performance is the antecedent of multinationality (Grant et al., 1988; Hong Luan et al., 2013; Jung & Bansal, 2009; Sun & Lee, 2013).

We rely on two theoretical streams of thought. The first stream builds on arguments from the resource-based view combined with the Uppsala model of internationalization. The second stream is based on prospect theory. By founding our arguments in the two theoretical streams, one can anticipate two different possible outcomes of the relationship between performance and multinationality. From a resource-based perspective (Barney, 2001; Penrose, 1959) we anticipated internationalization to be a resource-gaining opportunity and therefore hypothesize a positive linear relationship between firm performance and multinationality. From the prospect theory perspective (Kahneman & Tversky, 1979), internationalization is associated with risks, where the possible losses of internationalization outweigh possible gains. Therefore, we hypothesize a negative linear relationship between firm performance and multinationality.

Results from the data of Swedish publicly listed firms for the years 2001–2013, provide strong evidence for a curvilinear U-shaped relationship between firm performance and the degree of internationalization, with the inflection point close to the Y-axis where performance (ROA) is zero and internationalization is slightly positive. This means that in accordance with prospect theory and hypothesis 2 (e.g., Barberis, 2013; Kahneman & Tversky, 1979), the more negative the performance, the larger the degree of internationalization, and in accordance with the resource-based view and hypothesis 1 (e.g., Barney, 1991; Johanson & Vahlne, 1977; Penrose, 1959), the more positive the performance, the larger the degree of internationalization. In other words, our findings borrow partial support from both theories and consequently both theories are required to explain the relationship between performance and multinationality.

This study contributes to the Uppsala internationalization process model by expanding it to include explanations of risk-taking attitudes among managers, by building on prospect theory (Kahneman & Tversky, 1979). Managers are clearly willing to take on the risks of internationalization when performance is negative. This is important as it provides alternative explanations of managerial decision-making and the impact of financial results on a firm's internationalization strategies. The dominant argument has until now been that internationalization is contingent upon positive performance and abundant resources.

The paper also contributes to the literature on prospect theory as there are relatively few applications of the theory (e.g., Barberis, 2013). By testing the theory on our sample of Swedish publicly listed firms our study shows that prospect theory is helpful in explaining managerial decision-making under constrained financial circumstances, while there seems to be other aspects that come into play related to risk-taking when performance is positive. Thereby, we have highlighted the behavioral aspect, applicability, and explanatory power of prospect theory.

Explaining the findings from a managerial perspective, on the one hand, when performance is high and managers have slack resources they are likely to search for new business opportunities. When internationalization is a viable expansion alternative managers may choose to invest (Calof & Beamish, 1995; Hitt et al., 2006). The board and other stakeholders are likely to accept large investments in internationalization when performance is positive and there are slack resources. On the other hand, when a firm is experiencing losses, management may not see cost-cutting as

the best way to improve performance. Rather, investing in new business opportunities like internationalization may be preferable (Fiegenbaum & Thomas, 1988; Jegers, 1991; Sitkin & Pablo, 1992). It is possible to explain our results as a function of managerial perceptions of different situations as either a threat or an opportunity. Threats and opportunities are associated with how managers perceive losses or profits (cf., Chattopadhyay et al., 2001; Greve, 2003). Moreover, it is interesting to note that our results do not support the previous finding of Jung and Bansal (2009), which show that poorly performing firms are less likely to internationalize. Our results agree with their results that positive performance is associated with internationalization.

To address the causal direction of the multinationality-performance relationships, we used a competing models approach and tested causality in both directions and compared different time-lags. The model with performance as the dependent variable was substantially inferior to our hypothesized model with multinationality as the dependent variable. With performance as the dependent variable, the explained variance is very low and less than half of our hypothesized model, and the degree of internationalization variables are only marginally significant. The non-linear model produces a shallow inverted U-shaped curve with the inflection point below the X–Y intercept, which is nonsensical. In sum, the model with multinationality as the dependent variable is substantially superior. One plausible explanation for this finding is that the arguments presented above are actually true for managers when it comes to highly negative or highly positive performance. That is, managers feel compelled to act and seize internationalization opportunities when performance is clearly bad or clearly good. When performance is close to zero, managers prefer not to rock the boat by pursuing internationalization opportunities.

To summarize, in line with prospect theory the results show that firms with substantial negative performance often choose to internationalize. Contrary to prospect theory, but in accordance with the resource-based view and the Uppsala internationalization process model, the results also show that as performance rises above zero, the degree of internationalization rises exponentially. Perhaps most importantly, our findings further debunk the dominant view of investigating the multinationality to performance relationship, in favor of a more fruitful approach to consider performance as antecedent to internationalization.

6 Conclusions

In the paper we addressed the research question, what is the nature of the relationship between performance and multinationality? We demonstrate that financial performance is a major factor impacting a firm's international expansion (Bilkey, 1982; Eriksson et al., 2015). Both negative and positive financial performance, which determines the lack or abundance of resources, impact decisions to internationalize. Our foremost contribution is to international business research by showing that performance drives internationalization, much more so than vice versa. The few existing studies where internationalization is modeled as the dependent variable, with performance as an independent variable, argue that

abundant slack resources are necessary to internationalize. Results from these studies have been inconclusive and, in some cases, insignificant. Our study contributes to this line of research by showing that firms are motivated to internationalize when performance is highly negative or highly positive, whereas they do not pursue internationalization when performance nears zero.

We investigated publicly listed Swedish firms by manually collecting data from annual reports on their performance and international presence. It is a small yet highly developed and highly internationalized market, which could have influenced the findings. Given the small domestic market, many Swedish firms internationalize early to quickly grow market share. Firms from large developed markets may show a lower degree of internationalization relative to performance levels. Likewise, firms in small less developed markets may lack access to foreign markets and external resources to fund internationalization. Future research with broader datasets should take these aspects into consideration.

Looking to the future of firm internationalization, the trend of increasing presence in foreign markets for firms in all industries and of all sizes is not likely to end, despite the societal forces that both hinder and promote globalization. As our results show, firms with negative performance and firms with positive performance internationalize. The rationales offered by managers to stakeholders in either scenario are likely quite different. Firms grappling with poor performance may actually be more aggressive, dare we say desperate, in their actions than their well-performing counterparts. Whatever the case, this points to a rich avenue for further research. When researchers and practitioners are looking for explanations and ideas for understanding firm internationalization, there is strong support for looking not only, as is customary, at thriving firms, but also at struggling firms. Their solutions and market choices may be quite different based on their view of potential gains versus losses. Understanding the behavioral motivation behind internationalization might then be a way for managers to formulate more effective competitive strategies for internationalization as we can conclude that internationalization is not only driven by pure economic reasons but also by the managers' conceptions about risk. Managers thus need to carefully evaluate their own personal motives and propensities towards risk and align those with the internationalization strategy of the firm, approved by the principal owners of the firm. For risk-capitalists or other financiers it might also be helpful to get a better understanding of manager's behavior and thereby be able to better align the strategies for internationalization with their overall strategy for their investment portfolio. Our study has shown that managers tend to take the risk to internationalize both if they have and do not have the financial resources to do so.

The measurements for the key concepts, performance and multinationality, have been purposively chosen to replicate measurements used in previous studies. Despite their shortcomings, we nevertheless think that through being consistent with previous research, the results are more comparable over time. Furthermore, it emphasizes the need for changing the direction of the relationship, all other things being equal. One possible research agenda would be to first establish new measurements for both performance and multinationality, and then test them on both directions of the relationship between multinationality and performance.

Investigating 12 years of such detailed and high-quality financial data is an excellent contribution in itself. Nevertheless, a particularly apparent aspect in the data that should be considered in future research is the form and degree of the time lag in the dependent variable. Testing the effects with longer time lags, or using average performance of several years in a time lag, would provide more insight into the nature of performance-multinationality relationship. A one-year lag, though the most often used lag in the internationalization literature, almost certainly does not capture the full extent of the causal relationship.

The dataset only contains publicly listed firms. We controlled for industry, firm size, and year, however the full picture remains hidden. Many non-publicly listed small and medium sized firms have international operations. Ownership structure and the interplay with risk-taking, resource access, and performance likely influences internationalization behavior.

Future research should investigate different forms of internationalization, such as comparing exporting to foreign direct investments. Another interesting path would be to apply the logic and methodology of “necessary but not sufficient” causality to this issue, as outlined by Jan Dul (2016).

Finally, given the prevalence of multinationality and performance research that considers different S-shape hypotheses (e.g., Contractor et al., 2003; Lu & Beamish, 2004), it is prudent that we address it here as a possible shortcoming of our research and avenue for future research. The S-curve was not addressed in the paper since it was not part of the aim of this study. However, during our modeling process we tested for it and found evidence for it under various circumstances. Generally speaking, the S-curve added a tail onto the U-curve shown in our results, indicating that at very high levels of performance, internationalization decreased. However, the level of performance to reach the downturn was well above the performance of the firms in our dataset. While theoretically interesting, the downturn does not, in our data, have any substantive meaning.

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