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When Big Isn't Better: Why Smaller International Initial Public Offering Firms Seem to Win

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This paper has not undergone formal review or approval of the faculty of the ILR School. It is intended to make results of Center research available to others interested in preliminary form to encourage discussion and suggestions.

ABSTRACT

There is a considerable amount of research suggesting that “being international” is better. While that may be the case, the assumption remains tenuous at best, and research that considers organizational size provides results contesting this assumption. In particular, we explore the effect of having international sales and operations on both long and short-term performance of initial public offering (IPO) firms. We also explore the “size” phenomenon evident in prior research that suggests smaller firms seem to perform better when they are international than do medium size firms. By applying work from the field of human resource management, we suggest that the ‘size’ phenomenon may be related to the level of structural cohesion in the organization. Our longitudinal study supports the hypothesis that international companies with higher levels of structural cohesion are more successful.

The globalization of business affects firms of all sizes and extent of business experience, ranging from large well-established firms to small ventures seeking high growth. This is due to the fact that rapid internationalization is becoming more feasible. Organizations are facing dramatically increased globalization of markets in addition to improved communication, technology, and transportation (McDougall, Shane & Oviatt, 1994; Porter 1985). Even though internationalization is a phenomenon that affects both large and small firms, most of the international research conducted to date has addressed issues involving the largest corporations (Bartlett & Ghoshal, 1992; Cavusgil & Das, 1997). When smaller firms are studied, much of that work has involved case studies or relatively small samples of companies, rather than research on larger samples of smaller firms.

Even though most of the research has been based on case study work, the research conducted to date on smaller, more entrepreneurial firms has yielded results that challenge some of the assumptions about 'being international.' The traditional international business literature has assumed that success in international markets requires large size (Caves, 1982; Chandler, 1990). Research such as that by Mascarenhas (1997) has not provided support for that assumption. As a result of moving the international research from its more traditional domain (large organizations) to different samples that encompass both small and medium size firms, researchers have discovered that size matters. Firms of different sizes face different challenges, and those problems come into play when organizations enter the international arena (Braunerhjelm, 1993; Shaver, Mitchell & Yeung, 1995).

Given the need for research on small and medium size firms, we conduct our study with a sample of firms that, by most definitions, is considered small and medium size enterprises (SMEs). In particular, we study a cohort of initial public offering (IPO) firms that went public in 1993. Fifty percent of the firms in our sample have less than 207 employees (mean=607), and 90% have less than 2,000 workers. Although there is no universally accepted definition of what a small and medium size firm is,¹ our sample appears, by most standards, to represent small and medium size enterprises (often referred to as SMEs, e.g. Braunerhjelm, 1993). Even though we focus on these two groups of companies, we are not attempting to categorize the firms in our sample; instead, we choose an overall group of companies that has primarily small and medium size firms and look at size as a continuous variable.

The first part of our study examines a fairly basic issue: the degree to which having international sales or international operations at the time of the company's initial public offering affects the company's initial stock price and the subsequent performance of its stock. The second focus of our work explores the size effect, which refers to earlier findings suggesting that smaller firms may be more successful than medium size firms when they engage in international operations. Lastly, we merge literature from the fields of international business, entrepreneurship, and human resource management to suggest that structural cohesion² may be underlying some of the size effect. By merging literature from several different fields, we provide an integrative approach to exploring international SMEs, as advocated by several recent reviews of research on multinational enterprises (e.g. Buckley, 1996; Sundaram & Black, 1992; Wright & Ricks, 1994), and research on international new ventures (McDougall, Covin, Robinson & Herron, 1994).

In addition, our study involves investigation of several issues in a longitudinal study covering a three-year period of time. Several researchers, noting the conflicting results from research on the relationship between internationalization and performance, suggested that future research should be longitudinal (Bloodgood, Sapienza & Almeida, 1996; McDougall and Oviatt, 1996). It has been suggested that "[p]erhaps, the true relationship is only revealed longitudinally because the benefits of internationalization are realized only after the venture's international position is established" (McDougall & Oviatt, 1996: 26). Thus, our study expands the current research by using a longitudinal design and by specifically addressing both small and medium size firms.

¹ For example, the United States Small Business Administration has different definitions based on industry. In addition, there are significant differences from country to country, which are based on the average size firm in the country.

THE INTERNATIONAL EFFECT

Opportunities and challenges presented by growth in international trade and investment have led to the development of new organizational forms (e.g. Oviatt & McDougall, 1994) and a proliferation of organizations that cross national borders (Bartlett & Ghoshal, 1992; Sundaram & Black, 1992). The globalization of business increases the requirement for an understanding, both academic and practical, of ways in which international operations may differ from those focused on a domestic market.

We expect that a number of firms in our sample will have international operations. This is due to the fact that the advantages of internationalization (for large firms, at least) have been well documented and include reduction of factor/production costs, economies of scale and scope, innovation and knowledge transfers, and improved competitiveness (Bartlett & Ghoshal, 1992; Porter, 1986). In this paper, we examine the relationship between international sales and/or operations and performance. The extant literature on the relationship between internationalization and performance has been characterized by a number of broad approaches, two of which appear in our study.

First, a substantial body of research has examined the relationship between internationalization and performance, with mixed empirical results (McDougall & Oviatt, 1996). Several studies have found a positive relationship between internationalization and performance (e.g. Daniels & Bracker, 1989). However, some of the research suggests difficulties for SMEs, as opposed to large international firms (e.g. Buckley, 1997; this research is discussed in more detail in the following section). In particular, an emerging aspect of this research approach explores the process and factors that are important for international business performance of SMEs (Korhonen, Luostarinen, & Welch, 1996; Welch, 1996).

A second approach, and perhaps the research closest to the first part of our study, examines the internationalization of new ventures, including IPO firms (Bloodgood et al., 1996; McDougall and Oviatt, 1996). Oviatt and McDougall (1994) have suggested that new ventures with substantial international presence will outperform firms with only domestic presence, and outperform firms with limited international presence. Research on international IPOs is scarce, but not inconsistent with these findings (Bloodgood et al., 1996). Overall, research on international new ventures and IPO firms has not distinguished between sales and operations when examining internationalization. We suggest that this distinction, combined with a longitudinal approach, will be useful in developing our understanding of initial and long-term performance issues (Bloodgood et al., 1996; Oviatt & McDougall, 1995). We hypothesize that, for IPOs, international sales will have a positive effect on initial stock price, but no real effect in

² "an employee generated synergy that propels the company forward" (Welbourne & Andrews, 1996: 96).

the long-term. This may be due to the fact that investors perceive having international sales as a positive factor, but over time the market corrects for this perception, as international sales become viewed as simply another source of revenue.

Hypothesis 1a: Firms with international sales at the time of the company's initial public offering will show higher initial stock price but no better long-term stock price performance than firms with no international presence.

We also hypothesize that international operations will have a positive effect on initial stock price and on long-term stock price performance, in support of the research on international new ventures with substantial international presence (Oviatt and McDougall, 1994).

Hypothesis 1b: Firms with international operations the time of the company's initial public offering will show higher initial stock price and better long-term stock price performance than firms with no international presence.

THE SIZE EFFECT

Although the first part of our study focuses on both international sales and operations, the second and third sections will only address international operations. Acs, Morck, Shaver & Yeung, (1997) have calculated that less than 0.2 per cent of US SMEs have international operations. There is, however, considerable evidence that SMEs have increased their international presence (Admiraal, 1996). The consensus in the extant small business literature is that new and small firms are major participants in international trade, and this may grow in the future (Buckley, 1997; Reynolds, 1997).

The financial performance of international SME firms compared with domestic firms has been examined in a number of studies, with contradictory findings. This may be due to the fact that SMEs tend to be studied as one group, rather than differentiating between small and medium. We think that there is value in separating these two groups for purposes of hypothesis development. In the limited research that does focus on medium size international firms, there is some suggestion that they do not perform as well as their smaller size counterparts (Jenster & Jarillo, 1994). Unfortunately, there is no conclusive data on the lower performance of medium size firms. Some researchers have suggested that small firms internationalize by entering into strategic alliances while medium size firms may be more likely to try to 'go it alone.' We could speculate that a medium size firm will not survive in international markets unless the go-it alone firm uses the deep niche strategy identified by Kohn (1997) or it chooses the alternative strategy of entering into an alliance with a larger firm (Gomes-Casseres, 1997; Kaufmann, 1997; Osborn & Hagedoorn, 1997). However, this rationale only leads us to speculate about the firm's success in the international venture. Given our interest in the long-term performance of the entire

corporation, we offer an alternative reason for the 'size effect' that focuses on the internal dynamics of the firm.

An international small firm, even a firm embedded in an alliance or network with a large firm, may be more likely to have the flexibility required for firms to react quickly to volatile conditions, thus enabling their success in international ventures (Braunerhjelm, 1993; Acs & Preston, 1997). At the same time, large firms have the capability and resources to react from a global perspective, and this may ensure their success when they engage in international operations (Bartlett & Ghoshal, 1992). Medium size firms, on the other hand, may be in a unique position of having neither adequate flexibility nor enough resources. This may result in an internal dynamic within the company that hinders international growth.

While from an entirely different area of research, there is collaborating data from the field of occupational safety and health that attests to the peculiar vulnerability of the medium size firm. Smaller organizations and large organizations have both been found to have fewer accidents than medium size firms do (Greenlaw & Biggs, 1979). This research also supports the advantages of flexibility in the small firms and resources in the larger organization. Large firms have resources to hire supervisors who can be responsible for safety, while small firms may engender the type of 'family atmosphere' that results in employees being flexible (doing what it takes to get the job done) and helping each other.

We speculate that flexibility and resources (particularly human resources) may be key to understanding the 'medium size firm effect.' Prior research on IPO firms, using a population ecology framework, suggested that companies undergoing change (such as engaging in international operations) will perform better when they have structural cohesion (Welbourne & Andrews, 1996). Structural cohesion is defined as "an employee-generated synergy that propels the company forward." The logic behind this argument stems from population ecology's assumption that major change efforts put significant strains on a company's resources (Hannan & Freeman, 1984). Companies that succeed are those that can maintain a sense of momentum as they go through major changes. Welbourne and Andrews (1996) speculated that this momentum could be sustained by effective management of a company's workforce.

The concept of structural cohesion simply implies that if a firm can create an environment where all employees feel valued, work together toward common goals, and retain a cohesive atmosphere, then the organization can weather the challenges encountered through major change efforts. Structural cohesion requires shared vision, communication of goals, and creating an environment where all employees feel that they are a valued part of a team. This concept is not new in the international literature. For example, Oviatt and McDougall (1995) note the importance of shared vision and the ability of the leadership team to communicate vision to all

employees. In addition, there is an emergent body of literature that explores international strategic human resource management, and this work highlights the importance of effective management and strategic integration of the human resource dimension into the business (Benito & Welch, 1997; Schuler, Dowling & De Cieri, 1993).

We think that structural cohesion is particularly important for companies engaging in international operations (perhaps for the first time), and that smaller firms may, by the nature of their size, simply be more able to sustain a cohesive workforce, supporting expansion into international arenas. Small size firms may be better able to communicate vision and create an internal culture where employees share that vision because there are fewer people to be 'converted.' Relationships between people are less complex, and communication is easier when the organization is smaller (Hendrickson & Psarouthakis, 1992).

Thus, we conclude that medium size firms should have lower levels of structural cohesion, which negatively affects the performance of those medium size firms that have international operations. Medium size companies have more people, are likely hiring additional employees to sustain their growth, and are confronting the demands of increasing bureaucracy (Baird & Meshoulam, 1988). Thus, based on the assumption that structural cohesion is stronger in small firms, we hypothesize that smaller firms with international operations will perform better than medium size firms with international operations.

Hypothesis 2: Smaller firms that engage in international operations will have higher levels of firm performance than medium size companies with international operations.

Our logic in associating small firms with higher performance when they are international is tied to the concept of structural cohesion, which is defined by Welbourne and Andrews (1996) as being a function of collective action among employees in a company. When a company has a high level of synergy among employees, or when people within a firm are working together toward a common goal, the organization is better equipped to undergo major changes (such as internationalization) more effectively. The effect for structural cohesion is expected to be a long-term effect. Therefore, controlling for the size of the firm, we hypothesize that international companies with higher structural cohesion will be more successful.

Hypothesis 3: After controlling for firm size, firms with international operations and higher levels of structural cohesion will experience higher levels of performance.

METHOD

The study was conducted with a cohort of firms that went public in 1993 (a total of 706 firms went public in 1993). The data for this study come from several different sources. They include the prospectuses of firms going public in 1993, surveys sent to members of the top

management teams at those firms, and financial data from the time of the IPO and for the years from the IPO through year-end 1996. Financial data were obtained from The IPO Reporter, the Security Data Corporation database, and from COMPUSTAT. Although 706 firms went public, only 585 firms produced a good or service (others were real estate trusts, etc.). We were able to obtain prospectuses for 535 of those firms. As a result of missing data, the final analyses were run for 274 firms (we had financial data through 1996, international status, and other data). For the analyses that used the survey results, the sample size is further reduced to 210.

Prospectus Data Collection and Coding

Several variables used in the analysis (primarily the control variables) were obtained from the prospectus. The prospectus is the document provided to the Securities and Exchange Commission (SEC) prior to the public offering, and it is also the document circulated by the underwriter to assess demand for the firm's stock. The SEC requires that firms follow strict guidelines in the format. In fact, the firm is legally liable for any information that might mislead investors (O'Flaherty, 1984). As noted by Beatty and Zajac (1994), top management is accountable to the SEC and to stockholders regarding the contents of the prospectus. The Securities Act of 1933 sets the requirements for the prospectus, thus assuring consistency in the type of information that is included in the document. The typical prospectus writing process involves at least three lawyers (one for the company and one for each of the investment bankers), two investment-banking firms, and at least one certified public accountant. Each party has a vested interest in providing the public with an honest view of the company.

A team of four coders read the prospectuses and coded the data used for the study. Detailed coding rules were developed based on prior research that gathered similar data (Welbourne & Andrews, 1996). A random sample of the prospectuses was cross-coded, and agreement on all the variables used in this study was over 90%.

Survey Administration

Names of all officers in the firms were obtained from COMPUSTAT. Surveys were sent to these individuals, and a total of 4,700 surveys (representing the 700 firms) were mailed. Each survey had an identification code that allowed us to link the survey data with the prospectus and firm performance data. A total of 458 surveys was returned (9.7% response rate); however, those individuals represented 324 companies (46%). Of the individuals who responded, 78 were Chief Executive Officers, 87 were Chief Financial Officers, and 226 were in other senior vice president positions (e.g. marketing, production, engineering, etc.). Of the 226 in the "other" category, 14 was Chairman's of the Board and 36 were in other financial-related positions (e.g. Treasurer, Controller).

We coded the survey responses in two different ways. The first method involved coding data from the highest-ranking officer's responses. When coding via the highest level executive, we selected the CEO, Chairman, or President first. Next, we used the chief financial officer (using the logic that familiarity with the IPO process was highest for that individual). After that we utilized the most senior executive based on salary ranking patterns (technical individual, marketing, and lastly someone in human resource management or administration). The second coding process involved our averaging responses from all individuals within one firm. The correlation between the measures operationalized these two different ways ranged between .92 and .97 on the variables used in our study. For purposes of our study, we used the measures obtained from the highest-ranking officer of the firm.

Independent Variables

International sales and international operations. We coded the prospectus to determine if a firm had they had any sales originating from a country other than the United States and if they had any type of operation located in a different country (thus having international operations). This involved a careful reading of the business section of the prospectus. This variable was coded as a dummy variable (0/1), with 0 meaning that there were no international sales/operations mentioned and 1 indicating there was some type of international sales/operations. The international operation could be a manufacturing facility, sales location, or a regional office. A total of 212 companies reported having some type of international sales. A total of 153 firms reported having some type of operation in a different country.³ Of those, 65% had their operations in Asia or Africa; 14% had the business operation in an English speaking country or North America, 13% had operations in Europe, and 7% had business locations in Latin America. Only 43 firms reported the number of employees in the international office; of those, the mean number of employees was 232.77 (minimum is 1, and maximum is 1,600), with a standard deviation of 410. The median number of employees in an international operation was 53. Within the overall sample, 146 companies reported having both international sales and operations, 66 had international sales but no international operations, 6 had international operations and no international sales, and 257 had neither.

In addition to the dummy codes (0/1 for international), we coded the percent of revenue obtained from the international location. We use these data for a supplemental analysis conducted on hypothesis 3. The mean percent of revenue obtained from the international location is 26.54 (s.d. = 18.41), and the median is 26.

³ Given that the study is on firms going public in the USA, we excluded firms that were based outside of the United States from the analyses. Thus, a non-USA location was considered an international operation.

As we have noted, there is very little research on the differences between firms that have international operations and those that do not. This is particularly true for businesses at the IPO stage. Therefore, in order to supplement our study, we conducted a series of one-way ANOVAs on several company variables. The analyses were done to assure that our dummy codes (1=international; 0=not international) were merely capturing size or performance at the time of the IPO.

The results show that there were no significant differences (at the $p \leq .05$ level) in: company age, total number of employees, total sales, price to book ratio, price to earnings ratio, net income per share, total assets, (all at the time of the IPO) or percentage of CEO ownership prior to the IPO. From the survey data, there were no significant differences in the firms' reported strategies (whether they were pursuing a low cost, product differentiation, focus or niche, other strategy both at the time of the IPO and at the time of the survey). There were no significant differences in the self-reported characteristics of those completing the survey (e.g. age, education, and tenure). We did, however, find significant differences in initial stock price (10.04 for those not international and 12.79 for those that are international). Thus, it seems that the companies with international operations obtain a higher initial stock price, but they do not differ in terms of the other variables noted.

Structural Cohesion From Survey. The items used in the survey included 48 variables identified as potentially important for success of an IPO firm. Executives were asked how important these items were to the performance of their firm from the time of the IPO to mid-1995 (when the survey was distributed). The response scale was a 1 to 5 Likert-type scale, with 1 = not important at all, and 5 = very important. The items were pilot tested in a telephone survey in the Welbourne and Andrews (1996) study of IPO firms, which included items relating to the company's employees, top management team, rewards system, products, IPO-related issues (timing of the IPO, underwriters, market, etc.), technology, cash flow, financing in general, the manufacturing process, and a number of other items that were identified as related to IPO firm success.

An exploratory factor analysis with a varimax rotation was conducted on all of the items. The results indicate a five-factor solution⁴, and for purposes of this study, we use only the first factor, which is labeled "culture for employees." The items include: (1) Overall culture of the company, (2) Company values, (3) The family atmosphere, (4) The way employees work together, (5) The way employees work as a team, (6) The overall culture of the company, and (6) Commitment of employees. We think that this first factor (which was pilot tested in earlier research) measures a component of structural cohesion because it focuses on the internal

company culture for employees. The eigenvalue for this factor was 5.53, and the coefficient alpha was .86. The mean score for those in our sample was 3.80 with a standard deviation of .66.

Initial IPO firm performance. In order to investigate short-term performance, we used a measure of initial stock price (mean = 10.91, s.d. = 5.04) and 7-day stock price (mean = 12.47, s.d. = 6.25). While initial stock price represents the investors' initial reaction to the firm's performance and potential at the time of the IPO, the 7-day stock price represents a correction by the market and better captures initial demand for the company's stock.

Long-term stock price performance. We use a measure of change in stock price (adjusted for splits, etc.) from the time of the IPO through years ending 1994, 1995, and 1996. The average stock price change from IPO to year-end 1994 is .14 (s.d. = .90), for 1995 is .35 (s.d. = 1.45), and for year-end 1996 is .88 (s.d. = 2.88). Percentage stock price change is logged to correct for skewness. Given that the prime reason investors choose to put money into an IPO is to make money when the firm's stock price increases over time, stock price growth is a reasonable measure of performance for the IPO sample. In addition, market-based measures represent the most prevalent and relevant firm performance measures in the IPO literature (see Ibbotson and Ritter, 1995 for a review).

Control Variables

Several control variables were used in the analyses. The total number of employees, logged to correct for skewness, was included as a measure of size. We also included a control for company age, as this may affect both short and long-term performance. Net profit (also logged) at the time of the IPO was added as a performance measure. Dichotomous variables for industry were used, and we utilized the 9 categories recommended by the Small Business Administration and used in prior IPO research (Welbourne & Andrews, 1996).

Although our sample of IPO firms consists of higher risk ventures, we expect that each firm will be subject to varying degrees of risk. Therefore, an additional control variable (logged) indicates the level of risk faced by each firm at the time of the IPO. Each prospectus contains a section listing all risk factors faced by the firm, which must be disclosed to meet the requirements of the Securities and Exchange Commission. Prior research on initial public offering firms found that this measure was a useful way to code risk (Beatty and Zajac, 1994; Rasheed and Datta, 1994). The presence of the following risk factors were included in this measure: new product, few or limited products, limited number of years in operation, inexperienced management, technical risk, seasonality, customer dependence, supplier dependence, inexperienced underwriters, competition, legal proceedings against company, liability, and government

⁴ More detail on all five factors can be found in Welbourne & Wright, 1998.

regulation. The summated risk measure ranged from 1 to 11, with a mean of 3.81 and a standard deviation of 1.54.

RESULTS

At the time of its IPO, the average firm in the sample used for the analyses was 7.30 years old (s.d. = 8.50), and 50% of the sample was younger than 5 years old. The average firm employed 690 employees (s.d. = 1230), and 50% had 207 or fewer workers. The industries in the sample include mining, construction, manufacturing, transportation, communication, electric, gas, and sanitation, wholesale trade, retail trade, finance, insurance, and real estate, and companies in service organizations. The largest concentration of firms was in manufacturing (48.5%), with the second largest group falling in the service industry (19.1%). Table 1 presents the means and standard deviations and Table 2 presents the intercorrelations among the variables in the study.

TABLE 1
MEANS AND STANDARD DEVIATIONS

<u>Variable Name</u>	<u>Mean</u>	<u>Standard Deviation</u>
Age of Company (in years)	7.30	8.50
Net profit per share (at IPO)	.16	.61
Number of Employees	690.00	1230.00
Risk Factors (prospectus)	3.81	1.54
International operations (0,1)	.32	.47
International sales (0,1)	.45	.50
Culture for employees	3.80	.66
Offering Price	10.91	5.04
7-day stock price (per share)	12.47	6.25
Stock price growth (IPO to 12/94)	.14	.90
Stock price growth (IPO to 12/95)	.35	1.45
Stock price growth (IPO to 12/96)	.88	2.88
<u>Industry representation</u>	<u>% firms reporting in that category</u>	
Agriculture	.2	
Mining	2.8	
Construction	1.3	
Manufacturing	48.5	
Transportation	8.3	
Wholesale trade	5.3	
Retail trade	8.5	
Finance, investment, and real estate	3.6	
Services	19.1	

TABLE 2
CORRELATIONS FOR VARIABLES USED IN THE ANALYSES

	1	2	3	4	5	6	7	8	9	10	11
1. Age of Company	1.00										
2. Net profit per share	.17***	1.00									
3. Number of employees	.27***	.37***	1.00								
4. Risk Factors (prospectus)	-.13*	-.26***	-.38***	1.00							
5. Culture for employees	.14*	-.006	.05	-.14*	1.00						
6. International operations (0/1)	.05	.11*	.24***	.01	-.08	1.00					
7. International sales (0/1)	.15***	.02	.12**	.14**	-.11+	.71**	1.00				
8. Initial stock price	.18***	.27***	.55***	-.24***	-.08	.29***	.20***	1.00			
9. 7-day stock price	.12*	.27***	.46***	-.20***	-.06	.28***	.20***	.86***	1.00		
10 (log) Stock price growth (IPO to 12/95)	.08	.22***	.25***	-.09	.11+	.19***	.11*	.30***	.30***	1.00	
11. (log) Stock price growth (IPO to 12/96)	.09+	.22***	.26***	-.06	.03	.20***	.19+	.24***	.21***	.85***	1.00

***= $p \leq .001$; **= $p \leq .01$; *= $p \leq .05$; + $p \leq .10$

Analysis of Respondents vs. Non Respondents

An analysis on the survey respondents vs. nonrespondents, which consisted of a one-way ANOVA for all of the control and dependent variables in the analysis, indicated some differences between the respondent and nonrespondent organizations. Companies with executives who responded to the survey were on average from older firms (18.21 years, vs. 13.58, $F=4.97$, $p \leq .05$), and their offering price (stock price at the time of the IPO) was higher (11.52 vs. 10.33, $F=6.93$, $p \leq .05$). There were no significant differences on total number of employees (size), net profit at the time of the IPO, 1993 year-end stock price, or the number of risk factors faced by the firm. However, there were significant differences in year-end stock prices for 1994, 1995, and 1996. The respondents, in all cases, had higher stock prices. In 1994 respondents had an average stock price of \$13.27, while nonrespondents were at \$10.80 ($F=12.58$, $p \leq .001$). In 1995 the average stock price for respondents was \$14.67, while it was \$11.30 for nonrespondents ($F=17.42$, $p \leq .001$). Finally, for year-end 1996, respondents' average stock price was \$16.36, while the nonrespondents average stock price was \$13.20 ($F=8.67$, $p \leq .01$).

Results of Regression Analyses

Analyses for having international sales and international operations. Table 3 shows the results for both international sales and international operations on three dependent variables: initial stock price, 7-day stock price, and long-term stock price, and IPO through 12/96 (with unstandardized betas for IPO through 12/94 and 12/95 shown at the bottom of the page). All three equations are significant with the R^2 ranging from .40 for initial stock price to .16 for percentage change in stock price (logged) from IPO to 12/96. International sales are significantly related only to initial stock price ($p \leq .10$), while international operations are not. However, for all other analyses, international sales are not significantly related to firm performance, but international operations are positively and significantly related (at the .10 probability level for 7-day stock price and year end 1994, but at the .05 level for years ending 12/95 and 12/96).

TABLE 3
RESULTS OF REGRESSION ANALYSES
FOR INTERNATIONAL SALES AND INTERNATIONAL OPERATIONS EFFECTS

Factors	Initial stock price		7-day stock price		IPO to 12/96	
	beta	s.e.	beta	s.e.	beta	s.e.
Constant	3.24	1.28	4.44	1.92	-.38	.24
Age of company	.26	.24	.40	.37	-.04	.04
Net profit per share	.62	.49	.87	.73	.32***	.09
Risk Factors (prospectus)	-.12	.17	-.09	.25	-.002	.03
Number of employees	1.18***	.16	1.06***	.24	.06	.03+
International sales (0,10)	1.06+	.62	1.18	.93	-.14	.11
International ops. (0,1)	.78	.66	1.64+	.99	.27*	.12
<hr/>						
R ²	.40		.25		.16	
F	13.01***		6.45***		3.85***	

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$; + $p \leq .10$

Note: Industry codes included in analysis.

SUMMARY STATISTICS FOR EQUATIONS THAT PREDICT CHANGE IN STOCK PRICE FOR YEARS ENDING 12/94 AND 12/95

	IPO to 12/94	IPO TO 12/95
R ² =	.16	.14
F =	3.85***	3.14***
beta for international operations =	.27*	.35+
beta for international sales =	-.14	-.19

Analyses for firm size. Table 4 shows the results of the analyses considering the effect of international status (whether or not the firm had international operations) and the interaction between international status and number of employees. The results for the analysis predicting initial stock price show that having an international operation has a positive and significant effect on performance ($\beta = 1.11$, $p \leq .05$); however, the interaction term between international operations and size was not significant. The results for 7-day stock price are similar in that there is only a direct effect for having an operation in another country.

TABLE
RESULTS OF REGRESSION ANALYSES
SIZE (NUMBER OF EMPLOYEES) AND
INTERNATIONAL OPERATIONS INTERACTION

Factors	Initial stock price		7-day stock price		IPO to 12/96	
	beta	s.e.	beta	s.e.	beta	s.e.
Constant	3.65	1.28	4.86**	1.92	-1.54**	.51
Age of company	.34	.24	.47	.36	-.04	.10
Net profit per share	.63	.49	.87	.73	.53**	.19
Risk Factors (prospectus)	-.09	.17	-.07	.25	.08	.07
Number of employees	1.11***	.17	.99***	.26	.20**	.07
International ops. (0,1)	1.31*	.54	2.29**	.81	.41*	.21
Interaction term						
International operations *						
Number of employees	.0003	.00	.0002	.00	-.0002	.00 ($p \leq .11$)
<hr/>						
R ²	.40		.24		.14	
F	13.04***		6.47***		3.14***	

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$; + $p \leq .10$
Note: Industry codes included in analysis.

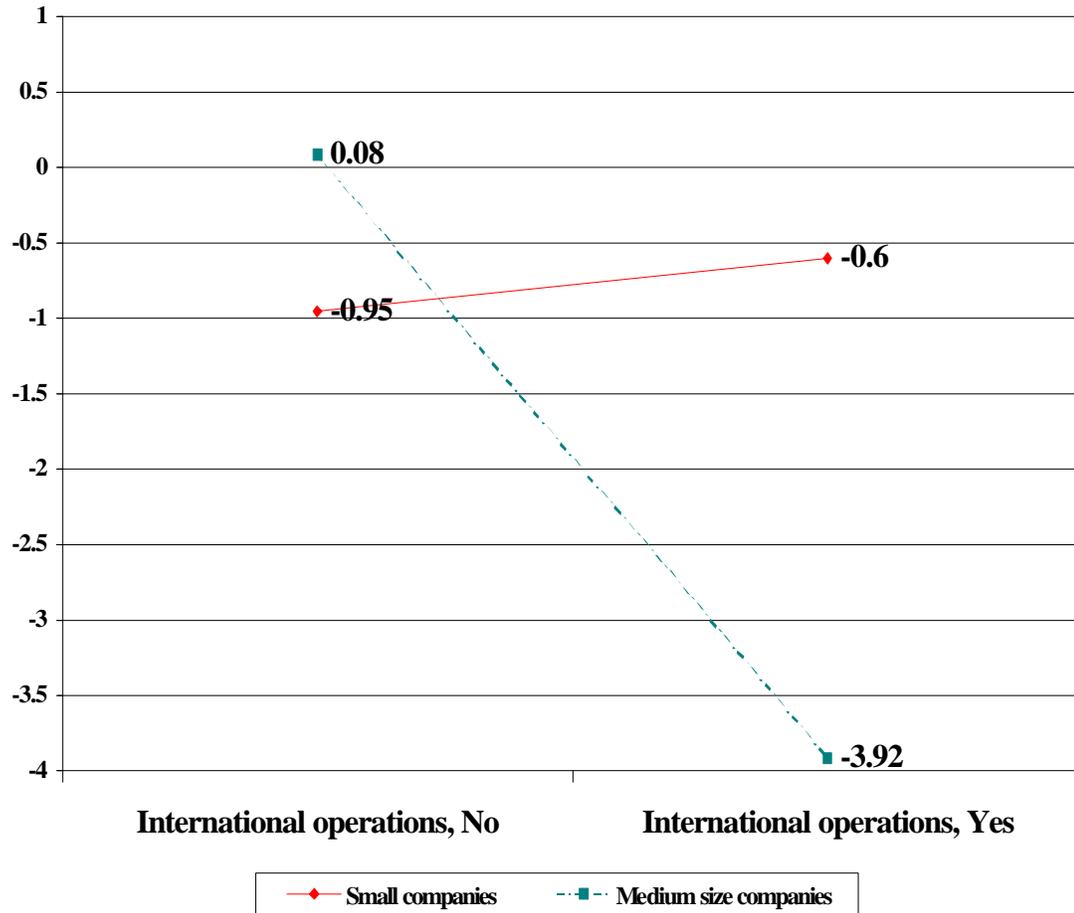
SUMMARY STATISTICS FOR EQUATIONS THAT PREDICT CHANGE IN STOCK PRICE
FROM IPO TO 12/94 AND IPO TO 12/96

	IPO to 12/94	IPO TO 12/95
R ² =	.17	.13
F =	4.05***	2.98***
beta for # employees =	.08*	.15**
beta for international ops =	.24*	.35*
Interaction term =	-.0001+	-.0002+

The analyses for long-term stock price growth showed that the interaction term was significant for years ending 1994 and 1995 (see analysis at bottom of table). The results for stock price growth from IPO to year-end 1996 were in the same direction, but significance was at the $p \leq .11$ level. The longitudinal analysis shows that the interaction effect is insignificant for initial and seven-day stock price, significant for the first two years after the IPO, but the effect is reduced over time and becomes insignificant in the third year (year ending 1996).

The analysis for stock price growth from IPO to year-end 1995 indicates that the interaction term is significant at the $p \leq .10$ level. In order to interpret the nature of the interaction, we plotted means that were calculated by using the constant and unstandardized beta coefficients for four quadrants (low on size, high on size, no international operations, yes on international operations). Figure 1 indicates the results of this analysis, which is useful in understanding the overall pattern of results (the data points are less relevant given that all controls are not included in the calculation). It appears that larger firms in the IPO sample experience a decrease in performance (stock price growth) when they have international operations, while smaller firms seem to obtain a somewhat small, but positive, gain for international operations.

FIGURE 1
 INTERACTION BETWEEN INTERNATIONAL OPERATIONS (YES/NO) AND
 SIZE IN PREDICTING STOCK PRICE GROWTH (IPO TO YEAR END 1995)



Culture for employees and international operations. As per hypothesis 3, the analysis reported in Table 5 shows that there is a significant interaction between culture for employees (the indicator of structural cohesion) and having international operations.

TABLE 5

RESULTS OF REGRESSION ANALYSES FOR CHANGE IN STOCK PRICE
IPO TO 12/96, CULTURE FOR EMPLOYEES' INTERNATIONAL STATUS

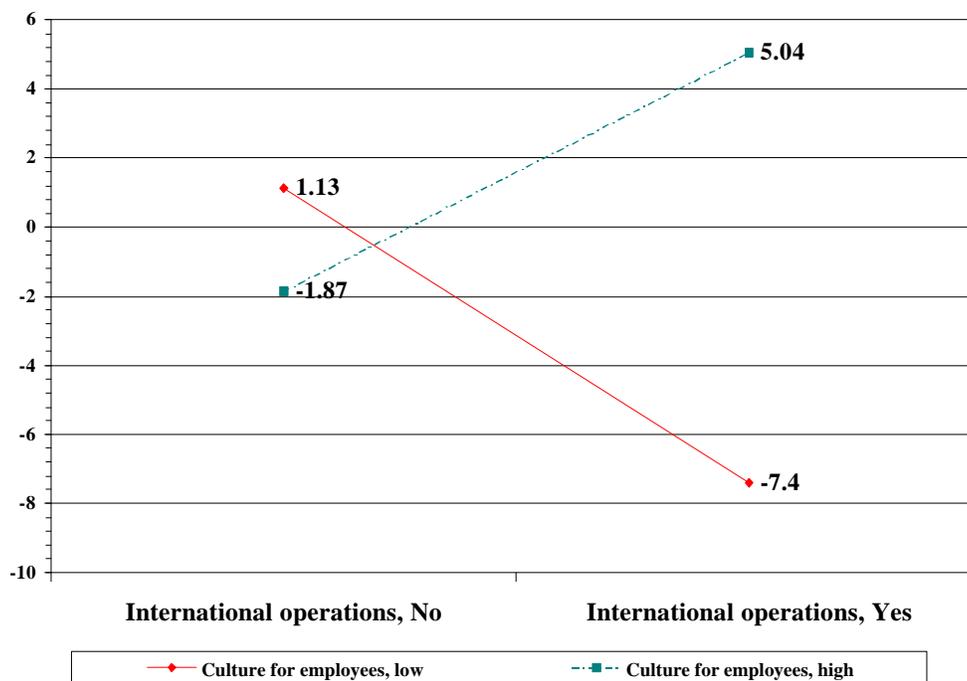
<u>Factors</u>	<u>beta</u>	<u>s.e.</u>
Constant	2.06	1.43
Age of company	-.18	.12
Net profit per share	.41*	.18
Risk Factors (prospectus)	.16*	.07
Number of employees	.40***	.09
International ops. (0,1)	-13.03**	4.07
Culture for employees	-.78*	.33
Interaction term International operations * Culture for employees	4.07***	1.24
<hr/>		
R ²	.19	
F	2.93***	
<hr/>		

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$; + $p \leq .10$

Note: Industry codes included in analysis.

The interaction was plotted and appears in Figure 2. The results show that firms with a lower score on culture for employees have lower performance when they engage in international operations, while firms that have a higher score on culture for employees increase their performance when they have a business operation in another country.

FIGURE 2
INTERACTION BETWEEN INTERNATIONAL OPERATIONS (YES, NO) AND CULTURE FOR EMPLOYEES
WHEN PREDICTING STOCK PRICE GROWTH (IPO TO YEAR-END 1996)



As a supplement to this analysis, we obtained the percentage of revenue from international operation and conducted an analysis using percentage revenue from international operations interacting with culture for employees. The sample size for this analysis is quite small ($n=50$) because we could include those firms that (1) completed the survey, (2) had an international operation, (3) had reported stock price data for year-end 1996, and (4) for which we could obtain the percentage of revenue from the international operation. The analysis was run without dummy codes for industry, but we included the same terms included in Table 4.

The pattern of results is identical to those obtained in Table 4 ($R^2 = .46$, $F=3.89^{**}$). The unstandardized beta coefficient for culture is $-.65$ ($p \leq .05$), for percentage of revenues from the international venture is $-.16$ ($p \leq .001$), and for the interaction term $.044$ ($p \leq .000$). None of the other variables (company age, risks, net income per share, number of employees) were significant in this equation. The plot of the interaction term shows the same relationship found in Figure 2. Those firms that score high on culture for employees and that have international operations have the highest stock price growth from IPO to year-end 1996 (2.51). According to

the analysis, those firms with international operations and scoring low on culture have a -4.54 percentage change in stock price (logged). Those firms without international operations, scoring low on culture have a 2.41 percent change, and those high on culture without international operations obtain -.03 on percentage change in stock price.

DISCUSSION

Hypotheses 1a and 1b focused on the effect of international sales or operations at the time of a company's IPO on initial and long-term performance. Hypotheses 2 and 3 addressed the degree to which international operations and firm performance were related to organizational size and structural cohesion.

Findings From Hypotheses 1a and 1b

Hypothesis 1a focused on the effect of international sales on initial and long-term performance. In support of this hypothesis, we found that having international sales at the time of the IPO had a positive effect on initial stock price but no significant long-term effect. Hypothesis 1b stated that international operations should positively affect both initial and long-term stock price performance. Although we found no initial effect of international operations on initial stock price, there was a positive effect from 7 days through the next three years. The lack of an initial effect may be due to the fact that investors are initially tentative about the implications international operations, while international sales are simply another source of revenue. The short term perspective of many people who are investing in the IPO at such an early stage may contribute toward explaining our results. However, it seems that the market quickly corrects for this perception. The differential results for international sales and operations perhaps explain the mixed results in the extant literature on internationalization (Buckley, 1997; McDougall & Oviatt, 1996). The positive long-term relationship between international operations and stock price performance is consistent with research on international new ventures (Oviatt and McDougall, 1994). It appears that the longitudinal approach taken in our study has provided useful clues towards explaining the complex relationship between internationalization and firm performance.

Results From Tests of Hypothesis Two

Hypothesis 2 focused on the relative performance of firms based on both their size (measured by number of employees) and having international operations. In support of our hypothesis we found that the larger firms in our sample (which represent medium size enterprises) were less successful when they engaged in international operations. This was the case for all years; however, the effect becomes insignificant ($p \leq .11$) for year ending 1996.

The longitudinal analysis results show that this differential effect (between small and medium size firms) is only significant for the first two years after the IPO. In year three (year

ending 1996), the differential impact seems to fade. This may be due to the fact that the sample changes over time (some firms go out of business, merge, etc.), or it may be the result of medium size firms becoming large, thus acquiring the 'advantages' of larger size. Future research will be needed to expand this work.

Results From Tests of Hypothesis Three

We speculated that the phenomenon underlying the 'size effect' is related to an internal company dynamic called structural cohesion. Hypothesis 3 stated that after controlling for size, firms that demonstrated higher levels of structural cohesion (measured by examining the culture for employees) would be more successful when they had international operations. The results of our analysis indicate that there is support for this hypothesis. The results support population ecology arguments in that firms with international operations (e.g. engaging in change) are more successful when they create an environment that increases and supports structural cohesion. However, according to Welbourne and Andrews (1996), structural cohesion, which is actually a component of inertia, is only positive for the organization when it is "moving" rather than "at rest."

We suggest that firms that have international operations at the time of their IPO are organizations that are going through change and likely to continue to engage in change initiatives. Inertia is a concept that most people associate with immobile organizations that are unable to change. However, the concept of inertia, which is from Newton's first law of motion, simply states that an object at rest will stay at rest and an object in motion will stay in motion. Inertia can keep a company staying in one place, or if the company is changing and moving, inertia helps the company continue to move. This concept implies that inertia will be good for companies going through change but bad for companies that are stable.

The results shown in our interaction plot seem to support this idea. The companies that were not engaging in international operations at the time of the IPO actually had lower long-term performance if they demonstrate higher levels of structural cohesion. If we believe that the non-international firms were more likely to be at a relatively 'at rest' state, then organizational features that increase structural cohesion and inertia would lead to poor performance.

Limitations

A number of limitations must be recognized in this research. First, the measure of culture for employees (capturing structural cohesion) was obtained in mid-1995 although the performance measure we utilized ranged from 1993 until 1996. Although we collected the data in 1995, we asked respondents to indicate how important each of the individual factors had been to their firm's performance since the time of the IPO. Therefore, we think that, based on the wording of the survey, we captured a variable that covers the time period of interest. An additional concern is that we are assessing a measure that is reported to be associated with

structural cohesion but that may not directly measure the variable. Unfortunately, this is a very new area of research, and only with additional research can we more adequately assess the validity of our measure.

Also, our measure of structural cohesion (or culture for employees) is based on the perceptions of one individual, in this case the highest-ranking officer from whom we received a survey response. However, for a number of firms we received surveys from multiple respondents, and our assessment of the potential for this type of bias showed that this form of bias should be minimal because the correlations between the responses from the highest ranking individual (what we used) and the average for all respondents was over .92 for all variables. Thus, these results lead to the conclusion that it is highly unlikely that using the single respondent impacted the results.

Another source of bias comes from the fact that the respondents seem to be from firms with higher stock prices in years 1994 through 1996. These organizations did not differ, however, on other organizational level variables such as risk, company size, or net profitability at the time of the IPO. One reason for this bias may stem from the fact that some of the nonrespondents could be from firms that are going out of business or longer in existence. IPO firms are subject to a larger number of risk factors, and many of these firms merge with other organizations or go out of business within a few years after the IPO. In fact, the Welbourne and Andrews (1996) study of firms that initiated their IPO in 1988 found that within 5 years only 60% of those firms had survived. In addition, the nonrespondents may not have wanted to participate because their firms were not performing well, and the study was communicated as a research study on 1993 IPO firms. The bias in performance leads us to conclude that our results may be understated because we do not have as much variance in the dependent variable as we could if the lower performing firms would have responded at a higher rate.

Conclusion

The results of our study make contributions to several academic fields, including international business, entrepreneurship, and human resource management. The multi-disciplinary, longitudinal approach taken in our study has provided useful information on the differential performance of small and medium size IPO firms with international sales and/or operations. We think that this work also has implications for more general work on organizational change because the presence of international operations at the time of a firm's IPO, we speculate, represents an overall firm preference for change and flexibility.

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