

INTERNATIONALIZATION REVISITED: THE 'BIG STEP' HYPOTHESES

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March, 2000

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We appreciate helpful comments from Susan Douglas, Michelle Gittleman, Michael Lenox, Xavier Martin, Ram Mudambi, Rachelle Sampson, Örjan Sölvell, seminar participants at the Wallenberg Symposium to celebrate the contributions of Jan Johanson at Uppsala University, and seminar participants at the European International Business Academy Annual meetings in Manchester.

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Abstract

We refine the prominent theory of the process by which firms expand internationally - internationalization theory. By augmenting the behavioral theory of the firm (which is the basis of internationalization theory) with theories of foreign direct investment, we argue that international expansion is not a gradual incremental process as argued by internationalization theory. Rather, we hypothesize that international expansion is a discontinuous process characterized by an initial “big step.” We expect that the differences of operating in one’s home country versus abroad are the major difficulties faced by foreign firms, and subsequently the differences between foreign countries are only marginal. As a result, we hypothesize that the internationalization process will be characterized by the following observations: (a) firms take a long period of time to make their first international investment; (b) firms take shorter but constant periods of time for subsequent investments; and (c) no relationship between time to expansion and the cultural distance of the target country will exist. We examine the international expansion activities of 176 Danish firms over 150 years and find support for these arguments.

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Introduction

The prominent theory regarding the sequencing of international expansion is internationalization theory (Johanson and Vahlne, 1977). Based on the behavioral theory of the firm (Cyert and March, 1963), this theory predicts that firms expand overseas through a series of gradual incremental investments as they gain local market experience.

Our contribution in this paper stems from a re-evaluation of the arguments underlying internationalization theory. We argue that international expansion is not a gradual incremental process as argued by internationalization theory but a discontinuous process characterized by a "big step." We hypothesize that international expansion will be manifest by an initial long time period before a firm first expands overseas and little difference in time between subsequent expansions. We ground this prediction in theories of foreign direct investment which argue that firms are at a disadvantage compared to indigenous firms with respect to operations in a foreign country (*e.g.*, Hymer, 1960; Caves, 1971; Zaheer, 1995). The organizational responses in coping with difficulties such as implementing appropriate management systems and changing managerial mindsets (Perlmutter, 1969) reflect a fixed-cost of expanding internationally which need not be fully incurred for subsequent investments.

The non-recurring fixed cost component of operating internationally leads us to predict that firms will take a long period of time to make their first international investment but subsequently expand at shorter but more regular intervals. In addition, we expect the fixed-cost component will be much larger than the incremental costs that firms face when adapting these investments to specific markets. Consistent with satisficing behavior as espoused by the behavioral theory of the firm, the focus on the up-front fixed cost component suggests that a

sequencing of international expansion for psychically close to distant countries will not hold.

To empirically investigate our arguments, we examine the international expansion activities of 176 Danish firms. We find support for our hypotheses. We find that firms are significantly faster in making their second versus first international expansion and the hazard rates for expansions subsequent to the second do not significantly differ from the hazard rate of the second. In addition, we find no relationship between the hazard rate to enter a set of 13 countries and the cultural distance of these countries for Denmark.

The paper proceeds as follows. The next section revisits internationalization theory and presents the refinements we make in the form of hypotheses. The following two sections, respectively, describe the data and present our empirical results. The final section concludes.

Internationalization theory and the “big step” hypotheses

Internationalization theory

The process models of international expansion (*e.g.*, Bilkey and Tesar, 1977; Johanson and Vahlne, 1977), which are also dubbed internationalization theory, are similar in that they are behavioral theories that argue firms' lack of experiential knowledge lead to a gradual process of internationalization. They are based on the theory of the growth of the firm presented by Penrose (1959), and the behavioral theory of the firm (Cyert and March, 1963), and assert that internationalization of a firm is an incremental process. Commitment decisions are made in response to perceived problems and opportunities. The process models rest on the assumption that firms have imperfect access to information about the foreign markets, which creates 'psychic distance' (Johanson and Vahlne, 1977).

In the internationalization model, two dimensions of international expansion are

identified: establishment chain and psychic distance. The establishment chain dimension predicts that firms' initial investments within a country initially involve a limited level of commitment, such as exporting to a local agent, and over time evolve to more involved forms of participation like direct investment. The model also postulates that as the psychic distance between the markets increases, the more difficult it becomes for firms to collect and interpret incoming information properly. Firms prefer foreign markets that are similar to their own domestic market (*i.e.*, psychic distance is small). The internationalization model postulates that as firms experientially gain knowledge over time this knowledge will help offsetting the uncertainty of entering a foreign market. Firms expand internationally once they believe that they have accumulated sufficient knowledge to successfully operate in a host country. As a result, the prediction from internationalization theory is that firms will first enter psychically close markets. Gradually, they will enter more distant markets as they gather more information about them.

Few studies support the establishment chain pattern within foreign countries. Eriksson *et al.* (1993) provides a comprehensive overview of this research. However, many studies support the sequential arguments with respect to the pattern by which countries are entered (*i.e.*, the geographical sequencing of investment). Most of these studies are based on small samples and are descriptive in nature (*e.g.*, Johanson and Wiedersheim-Paul, 1975; Loustarinen, 1980).

Three studies conduct larger-sample statistical analyses of this phenomenon. Davidson (1980) analyzes the location of foreign direct investments for a sample of 934 individual new products introduced by fifty-seven U.S. firms in the period 1945-76. Calculating pairwise entry frequencies Davidson concludes that "firms in the initial stage of foreign expansion can be expected to exhibit a strong preference for near and similar culture." (p. 18). With a sample of Swedish firms, Nordström and Vahlne (1994) find a positive rank correlation between measures

of psychic distance from Sweden and mean entry rank of entry. Rank of entry indicates whether the Swedish establishment in a nation was the company's first, second, third, and so on. Yet in a study of Norwegian companies' FDI, Benito and Gripsrud (1992) find no support for the hypothesis that the first FDIs are made in countries that are culturally closer to the home country than later FDIs.

All told, the current literature tends to support the prediction that firms expand first to proximal countries. Nevertheless, we contend that theory suggests that internationalization is better characterized as a discontinuous 'big step' and that previous findings might be, in part, a function of misspecified tests. We now turn to the theoretical arguments that underlie the big step hypotheses. We address some methodological issues with respect to the previous research and our effects to mitigate such concerns in the section that describes the data and our statistical approach.

The big step hypotheses

We expect that a discontinuous, rather than incremental, process characterizes internationalization. We ground this expectation in theories of foreign direct investment. Theories of foreign direct investment take as a starting point that foreign firms face disadvantages in foreign markets when competing with indigenous firms for a variety of reasons that include: (i) differences in the language, political economy, laws, business environment, (ii) discrimination by government, consumers and suppliers, and (iii) exchange rate risks (*e.g.*, Hymer, 1960). Foreign investors must find ways in which to manage or overcome these disadvantages in order to compete successfully.

The combination of these forces can provide an operating environment that is very

different between countries that appear to be similar. For example, even countries that share language, historical, and legal traditions, often have very different institutions that do not allow the simple transfer of business practices and attitudes across borders. Evans, Lane and O'Grady (1992) provide many examples of Canadian retailers that performed poorly in the United States due to the large differences in the operating environment between countries. In fact, many of the examples that they present show that the differences in the business environment between Canada and the U.S. were more profound than the managers had expected. Moreover, the growing literature on survival of firms in foreign nations suggests that foreign investment into close countries often fails (*e.g.*, Mitchell, Shaver and Yeung, 1994).

We expect that the costs for organizations to cope with these difficulties are largely fixed (Caves, 1971). For example, firms that expand internationally must implement various formal and informal management systems in order to manage the business (*e.g.*, Bartlett and Ghoshal, 1989). Likewise, firms that expand internationally must often change the nature of their managers' mindset (*e.g.* Perlmutter, 1969). Such changes in management systems and mindsets are required regardless of the foreign nation to which a company expands. However, once the company has made these changes, it does not have to make the same level of investment should it expand its international operations to other countries. Therefore, the costs of running international operations consist of a large fixed component.¹

In addition, we expect that these fixed costs are also sunk. That is, once a firm incurs these costs they do not recover them should they cease international operations. For example, should a firm retreat from operating internationally, it cannot recover the cost or managerial effort involved in implementing the management systems that it employed for its international operations. Although we ground the existence of this cost structure in the foreign direct

investment literature, it is also consistent with the cost structure that firms face when exporting. The sunk-cost hysteresis literature with respect to exporting behavior argues that firms face fixed and sunk costs when commencing export operations (*e.g.*, Baldwin, 1988, Campa 1999).

The existence of fixed, sunk costs of operating internationally will lead to a discontinuous internationalization process. Following the behavioral nature of internationalization, our assumption is that firms will enter a foreign market only after they have accumulated sufficient knowledge to offset the perceived risks of entry. The existence of substantial fixed, sunk costs of operating internationally present a large impediment that firms must overcome in order to make their first international expansion. As a result, firms will often need substantial time to accumulate sufficient knowledge before undertaking their first investment (*e.g.*, Aharoni, 1966). Moreover, because firms cannot recover many of the costs that they incur when expanding internationally, we expect that they will be especially cautious when making their initial expansion. However, because of the fixed nature of these costs, firms do not have to make the same level of investment when expanding to subsequent markets. Therefore, we expect that the length of time it takes for a company to accumulate sufficient knowledge and make successive investments will be shorter. This leads to our first hypothesis.

H1: Time between successive entries is longer for initial investments than subsequent investments.

Although H1 is consistent with the big step argument, it is not the only possible source for this relationship. Another driver of this relationship could be that firms gain experience or learn how to assess and adapt to local market conditions and this is why successive expansions occur faster (*e.g.*, Johanson and Vahlne, 1977; Yu, 1990; Eriksson *et al.*, 1997). In this latter scenario, firms become more adept at assessing and learning about foreign environments as they

¹ Nevertheless, we expect that incremental costs still exist when entering and adapting systems to new markets.

have greater international operations experience. For ease of exposition, we will coin this the “learning” argument.

Although the big step and learning arguments are both consistent with H1, they lead to different predictions regarding two other aspects about the internationalization process. In particular, they have different predictions with respect to: (1) comparative time among successive entries after the first (*i.e.*, time between first and second versus the second and third, and so on), and (2) the order in which countries are entered.

We turn first to the time between successive entries after the first expansion. The learning argument suggests that firms continue to learn after their first expansion. Therefore, we would expect successive expansion times to get shorter with successive investments because firms continue to gain international operating experience. The big step argument, however, does not make such a prediction. The observation consistent with the big step hypothesis is that after the discontinuity of the first investment, firms expand at a rate that is fairly constant. Their international expansion activities are largely constrained by the rate at which the firm can manage its increased level of international operations and the time it takes for firms to overcome information disadvantages within each foreign market. Therefore, the big step does not predict that firms become successively faster at making subsequent international investments.

We wish to stress that the big step form of internationalization still expects there to exist differences between markets that firms must understand and adapt to. As a result, the expected time between successive investments often involves several years. It is the understanding and adjustment costs that a firm must undertake to conduct business outside of its home country that leads to the discontinuity (*i.e.*, the initial big step). Adapting to the specific country differences leads to the time between successive steps after the first.

Second, with respect to the order of countries entered. The big step argument suggests that the greatest difficulties that firms face stem from operating outside their home country regardless of where that might be. Differences between countries are relatively small compared to this. Given the behavioral nature of the decision process and the cost structure of expanding internationally, we expect that firms initially focus their attention on the large fixed-cost element. The incremental differences stemming from the psychic distance differences between foreign countries largely fall beyond the bounded capacity that managers have for search and optimization. Therefore, the big step hypothesis suggests that the internationalization argument of firms expanding from close to distant countries need not exist. However, because the learning argument is based on the traditional internationalization approach, it would suggest that firms would enter psychically proximal countries first and more distant countries later.

Therefore, the big step argument is consistent with H1 and the following relationships.

As a set, we refer to the three hypotheses as the big step hypotheses.

H2: We do not expect the time between successive foreign direct investments to decrease after the first investment.

H3: We do not expect foreign direct investment to first enter psychically proximate countries.

We acknowledge that as stated, hypotheses H2 and H3 are null hypotheses. That is, they predict no effect of the independent variable on the dependent variable. However, because the big step argument is the focus of our paper, we state these hypotheses formally versus the competing hypotheses that stem from the learning argument.

The arguments underlying the three hypotheses can be summarized in the following way:

$$\text{FDI} = f(\text{Set-up costs, Adaptation costs}).$$

Set-up costs are the initial costs of setting up the management systems, structures, and mindset

associated with conducting international operations. Adaptation costs are the costs of adapting the existing systems to each subsequent nation. We expect the set-up costs to be much greater than adaptation costs.

In comparison, the competing hypotheses of internationalization theory can be expressed:

$$\text{FDI} = g(\text{Adaptation costs}).$$

Adaptation costs are a function of general international operation experience and psychic distance. Adaptation costs are expected to decrease with international operating experience and increase with psychic distance.

Having outlined our predictions, we turn to their empirical assessment.

Data

We test these hypotheses by examining a set of Danish firms' international expansion activities. We focus on the expansion activities of firms from one country in order to hold constant host country conditions. Along these lines, Denmark has certain advantages in that being geographically small and culturally rather homogenous, we do not expect large regional variations in psychic distance within Denmark. Moreover, Denmark is a small country forcing Danish companies to go international at rather early stages in their lifecycle. Therefore, a large proportion of Danish companies has international operations and is exposed to the problems of international expansion. In addition, because internationalization theory also predicts an establishment chain we focus only on direct investment (*i.e.*, setting up a subsidiary in a foreign country) in order to hold this aspect of the internationalization process constant.

Data source and collection

To accurately track the international expansion activities of these firms, we employed a

survey. In order to increase the response rate, the data were collected in collaboration with the Federation of Danish Industry. A questionnaire was formulated in autumn 1997 and after carrying out two test interviews the initial mailing occurred in February 1998. All members of the Federation of Danish Industry who operated foreign subsidiaries comprised the base sample. These 420 firms operated foreign subsidiaries that performed activities that included sales, service, and production. We estimate that these firms account for approximately three fourths of the international activities of all firms in Denmark.

Questionnaires were mailed personally to each company's CEO. CEOs or other top executives completed most questionnaires. A reminder was mailed two months after the initial mailing. Upon this follow-up procedure the number of replies usable for data processing reached 176, corresponding to a 42 per cent response rate.²

Given the structure of the data collection, our sample includes firms that have at least one foreign subsidiary. As a result, we do not sample firms that have yet to make an international expansion. This potentially introduces a conservative bias in the test of H1. Namely, our sample does not include firms that continue to operate solely in Denmark.

Variable definitions

Dependent Variables:

We employ two dependent variables. The first, which we use to test H1 and H2, is the time, in years, between successive international expansions.³ We define international expansion as the first establishment of a subsidiary in a foreign country. In addition, we include the

² A report with a comprehensive description of the Internationalization of Danish Industry questionnaire data can be downloaded from the following web-site: <http://www.di.dk/di/international/publica.htm>.

censored international expansion for most firms in the sample. That is, the length of time since the last international expansion until the end of our sampling period, which is 1997. For companies that made their last international expansion in 1997, we do not include a censored event. For example, consider a company that began operations in 1950 and made the following international expansions: Sweden in 1970, Germany in 1980 and the UK in 1991. We would create 4 observations for this firm with the following values of the dependent variable: 21, 10, 11, and 6 (which is censored).

In total our data set consists of 506 subsidiaries representing investments undertaken by the 176 companies. On average, each company made approximately three FDIs, however, there is substantial variation - from one to sixteen. The first investment dates back to 1878, but as shown in table 1, the majority of investments were undertaken later. Two thirds of the investments were made in the last ten years and less than ten per cent was made before 1967. The average subsidiary age is 12 years.

Second, to test H3 we create thirteen observations for each firm that measure the time from company founding until it first establishes a subsidiary in each of thirteen countries in years plus one.⁴ Should a company not enter a country, we censor the event at 1997. The thirteen countries are listed in Table 2 along with the number of entries into each country. The set of thirteen countries is those with the largest investment counts in the sample. This set of countries accounts for eighty percent of all foreign subsidiaries (405 of the 506).

Previous research on this topic has examined the rank sequence of countries that firms enter (*e.g.*, Davidson, 1980; Benito and Gripsrud, 1992; Nordström and Vahlne, 1994). We favor

³ For the first international expansion we added 1 to the difference between the year of first expansion and year of company birth. This is because some companies expanded overseas in their first year of operation. The statistical method we use estimates the log of the dependent variable, which is undefined for values of 0.

using the time to entry and information on whether an event is censored for the following two reasons. First, the previously employed approach is only able to examine entries that occurred, otherwise there could be no ranking of a country. However, we believe that there is important information provided by understanding what countries companies do not enter. If most companies never enter a country, then assessing the timing and characteristics of the few entries that do enter potentially introduces large biases in the analyses. Measuring time to entry, with the additional information if an observation is censored mitigates such biases. For example, in our sample one company entered Uganda. Moreover, this was the particular company's first international expansion! Therefore, the average entry rank of Uganda in our sample is one, which is the lowest possible value that this variable can take. Clearly, we do not want to conclude that Danish companies enter Uganda most quickly because 175 companies in our sample do not have investments there.

Second, there is information included in the time to entry that ranks of time to entry ignore. For example, large or small periods of time between successive entries can make the use of rank statistics misleading. Moreover, ranking entries does not allow for the testing of a discontinuity in the internationalization process. Again, we lessen the possibilities of introducing such biases when we examine time to entry. In summary, the way in which we define the dependent variables both reduces the likelihood of biases and incorporates more information about the timing of firms' international expansion.

Independent variables:

The first independent variable that we define is the step in the firm's international

⁴ As previously mentioned, we add one to this term because some firms expanded internationally in their first year of operation.

expansion process that corresponds to the observation. For example, STEP takes the value of one for a company's first expansion, two for the second, and so on. In the case that a firm enters two countries in a year, we define them as the same step because the survey did not distinguish entry time in periods shorter than one year. In these conditions we count both entries as steps in defining the subsequent step. For example, if a company makes simultaneous first investments in one year, STEP takes the value of 1 in both instances. The next expansion is coded as STEP 3.

To measure the timing of investment into proximal versus distant countries in order to test H3, we create a set of country dummy variables. Referring back to Table 2, the set of countries are ordered from nearest to farthest from Denmark in terms of cultural distance. We rank the countries in terms of cultural distance using the approach by Kogut and Singh (1988). The distance measure is a variance-weighted distance of Denmark from the set of countries using Hofstede's four cultural dimensions. We gather the raw data from Hofstede (1980).⁵

We favor the use of the country dummies versus the continuous measure of cultural distance for the following reasons. Should we use the continuous measure as an independent variable, we would be implicitly assuming that this measure has scalar properties. For example, the distance measures from Denmark to Sweden, the UK, and Japan are 0.2, 1.9, and 7.2, respectively. Including these values as measures of the independent variable assumes that the UK is 9.5 times more distant than Sweden and about 1/4 as distant as Japan. We feel much more justifiable in using the ordinal properties of this measure and stating that Sweden is closer than the UK, which in turn is closer than Japan. Moreover, by presenting the estimates from each country separately, the reader is able to assess our results using any measure of cultural distance that they deem appropriate.

Controls:

We include firm level fixed effects to control for other factors that might correlate with the speed by which firms expand overseas. For instance, the level of international expansion varies by industry. If firms from certain industries are more likely to follow a path of international expansion, our results of investment timing might be spurious. The advantage of the fixed-effects specification is that it will control for firm heterogeneity without having to precisely specify the source of such heterogeneity. The disadvantage is that we cannot isolate or identify the firm and industry factors that influence the speed by which firms expand overseas. Because our goal is to control for and not investigate or test the firm and industry effects, we accept this tradeoff.

Results

Because our dependent variable is a time spell and some of our observations are right-censored, we use Cox's partial likelihood technique to test our hypotheses (Cox, 1972). This event-history technique uses the dependent variable and information on whether it has been censored to construct a hazard function. A hazard function indicates the probability that an event will occur (*i.e.*, expansion will occur) at a given time, conditioned that the event had not happened up to that time. The coefficient estimates in these models test whether the independent variables accelerate or decelerate a base line hazard function.

We employ this method for the following reasons. First, it is a form of event-history analysis that incorporates the censoring information of the dependent variable. As we mentioned

⁵ In the case of Poland there exist no Hofstede measures. Instead, we have chosen to apply the Hofstede measures for the former Yugoslavia as the best possible proxy. However, as we note shortly, the use of the dummy variables

previously, ignoring this information can introduce large biases in the estimates. Second, an advantage of Cox's partial likelihood technique is that we need not specify the form of the underlying hazard distribution. Other event-history techniques require the specification of an underlying survival distribution. Should the distributional assumption be incorrect, the estimates in these models will not have desirable statistical properties. Third, we are able to incorporate firm fixed effects in the set-up of this model through the introduction of different base-line hazard rates for each firm in the sample (*i.e.* a stratified model). This allows us to better control for firm heterogeneity when estimating and interpreting the results. We estimate these models using PROC PHREG in SAS.⁶

Before presenting the results from the test of H1, we present the descriptive statistics of the average time for each step and the number of observations in each step in Table 3. The average length of time until the establishment of firms' first international subsidiary is over 29 years. In contrast, the average time between subsequent steps is much shorter. While this appears consistent with Hypothesis 1, we recognize that the averages might be misleading because none of the entries in step 1 are censored, while over 25 percent of entries are censored for later steps. Moreover, other firm attributes that affect the rate of international expansion might make these simple comparisons misleading. For these reasons, we turn to the partial likelihood estimates.

Table 4 presents the results from the Cox estimates. Positive coefficient estimates indicate a greater hazard of international expansion (*i.e.*, it occurs more quickly). Negative coefficient estimates indicate a lower hazard of international expansion (*i.e.*, it occurs more slowly). Note that the sample size in Table 3 is greater than the total number of foreign

allows the reader to use their own assessment of Poland's cultural distance when comparing the order of entry.

⁶ The Cox partial-likelihood technique is often referred to as a "proportional hazards." However, because we allow for firm fixed-effects, the underlying hazard rate differs for each firm. Therefore, the change in hazard rate is not proportional with respect to the independent variables that we present in the tests.

subsidiaries because a censored international expansion is included for most firms.⁷

The first column includes the variable STEP. We see that STEP takes a positive and marginally significant sign indicating that the time to entry shortens for successive entries. This is consistent with Hypotheses 1. The number in the square bracket indicates the extent to which STEP accelerates the underlying hazard function. This is referred to as the risk ratio or accelerator. The value of 1.06 suggests that increasing STEP by 1 increases the hazard function by 6 percent, which is not terribly large. The marginal significance and impact of this effect might reflect what we see in the descriptive statistics in Table 3. The time between steps might increase at a decreasing rate.

To more flexibly estimate the hazard for the various steps, we entered a set of six dummy variables. These variables indicate the second, third, fourth, fifth, sixth, and seventh+ steps and column 2 of Table 4 presents the results. The coefficient estimates test the difference in the hazard of these steps to the base case, which is the first step. All coefficient estimates are positive and highly significant suggesting that time to entry in subsequent steps is significantly faster than the first international expansion. Moreover, the size of the coefficient estimates shows the great acceleration of subsequent steps versus the first step. For example, the risk ratio in the hazard function for the second step is twice that of the first step. To aid interpretation of these estimates we graph the resulting accelerator from the estimates in Figure 1. Note that the first step is shown with the base-line accelerator of 1.

Figure 1 shows the great difference in the hazard between the first and second step. Moreover the figure indicates that there is little difference in the risk ratio between second and subsequent steps. In order to test if this is the case, we run a similar specification to the one

⁷ As we discussed in the variable definitions, we do not include a censored observation if a firm expanded in the last year of our sample. It is for this reason that the sample size is less than the number of subsidiaries plus the number

presented in column 2 of Table 4; however, we omit the dummy variable for step 2 (so step 2 become the base case) and include a dummy variable for step 1. The third column of table 4 presents these results. This specification test the differences from step 2 compared to the other steps. The results show that the hazard function of step 2 is not significantly different than the hazard function of subsequent steps.

Two factors potentially account for the different results in Tables 3 and 4. The results from the event-history analysis show no increase in the hazard to entry after STEP 2 although the simple means in Table 3 shows that time between each step decreases. First, because we are using time as a dependent variable, censoring becomes an issue. Namely, we would expect that firms in many of the later steps have had little time to make a subsequent international expansion. Our use of Cox's partial likelihood technique explicitly accounts for censoring while the simple means in Table 3 do not. Second, the reduction in average time found in Table 3 might be spurious in that firms from certain industries expand at a faster pace than firms from other industries. The firms expanding at a more rapid pace are most likely to have made multiple investments. Therefore, the reduction in time as STEP increase might be spurious in that it disproportionately captures more fast expanding firms. Our use of firm fixed effects in the event history analysis controls for such a spurious effect.

All told, the results from the time to incremental expansion are in line with H1 and H2. We find that firms take significantly longer to make their first international investment than subsequent investments. In addition, we see that the time to the second investment does not significantly differ from subsequent investments. Again, we want to reiterate that the nature of sample (*i.e.*, each firm has made at least one international expansion to be in our sample) introduces a conservative bias for the test of H1 because we do not include firms that have

operated for several years without making an international expansion.

Having found support for the first two hypotheses, we turn to the analysis of the comparative time until entering the 13 distinct countries. We set-up the specification in the following manner. Each firm has 13 events, which represent the time into a given country and information if entry to a country is censored. We estimate fixed-effects Cox model where the set of independent variables are the set of country dummies. Sweden is the omitted case, and the list of countries is presented in order of increasing cultural distance from Denmark. Column 1 of Table 5 presents the results.

Should firms be expanding from close to far countries, the set of coefficient estimates should all be negative. Moreover the coefficient values should decrease in magnitude as we move down the table (*i.e.*, further away from Denmark). To aid in this assessment we graph the risk ratios for these estimates in Figure 2. Clearly, we do not see a decreasing relationship. To assess if there exists a general pattern in the data, we statistically investigate the correlation between distance and coefficient estimate. As we previously discussed, we do not want to assume scalar properties for the distance measure. For this reason we examine the relationship using common non-parametric techniques for ordinal data. We examine Pearson's rank correlation and Kendall's Tau with respect to the rank of the distance measure and the rank of the coefficient estimates (Conover, 1980). The value these relationships are -0.21 and -0.18, respectively. Neither is significant at standard levels of significance; therefore, we cannot reject the null hypotheses that these series are independent.

Additionally, we examined the relationship between the coefficient estimates and three measures of market size: GDP, population, and per capita GDP. The rank correlation of these measures with the coefficient estimates took the values of 0.25, 0.00, and 0.23 respectively.

None are significant at standard levels of significance.

Should we replace the set of country dummies with a measure of cultural distance (and implicitly assume that this measure has scalar properties) we find results that are very consistent with what we present in Figure 2. We find a very strong curvilinear relationship with a maximum in the middle of the cultural distance measure. This corresponds to the peaks in the risk ratio in the middle of Figure 2. Once again, this is not consistent with the interpretation that firms expand first to proximal countries.

We also examined specifications that included the continuous measure of cultural distance and added a measure of country size. Because the size variables are rather correlated, we only introduced one into the specification. We continued to find the curvilinear relationship between size and cultural distance that we discussed above. In addition, we found a positive and significant estimate of market size.

Finally, we were concerned that the relationship in entry timing might have changed over time. For example, one could argue that increased pressures for globalization have forced firms to move abroad faster. To address this possibility, we split the sample by the median company founding date, 1958. We repeat the analyses using the country dummy variables for each sub-sample. The results are presented in columns 2 and 3 of Table 5. Examining these columns show little qualitative change in the interpretation of the results. Germany and the UK continue to have large positive coefficient estimates in both sub-samples. Coefficient estimates that are negative and significant in both sub-samples include the Netherlands, Finland, Switzerland, Spain, and Japan. Interestingly the coefficient estimates of Poland and Italy are not significant in the sub-sample of the oldest companies yet significant for the younger sub-sample. This suggests that relative to the expansion rate into Sweden, younger firms are taking longer to expand to Poland

and Italy than older firms.⁸

All told, we find support for the big step hypotheses. We find that firms are significantly faster in making their second versus first international expansion. Moreover, we find that the hazard rate for expansions subsequent to the second do not significantly differ from the hazard rate of the second. Finally, we find no relationship between the hazard rate to enter a set of 13 countries and the cultural distance of these countries from Denmark.

Conclusion

Examining the timing by which a sample of Danish firms set-up subsidiaries in foreign countries, we found support for what we coin the “big step” form of internationalization. Grounded in theories of foreign direct investment and the behavioral theory of the firm, the big step hypotheses argue that internationalization is not a gradual incremental process, yet a discontinuous process that is characterized by a big initial step.

The difficulties that firms face when operating outside their home country make internationalization a journey into the unknown where the first step is the most difficult and demanding. On average it took almost thirty years for the Danish companies to accommodate this big step into the unknown. However, it took the Danish companies, on average, less than 7.5 years to make the next step (the time from establishing the first subsidiary to the second subsidiary). This is consistent with the firms having made investments in their operating systems that need not be repeated when expanding to other subsequent countries.

Moreover, support for our insight was aided by using a research design and statistical technique better suited to measure the occurrence and timing of events than previous research in

⁸ We also investigated the sensitivity of our results by adding period controls to the specifications in Tables 4 and 5. Namely, we included dummy variables to control specific time periods. Our results did not materially change with

this area. The methodology allowed us better understand the determinants of entry timing by including information on whether an event was censored and by controlling for firm heterogeneity in the estimation. This facilitated a more appropriate test of the hypotheses.

The discontinuous view of internationalization that we identified has important implications for managers. It suggests that managers should not necessarily look to proximal countries when beginning their international expansion efforts. Expansion into proximal countries can result in many unanticipated difficulties. O'Grady and Lane's (1996) notion of the psychic distance paradox and Mitchell, Shaver, and Yeung's (1994) finding that many Canadian firms failed in their expansion activities in the United States are consistent with this interpretation.

Of potentially greater importance is the opportunity cost incurred by incremental investment. For example under the assumption that international expansion is an incremental process, firms might delay profitable expansion into distant countries and gradually invest in proximal countries which have lower expected returns because they believe such incremental investments are less risky. However, given the discontinuous nature of the internationalization process, the appropriate trade-off might favor expansion into the more distant, profitable country.

For these reasons, an important implication stemming from our arguments and findings is that firms should not be fooled by the notion that international expansion to proximal countries is incremental. Rather, when considering international expansion as a discontinuous process, firms are more likely to consider expanding to countries that are not considered proximal. In addition, they are less likely to be overwhelmed by difficulties that they unexpectedly face when entering proximal countries.

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Table 1
Foreign subsidiaries by year of establishment

Year of establishment	Number of subsidiaries
Pre 1967	37
1968 – 1977	46
1978 – 1987	87
1988 – 1992	151
1993 – 1997	185

Table 2
Countries used for the analysis of Hypothesis 3^a

Country	Number of entries
Sweden	36
Norway	28
Netherlands	15
Finland	17
UK	68
USA	42
Switzerland	10
Germany	77
Spain	20
Italy	14
France	44
Poland	28
Japan	6

^a Countries are listed in order of cultural distance from Denmark as described in the text.

Table 3**Descriptive Statistics of average time in each international expansion step**

Step	n	% censored	Mean Age¹	Maximum Age	Minimum Age
1	189 ²	0	29.27	175	1
2	168	38	7.42	104	1
3	95	32	7.26	53	1
4	72	29	5.76	66	1
5	46	22	4.54	23	1
6	25	20	4.36	11	1
7+	59	29	3.93	17	1

¹ Censored observations are included in the calculation of the mean with their age equal to the age at the time of censor (*i.e.*, 1997).

² When there were multiple entries in a year, we coded all entries as being of the same step. For example, several companies entered multiple countries in the first year of their international expansion. It is for this reason that the number of first steps is greater than the number of companies in the sample.

Table 4

Cox's partial likelihood estimation with firm fixed-effects
Dependent variable = hazard rate for expansion to an additional country
 Standard errors in parentheses
 Accelerators of coefficient estimates in square brackets

	1.	2.	3.
Step	0.05* (0.03) [1.06]		
Step #1			-0.86*** (0.18) [0.42]
Step #2		0.86*** (0.18) [2.37]	
Step #3		0.59*** (0.20) [1.81]	-0.27 (0.19) [0.76]
Step #4		0.71*** (0.21) [2.04]	-0.15 (0.21) [0.86]
Step #5		0.80*** (0.24) [2.24]	-0.06 (0.23) [0.95]
Step #6		0.56* (0.29) [1.75]	-0.30 (0.28) [0.74]
Step #7 +		0.60** (0.24) [1.82]	-0.26 (0.23) [0.77]
χ^2 test of covariates, (d.f.)	3.69 (1)*	29.67 (6)***	29.67 (6)***
n	654	654	654

* p<0.1, ** p<0.05, *** p<0.01; two-tailed tests.

Table 5
Cox's partial likelihood estimation with firm fixed-effects
Dependent variable = hazard rate for expansion into a country from firm founding
Standard errors in parentheses, accelerators of coefficient estimates in square brackets
Sweden is the omitted case.

	1. Entire Sample	2. Companies founded in 1958 and prior to 1958	3. Companies founded after 1958
Norway	-0.31 (0.25) [0.73]	-0.09 (0.34) [0.91]	-0.58 (0.39) [0.56]
Netherlands	-0.97*** (0.31) [0.38]	-0.67* (0.40) [0.51]	-1.39*** (0.51) [0.25]
Finland	-0.86*** (0.30) [.42]	-0.95** (0.43) [0.39]	-0.76* (0.41) [0.47]
UK	0.95*** (0.21) [2.59]	1.04*** (0.29) [2.84]	0.85*** (0.30) [2.34]
USA	0.24 (0.23) [1.28]	0.44 (0.31) [1.54]	0.01 (0.35) [1.01]
Switzerland	-1.43*** (0.36) [0.24]	-1.65*** (0.55) [0.19]	-1.24*** (0.47) [0.29]
Germany	0.96*** (0.21) [2.61]	1.07*** (0.28) [2.92]	0.84*** (0.30) [2.31]
Spain	-0.71*** (0.28) [0.49]	-0.71* (0.40) [0.49]	-0.71* (0.40) [0.49]
Italy	-1.02*** (0.32) [0.36]	-0.65 (0.40) [0.52]	-1.59*** (0.55) [0.20]
France	0.27 (0.23) [1.31]	0.56* (0.31) [1.76]	-0.11 (0.35) [0.90]
Poland	-0.42 (0.25) [0.66]	0.09 (0.32) [1.09]	-1.46*** (0.51) [0.23]
Japan	-1.93*** (0.44) [0.15]	-1.44*** (0.51) [0.24]	-2.99*** (1.03) [0.05]
χ^2 test of covariates, (d.f.)	246.28 (12)***	140.09 (12)***	122.73 (12)***
n	2288	1144	1144

* p<0.1, ** p<0.05, *** p<0.01; two-tailed tests.

Figure 1
Risk ratio for various steps

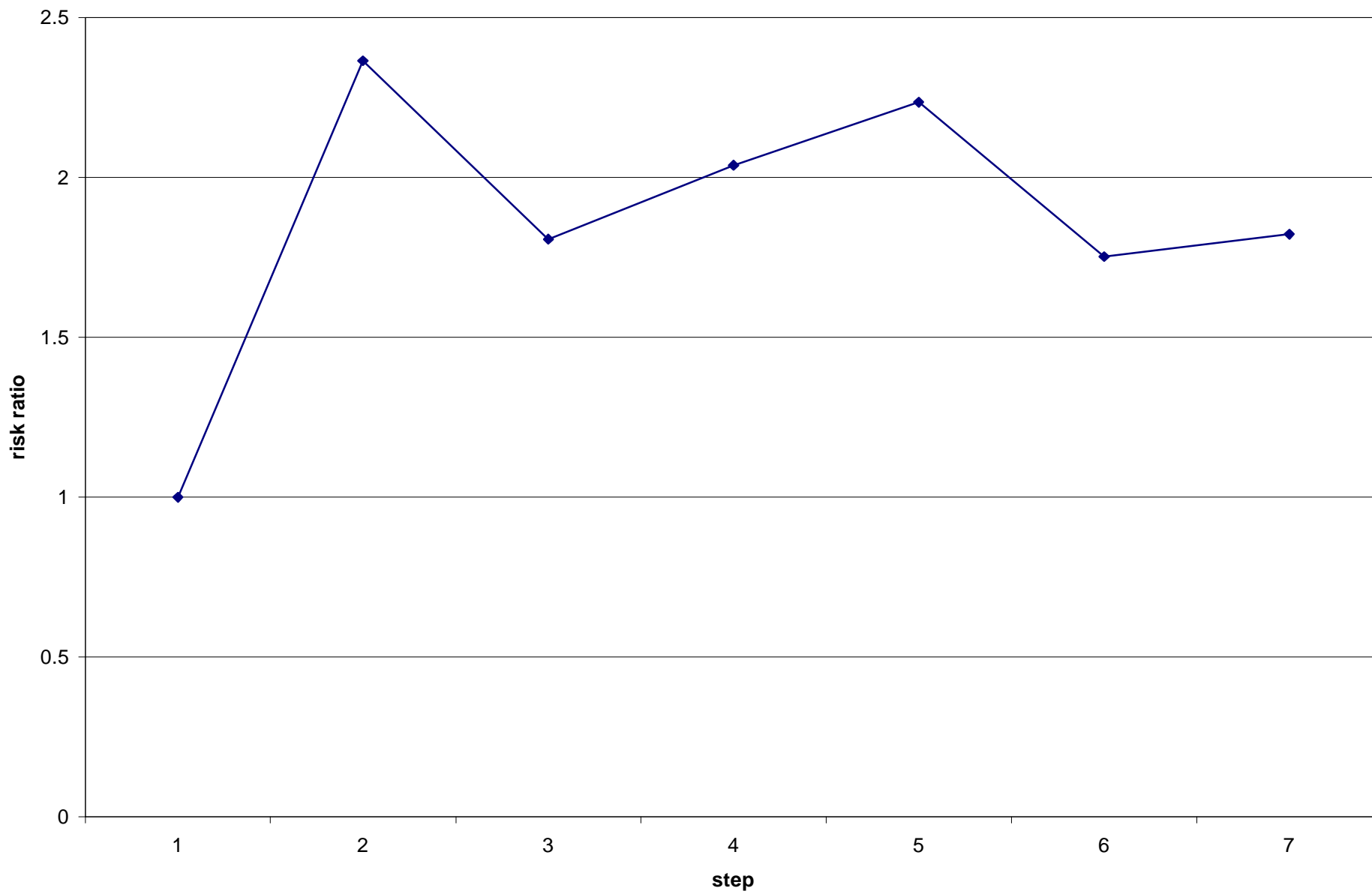


Figure 2
Risk Ratio by country

