

## Environment-Strategy-Performance Relationships in U.S. and U.K. Firms: An Empirical Assessment

Galen deGraff, Mary Washington College  
Willie E. Hopkins, Colorado State University  
Shirley A. Hopkins, University of Denver

*The environment-strategy-performance (ESP) relationship was assessed using a sample of 378 firms, 189 from the United States (U.S.) and 189 from the United Kingdom (U.K.). Using structural equation modeling techniques, we found that the relationships within the ESP model for both countries to be consistent with findings of previous research studies. However, results of the present study suggest that the ESP relationship is distinctly different when it is examined within the context of U.K. and U.S. national markets. Specifically, results suggest that the strength of the relationships within the ESP paradigm is much stronger for U.S. firms than for U.K. firms.*

In this study our focus is on determining the nature of the environment-strategy-performance (ESP) relationship in United States (U.S.) and United Kingdom (U.K.) firms and whether this relationship differs between firms in these two countries. Our interest in taking this research focus stems from a 1998 U.S. Department of Commerce report (see Bargas, 1998) which indicates that the U.K. is the preferred location for North American investment in Europe. The report also indicates that nearly 40% of all U.S. investment in Europe is in the U.K. and over 4,200 U.S. companies have a U.K. base. Moreover, between 1996 and 1997, there was an \$83.5 billion increase in U.S. direct investment abroad. Europe and Latin America accounted for over three-fourths of this increase. However, Europe accounted for \$38.6 billion of the total increase, of which the U.K. accounted for \$16.1 billion (Bargas, 1998).

These statistics suggest that U.S. firms are continuing to invest heavily in the U.K. As more U.S. firms enter the U.K. market for the first time, their managers should develop an understanding of the nature of the ESP relationship. Specifically, managers should focus on determining whether the relationship is similar or different across U.S. and U.K. markets. If the ESP relationship is different, the applicability and appropriateness of the same strategy in a different environment would be questionable (Buzzell & Gale, 1987; Day, 1986; Szymanski, Bharadwaj, & Varadarajan, 1993). Moreover, as suggested by Webster (1996), policies regarding pricing practices, cost considerations, and efficiency can be formulated only after closely scrutinizing the interaction of forces which comprise the ESP relationship.

Theory predicts that the ESP relationship will generalize across national markets that are similar economically, politically, and culturally. Moreover, past studies (*cf.* Archer, 1990;

Douglas & Craig, 1991; Ohmae, 1987; Smith, 1990) provide evidence that the U.S. and U.K. markets are relatively similar along these dimensions. However, there is inconclusive empirical evidence as to whether the ESP relationship is similar or dissimilar among firms operating within U.S. or U.K. industry structures. Recent changes in the role of government in U.K. competitive markets are likely to affect the nature of this relationship in U.K. firms and raise important questions. Will government's changing role produce greater similarities or greater differences in this relationship between U.S. and U.K. firms? What implications will greater similarities or differences have for firm strategy across national markets? Such questions, along with the paucity of empirical evidence confirming differences or similarities in the ESP relationship between U.S. and U.K. firms, highlight the gaps left in the relevant literature and indicate a clear need for continuing exploratory and confirmatory studies of this important relationship. Our objective in this study is to make substantive contributions toward filling some of these gaps.

### STUDY BACKGROUND AND HYPOTHESES

Economic systems can be loosely defined as either capitalist, socialist, or mixed (Gordon, 1984). In the words of John Moore (1992), who was Financial Secretary of the Treasury from 1983 to 1986 in Margaret Thatcher's Conservative government, "The extent of state control in Britain never approached the command economies of Eastern Europe, but by 1979 it was sizable" (p. 117). Moore's statement suggests that the U.K. might be classified as a mixed economic system, which generally has a higher degree of government intervention in market exchanges than is found in the capitalist economic system of the U.S. According to Grosse and Kujawa (1988), an economic system's macroeconomic policies are reflected in the competitive and economic performance of its firms. Government's greater role in U.K. market exchanges, and subsequent effects on firm performance during the late 1970s and early 1980s, is indicated by Moore's observation:

Since World War II, successive labor governments had nationalized the coal industry, the steel industry, electricity generation, gas supplies, railways, docks, canals, and trucking. The government owned virtually the entire telecommunications industry, along with aircraft and shipbuilding, much of car manufacture, North Sea oil, and even silicon-chip production. The overall performance of these industries was characterized by poor—in some cases negative—return on capital, low productivity, high costs, high prices, bad labor relations, inefficient use of resources, and unsatisfactory service to customers (p. 117).

Relevant literature (*cf.* Daniels, Ogram, & Radebaugh, 1976; Gordon, 1984; Grosse & Kujawa, 1988) shows that extensive government intervention in markets influences environmental factors such as market growth and industry concentration, as well as strategic factors such as the level of firm integration, product development and quality, and investment. As Moore argued, government's influence on these factors resulted in poor economic performance in U.K. firms during this period. However, he also asserts

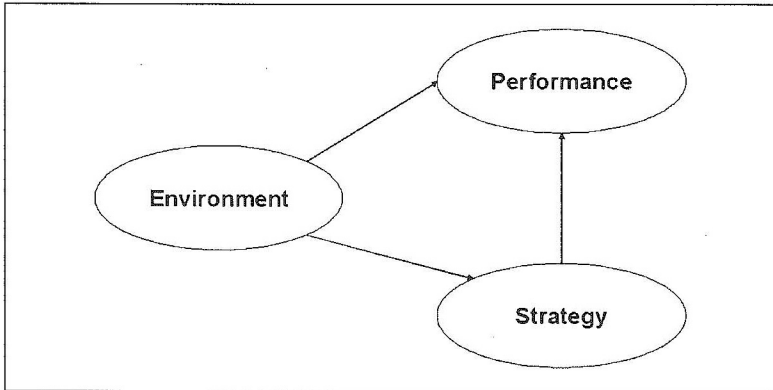
that since the mid-1980s, the government's commitment to free market exchange, which lessens its impact on environmental and strategic factors, has resulted in better economic performance in U.K. firms. As an indication of the new role that government will play in U.K. markets and business enterprise, Peter Mandelson, former Secretary of State for Trade and Industry, stated (1998):

The present Government will not resort to the interventionist policies of the past...Too many British companies fail to match the performance of their overseas counterparts, not just in terms of productivity, but in innovation and quality. We have invested too little in modern plant and machinery, as well as research and development and other intangible assets...To compete effectively in the knowledge driven economy we need to overcome these shortcomings. Achieving that requires a new approach to public policy (*The 1998 Competitiveness White Paper*).

According to Mandelson, this new approach includes promoting market growth, increased investments in manufacturing processes and new technology, new product developments, collaborative partnerships among firms and their suppliers (*i.e.*, vertical integration), and other “free-market” oriented activities. Strongly suggested by this new approach is that U.K. and U.S. market structures (*i.e.*, business environments) may be increasing in similarity, as might be the strategic focus of each country's business firms. Of all European cultures, the British is most similar to that in the United States. The two countries are remarkably similar in their methods of conducting business (Hogan, 1987), and are more similar than different in terms of language, law, and general political philosophy (Cateora & Keaveney, 1987; Dudley, 1990; Kenny, 1986; Lewis, 1991; Terpstra, 1988; Tillier, 1992). Given these similarities, along with the U.K. government's new approach to public policy, one would expect the ESP relationship to generalize (*i.e.*, be similar) across U.S. and U.K. national boundaries.

### **The ESP Relationship**

The model shown in Figure 1 summarizes the ESP relationship. The relationship has been the focus of several studies (*e.g.*, Bass, Cattin, Wittink, 1977; Goll & Rasheed, 1997; Jauch, Osborn, & Glueck, 1980; Miller, 1987; Miller, 1988; Porter, 1979; Prescott, 1986). In these and related studies (*e.g.*, Hambrick, 1988; Hitt, Ireland, & Stadter, 1982; Hofer & Schendel, 1978; Pfeffer & Salancik, 1978; Porter, 1980, 1981; Scherer, 1980), environment and strategy were found to have significant effects on firm performance. In other studies (*e.g.*, Bourgeois, 1985; Elenkov, 1997; Fredrickson, 1984; Fredrickson & Mitchell, 1984; Fredrickson & Iaquinto, 1989; Lawrence & Lorsch, 1967; Schneider & DeMeyer, 1991), environment has been found to be a primary determinant of both strategy and performance. In the next few sections of this paper, we discuss the theory behind the relationships expressed in this model and set forth relevant hypotheses.



**Figure 1. Model of the ESP Relationship**

### **The Environment-Performance Relationship**

Past research on firm environment (*cf.* Aldrich, 1979; Bass, Cattin, & Wittink, 1977; Bourgeois, 1985; Covin & Slevin, 1989; Duncan, 1972; Elenkov, 1997; Fredrickson & Mitchell, 1984; Goll & Rasheed, 1997; Jauch, Osborn, & Glueck, 1980; Keats & Hitt, 1988) suggests that strong linkages exist between a firm's performance and certain components of its environment. Research (*e.g.*, Daniels *et al.*, 1976; Dudley, 1990; Grosse & Kujawa, 1988; Schneider & DeMeyer, 1991; Szymanski *et al.*, 1993) focusing on environment-performance relationships across national markets is in general agreement that the market growth and industry concentration components of a firm's environment are strongly linked to firm performance. For example, Szymanski *et al.* (1993) contend that high growth markets are often characterized by relatively higher gross margins, rising productivity, more new customers, higher levels of demand per customer, and a higher probability that firm products will meet some customers' needs. According to Buzzell and Gale (1987), the net effect of these rising margins and the rising sales that often characterize high-growth markets seems to be increased profits (*i.e.*, performance).

With respect to industry concentration, past research (*cf.* Demetz, 1973; Gale & Branch, 1982; Ravenscraft, 1983) suggests that firms attempt to control the output in the market through the exercise of monopoly power or colluding with other firms to drive up prices and profit, which implies a positive relationship between industry concentration and profits. In the 1998 Competitive White Paper cited earlier in this paper, the Secretary of State for Trade and Industry stressed Britain's commitment to stimulating market growth and to encouraging increased cooperation (*e.g.*, partnerships, strategic alliances, mergers, etc.) among U.K. firms, which amounts to increased industry concentration. This commitment implies an acknowledgement, on the part of the U.K. government, that a positive relationship exists between these environmental components and the performance of U.K. firms.

Theory supports the existence of a positive relationship between market growth and concentration (which represent important components of a firm's industry environment) and a firm's financial performance and suggests that this relationship should be similar for U.S. and U.K. firms. However, the issue remains unresolved as to whether the U.K. government's implementation of its new and previous public policy initiatives has been successful in bringing U.K. environment factors into greater alignment with U.S. environmental factors. If these policy initiatives have been successful, is the environment-performance relationship in U.K. firms similar to the relationship as it exists in U.S. firms? In the absence of empirical evidence which would indicate an affirmative answer to this question, we set forth the following hypothesis:

Hypothesis 1: The relationship between industry environment and financial performance will be significantly (statistically) different between U.S. and U.K. firms.

### **The Strategy-Performance Relationship**

In previous research, strategies such as improving product/service quality, new product introductions, investments in new facilities, new technology, etc., and vertical integration have been found to be positively related to firm performance. For example, evidence (*cf.* Booz, Allen, & Hamilton, 1982; Cooper, 1986; Peters & Waterman, 1982; Maidique & Hayes, 1984) suggests that new product introductions and profitability are positively related because customers are willing to pay a premium price for superior new products that cannot be readily duplicated by competitors. Similarly, research (*cf.* Buzzell & Gale, 1987; Garvin, 1988) suggests a positive relationship between quality and profitability because customers are willing to pay a price premium for better quality products and services. This same research also suggests that superior product quality reduces rework and service costs, which leads to increased profitability.

Several studies (*cf.* Fine, 1983; Reddy, 1980; Shapiro, 1977; Smith, 1980; Wheelwright, 1981) suggest that investments in certain types of technology and production processes enable firms to successfully use a cost leadership strategy. This type of strategy allows firms to generate higher margins relative to their competitors by achieving lower relative direct manufacturing and distribution costs. Phillips, Chang, and Buzzell (1983) contend that in order to maintain their cost leadership position, firms must continue to reinvest in new manufacturing equipment and facilities. Suggested by this line of research is that there is a strong relationship between a firm's investment strategy and its performance.

In addition to product and investment related strategies, the strategy of vertical integration has been found to be related to firm profitability performance. For example, Aaker and Jacobson (1987) argue that vertically integrating operations have a positive impact on performance because profits that would otherwise go to other members of the supply chain are internalized. Similarly, results of other studies (*cf.* Buzzell, 1983; Ravenscraft, 1983; Williamson, 1975) suggest a positive relationship between vertical integration and performance in that the reduced transaction costs tend to offset the increased costs associated with being more integrated. Finally, although Rumelt (1974)

and Lubatkin and Rogers (1989) reached different conclusions about the performance of vertically integrated firms, they both identified factors associated with integrated firms that were possible contributors to performance.

Theoretical and empirical results suggest that integration and product-related investments represent a firm's competitive strategy, and this strategy is positively associated with a firm's financial performance. The various public policy initiatives introduced by the U.K. government appear to acknowledge this association. The evidence for that conclusion is the initiatives' emphasis on new product development and quality improvements within U.K. firms, as well as the encouragement for firms to intensify their investment efforts and to vertically integrate their operations. As stated earlier, however, the issue is whether these initiatives have been successful in bringing the strategy-performance relationship in U.K. firms into greater alignment with the relationship as it exists in U.S. firms. Thus,

Hypothesis 2: The relationship between competitive strategy and financial performance will be significantly (statistically) different between U.S. and U.K. firms.

### **The Environment-Strategy Relationship**

Several studies (*cf.* Chatterjee, 1991; Eckbo, 1985; Harrigan, 1984; Lustgarten, 1975) have concluded that industry concentration (an environmental factor) is a primary determinant of vertical integration (a strategy factor). The rationale is that firms in industries dominated by a few players have an incentive to integrate. As suggested by Harrigan (1984, 1985), the main incentive is the existence of less competitive volatility. In other words, when competition is less volatile, firms can make long-term commitments to vertical integration because their options are not constrained by competitors should strategic changes be required. In addition to the environment (*i.e.*, concentration)-strategy (*i.e.*, vertical integration) relationship, others (*cf.* Barney, Edwards, & Ringleb, 1992) have found relationships to exist between environmental factors such as market growth and strategy factors such as investments in new facilities and manufacturing processes and research and development (R&D). As suggested by Szymanski *et al.* (1993), investments in R&D are indicative of product development and process innovation (*e.g.*, quality improvement) strategies. The relationship between environment and strategy is clearly supported in the literature. The issue addressed in the present study is whether ongoing and recent public policy initiatives implemented by the U.K. government has brought about similarities in this relationship with respect to U.S. and U.K. firms. Accordingly,

Hypothesis 3: The relationship between industry environment and competitive strategy will be significantly (statistically) different between U.S. and U.K. firms.

## The Mediating Role of Strategy

In Figure 1, strategy is represented as mediating the relationship between environment and strategy. For purposes of this exploratory study, such a representation is consistent with research approaches dealing with multiple-indicator latent variables (Maruyama, 1998). Moreover, past studies (*cf.* Bain, 1951, 1956) of the ESP relationship have found that environment variables influence a firm's strategy and eventually impact its financial performance. The mediating role that strategy plays in the environment-performance relationship is clearly suggested in these studies. Based on the results of these studies, and previous and new public policy initiatives launched by the U.K. government, we set forth the following hypothesis:

Hypothesis 4: The mediating role that competitive strategy plays in the relationship between industry environment and firm financial performance will be significantly (statistically) different between U.S. and U.K. firms.

## RESEARCH METHODS

### Data and Sample

Data for this study were drawn from the Strategic Planning Institute's PIMS Competitive Strategy Research Data Base. Although several limitations have been associated with the PIMS database (*cf.* Anderson & Payne, 1978; Morrison & Craswell, 1980), several studies (*e.g.*, Hambrick, 1982; Day, 1986; Buzzell & Gale, 1987) have found the quality and reliability of the PIMS data itself to be high. This proprietary database makes available to researchers observations on over 2800 business units across periods of both economic recession and expansion. After screening the database to obtain only the latest data and to ensure that each data set was complete, data for 189 British business units were obtained. Similar screening produced data for 1183 U.S. business units. However, since sample size considerations were constrained by the British sample, the U.S. data set was reduced to an equivalent sample size in order to match the British sample across all eight economic sectors represented in the database. This was accomplished by matching the number of observations in each sector and then randomly selecting observations within sectors.

Consistent with prior studies that have used the PIMS database, the unit of analysis for the present study was at the business-unit level. In addition to being consistent with prior research, an important theoretical reason for studying the ESP relationship at the business-unit level is that the literature of industrial organization economics has demonstrated particularly strong theoretical links and empirical associations between structure (*i.e.*, industry environment), competitive strategy, and financial performance in individual product-market businesses (Scherer, 1980; Porter, 1981).

### Research Variables

Based on the empirical and theoretical results of research studies cited earlier (*e.g.*, Bourgeois, 1985; Elenkov, 1997; Fredrickson, 1984; Schneider & DeMeyer, 1991) and

the ongoing and new approach to public policy that the U.K. government has decided to take, we selected three variables as measures of the environment latent construct: industry concentration, real market growth, and long-term industry growth. Similarly, based on previously cited research (e.g., Aaker & Jacobson, 1987; Garvin, 1988; and others) and the free-market perspective of the U.K. government, we selected three variables as measures of the strategy latent construct: vertical integration, investment intensity, and R&D expenditures, which is proxy measures of product development and process innovation (*i.e.*, quality improvement) strategies (Szymanski *et al.*, 1993). The performance variable used was return on investment (ROI). This measure is viewed as the most useful global measure of business unit performance (Reece & Cool, 1978). Other accounting-based measures of performance typically used in strategy research include return on sales (ROS) and return on equity (ROE). However, Buzzell and Gale (1987) noted that prior research on the PIMS database showed that regressing environment and strategy variables on (ROS) and (ROE) produced similar results as regressing these variables on ROI.

### Data Analysis Method

LISREL 8, a multivariate, statistics-based computer program, was used to analyze the ESP relationship expressed in Figure 1. LISREL (Joreskog & Sorbom, 1989) was designed as a linear structural equation model for latent variables (Goldberger and Duncan, 1973) and is appropriate for the purposes of the present study because of its ability to (1) estimate unknown coefficients of a set of linear structural equations, (2) accommodate models that include latent variables, (3) accommodate measurement errors in both dependent and independent variables, (4) measure the direct and indirect effects of independent variables on dependent variables, and (5) accommodate simultaneity and interdependence (Joreskog and Sorbom, 1989). The two components of LISREL are measurement and structural. The measurement component identifies latent variables, and the structural component evaluates hypothesized causal relationships among latent variables in the causal model and provides an overall hypothesis test of the model as a whole. The full LISREL model, used to test the ESP relationships in Figure 1, is shown in Figure 2.

The  $\eta$  latent endogenous variables in this model are firm performance and firm strategy, and the  $\eta$  latent exogenous variable is environment. As shown in the model, the first measurement variable of each latent construct was specified as having a factor loading of  $\lambda=1$  in order to assign units of measurement to the unobserved variables. Because latent variables are "theoretical constructs that cannot be observed directly" (Byrne, 1989, p. 3), they are operationalized by variables that are observable and measurable. As indicated in the LISREL model, the environment latent variable is measured by the SIC-Group Concentration Ratio (CONCN), Real Market Growth Rate (RMKTG), and Long-Term Industry Growth (LTING). Vertical Integration (INTGR), Total R&D Expenditures/Net Revenue (RDEXP), and Investment Intensity (NVEST) measure the strategy latent variable, and the performance latent variable is measured by return on investment (ROI). Table 1 presents the means and standard deviations for the variables for the U.S. and



U.K. samples. Table 2 presents the correlations among the measured variables for the two sample groups.

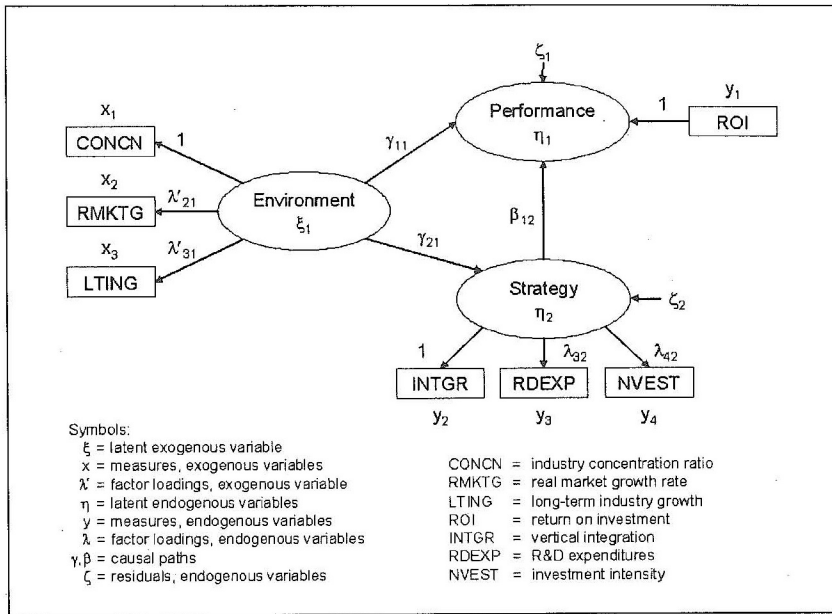


Figure 2. LISREL Model of the ESP Relationship

Table 1  
Means and Standard Deviations

Variables <sup>a</sup>	Mean	U.S. Sample		U.K. Sample	
		Std. Dev.	Mean	Std. Dev.	t-value
ROI	22.20	25.67	25.57	24.49	-2.86***
INTGR	57.50	16.58	50.07	13.70	2.58***
RDEXP	1.68	2.32	1.10	1.24	0.54
NVEST	0.05	0.97	-0.10	0.95	7.50***
CONCN	55.41	24.47	69.63	19.15	-2.67***
RMKTG	3.92	10.90	1.54	9.80	2.16***
LTING	8.31	5.31	10.01	5.12	-8.95***

<sup>a</sup> ROI = return on investment  
 INTRGR = vertical integration  
 RDEXP = research & development expenses/net revenues  
 NVEST = investment intensity  
 CONCN = industry concentration ratio  
 RMKTG = real market growth rate  
 LTING = long-term industry growth  
 \*\*\*p < .001

**Table 2**  
**Correlations among Variables<sup>a</sup>**

Variables <sup>b</sup>	1	2	3	4	5	6	7
1. ROI	—	.35	.08	.15	.21	.22	.19
2. INTGR	.29	—	.25	.21	.26	.19	.20
3. RDEXP	.28	.28	—	.36	.19	.10	.16
4. NVEST	.35	.26	.26	—	.15	.12	.23
5. CONCN	.41	.16	.19	.15	—	.21	.23
6. RMKTG	.32	.29	.10	.22	.31	—	.26
7. LTING	.39	.20	.26	.23	.33	.36	—

<sup>a</sup> Correlations below the diagonal are for the U.S. sample and correlations above the diagonal are for the U.K. sample. Correlations of .12 or greater are significant at  $p < .05$ .

<sup>b</sup> ROI = return on investment

INTRGR = vertical integration

RDEXP = research & development expenses/net revenues

NVEST = investment intensity

CONCN = industry concentration ratio

RMKTG = real market growth rate

LTING = long-term industry growth

## RESEARCH RESULTS

### Structural Equation Models

The hypothesis-testing capability of LISREL allowed us to determine the likelihood that the relationship among the latent variables actually fit the relationship defined in the hypothesized model. LISREL first analyzes the data collected on the observed variables for evidence of model specification quality (*i.e.*, whether or not the model is correctly specified) and then conducts a chi-square likelihood ratio test of the null hypothesis that the sample covariance matrix  $S$  is drawn from a population characterized by the hypothesized covariance matrix  $\Sigma$ . An overall chi-square goodness-of-fit test with a  $p$ -value exceeding 0.05 would indicate that the model is correctly specified. Elsewhere (Keats and Hitt, 1988) it has been suggested that correctly specified models are indicated when the value of  $p$  exceeds 0.10. As a rule of thumb, a chi-square value that is less than five times the degrees of freedom indicates a correctly specified model (Wheaton, Muthen, Alwin, and Summers, 1977). Table 3 presents the results of the LISREL analysis for the ESP relationships for the U.S. and U.K. samples.

The LISREL 8 computer program was used to solve the structural equations, and the generalized least squares (GLS) method was used to derive parameter estimates for the models shown in Table 3. As indicated by the  $t$ -values, all of the parameter estimates for the U.S. model are significant at  $p < .001$ , and all of the parameter estimates (except  $\gamma_{11}$ ) for the UK model are significant at  $p < .001$  or  $p < .10$ . The U.S. model shows a chi-square ( $\chi^2$ ) value of 13.35 ( $df=12$ ), with  $p=.34$ , and  $\chi^2 = 15.96$  ( $df=12$ ) for the UK model with  $p=.19$ . The adjusted goodness-of-fit index (AGFI) of .95 for the U.S. model and .94 for

the U.K. model is a measure of the relative amounts of variances and covariances jointly accounted for by the models. Values of this index range between 0 and 1, with higher values indicating a good fit. We also looked at the root mean square error of approximation (RMSEA) as another indicator of model fit. Brown and Cudeck (1993) suggest that a value of RMSEA which is less than .05 is an indication of close fit. The RMSEA is .024 for the U.S. model and .042 for the U.K. model. Based on the  $p > .05$  rule and on the strength of these fit indicators, a conclusion to be reached is that both models provide a good fit and that the ESP relationships expressed in the models are correctly specified.

**Table 3**  
**Parameter Estimates for the LISREL Models**

Parameter	U.S. Firms		U.K. Firms	
	Unstandardized <sup>a</sup> Estimates	t <sup>b</sup>	Unstandardized <sup>a</sup> Estimates	t <sup>b</sup>
$\lambda_{y32}$	0.13 (0.03)	4.29***	0.07 (0.02)	4.13***
$\lambda_{y42}$	0.06 (0.01)	4.36***	0.06 (0.01)	4.13***
$\lambda_{x21}$	0.44 (0.08)	5.16***	0.46 (0.13)	3.55***
$\lambda_{x31}$	0.23 (0.04)	5.14***	0.28 (0.07)	3.74***
$\gamma_{11}$	0.79 (0.27)	2.95***	0.52 (0.53)	0.97
$\gamma_{21}$	0.40 (0.11)	3.76***	0.62 (0.18)	3.45***
$\beta_{12}$	0.94 (0.45)	2.08***	0.86 (0.61)	1.40†
$\chi^2_{(12)}$	13.35		15.96	
P	.34		.19	
AGFI <sup>c</sup>	.95		.94	
RMSEA <sub>d</sub>	.024		.042	

<sup>a</sup> Standard errors are in parentheses.

<sup>b</sup> The t-values are based on a one-tailed test.

<sup>c</sup> AGFI = Adjusted Goodness of Fit Approximation

<sup>d</sup> RMSEA = Root Mean Square Error of Approximation

†p < .10  
\*\*\*p < .001

**Results of Hypotheses Tests**

The results reported in Table 3 show the path coefficients (PC) for all of the LISREL parameters listed in Figure 2. All PCs relevant to the hypotheses set forth in this study are shown in the path analytic model provided in Figure 3. As indicated in this figure, all of the PCs are significant at  $p < .001$  or  $p < .10$  except on path  $\gamma_{11}$  (PC=.52), which links environment to performance for the U.K. sample. These results suggest that a positive and significant relationship exists between the latent constructs (*i.e.*, environment, strategy, and performance) shown in the ESP model, which is consistent with studies that have found a firm’s financial performance to be strongly influenced by its industry environment (*cf.* Szymanski *et al.*, 1993) and its competitive strategy (*cf.* Phillips *et al.*, 1983) and that a firm’s competitive strategy is strongly influenced by its industry

environment (Barney *et al.*, 1992). The hypotheses set forth in the present study predicted that there will be differences between these relationships between U.S. and U.K. firms.

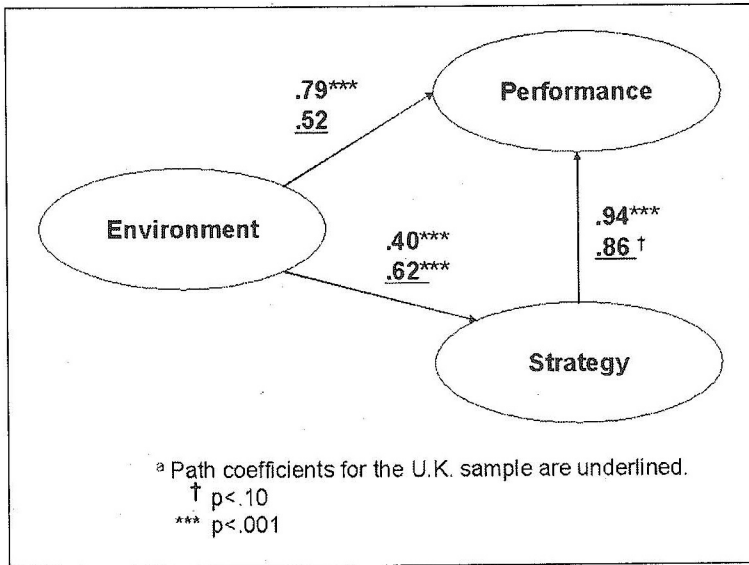


Figure 3. Path Analysis of the ESP Relationship<sup>a</sup>

To test for these differences we transformed each of the PCs, or correlation coefficients  $r$  (Asher, 1983) shown in Figure 3, to Fisher's Z statistic and employed the tests of significance between two Z-values (Downie & Starry, 1977). Results of these tests are provided in Table 4. As indicated in this table, significant differences were found between each of the ESP relationships expressed in Figure 3. Thus, the first three hypotheses set forth in this study were supported. That is, the environment-performance ( $\gamma_{11}$ ) relationship (hypothesis 1), the strategy-performance ( $\gamma_{21}$ ) relationship (hypothesis 2), and the environment-strategy ( $\beta_{12}$ ) relationship (hypothesis 3) were all found to differ between U.S. and U.K. firms.

Table 4  
Results of Fisher's Z-Test for Differences

Hypothesis	Path	U.S. Firms r-transformation	U.K. Firms r-transformation	Fisher-Z
1	$\gamma_{11}$	1.07	0.58	4.73 <sup>***</sup>
2	$\beta_{12}$	1.74	1.29	4.34 <sup>***</sup>
3	$\gamma_{21}$	0.42	0.73	2.99 <sup>***</sup>
4	$\gamma_{21} - \beta_{12}$	0.40	0.59	1.83 <sup>*</sup>

<sup>\*</sup>  $p < .05$   
<sup>\*\*\*</sup>  $p < .001$

Hypothesis 4 suggested that strategy mediates the environment-performance relationship, and predicted that the mediating role that strategy plays in this relationship would be significantly different between U.S. and U.K. firms. Before testing for differences, we first tested for mediation. Baron and Kenny (1986) suggest that mediation is demonstrated when the predictor (environment) is statistically related to the mediator (strategy) and the mediator is statistically related to the dependent variable (performance). Based on the PCs shown in Figure 3, mediation is demonstrated for the U.S. sample and for the U.K. sample. The indirect effect of environment on performance (mediated by strategy) was calculated as  $PC=0.38$  for the U.S. sample and  $PC=0.53$  for the U.K. sample. By way of an explanation of this procedure, the indirect path coefficient is determined by the product of the direct effects:  $b_{\text{indirect effect}} = b_1 \times b_2$  where  $b_1$  is a path coefficient for the effect of the independent variable on the mediator and  $b_2$  is a path coefficient for the effect of the mediator on the dependent variable. The test of significance for the indirect path coefficient is determined by dividing this coefficient by its standard error. This test is t-distributed. As indicated in Table 4, the Fisher's Z (1.83,  $p < .05$ ) provides support for hypothesis 4; that is, the mediating role that strategy plays in the environment-performance relationship is significantly (statistically) different between U.S. and U.K. firms.

## DISCUSSION AND IMPLICATIONS

Consistent with previous research (Bourgeois, 1985; Elenkov, 1997; Fredrickson, 1984; Fredrickson & Mitchell, 1984; Fredrickson & Iaquinto, 1989; Lawrence & Lorsch, 1967; Schneider & DeMeyer, 1991), industry environment was found in the present study to be a major determinant of competitive strategy and financial performance in U.S. and U.K. firms. Despite the fact that this was found to be true for firms in both samples, and although environment was found to have only an indirect effect on performance for firms in the U.K. sample, overall results of this study suggest that the ESP relationship is distinctly different between U.S. and U.K. firms when it is examined within the context of U.K. and U.S. national markets. Results also provided support for the hypothesis set forth in this study that differences between U.S. and U.K. firms would exist on components of the ESP model. These results raise the issue of the extent to which macroeconomic policy influences and is reflected in the industry structure within which firms in both countries compete.

As discussed earlier in this paper, the macroeconomic policy of the U.K. has been changing over the years toward mirroring the U.S. model. Results suggest that these changes have not yet affected the ESP relationship in U.K. firms to the extent that it mirrors the relationship as it exists in U.S. firms. However, the present study assessed the ESP relationship using data from the late 1980s, when reform efforts in the U.K. were in their infancy (6-8 years). As suggested by Moore (1992), the reluctance of politicians to completely extricate themselves from what should have been management decisions during this period meant that political priorities took precedence over commercial ones. Consequently, reform efforts may have had very little impact on the ESP relationship in U.K. firms during this period. Intensified efforts to accelerate the movement of U.K. markets and enterprise toward the U.S. model are fairly recent. Therefore, additional

research is needed to reassess the ESP relationship in U.S. and U.K. firms using data that reflect these more recent efforts. Future research might also attempt to identify and match up different combinations of ESP variables among the sample groups to validate whether or not differences we found in the ESP relationship would still exist. Such research will reveal if the limitations (e.g., data assessment and variable selection issues) associated with the present study influenced the results reported in this paper.

In spite of these limitations, this study has demonstrated the impact that environment can have on strategy and performance in different settings. Although many studies have investigated the ESP relationship as extended through PIMS, very little has been done to investigate and extend this powerful stream of empirical research outside the United States where it was developed and tested. Results reported in this paper fill gaps in the strategy literature by facilitating better understanding of comparative business performance in different market structure environments. Results also suggest a clear need for continuing studies in this research arena, especially as firms in many countries attempt to become more competitive in markets other than their own. A major implication for future research is to extend comparisons of the ESP relationship to multiple market structures which may be similar or different from one another.

For example, the French economic system depends heavily on private enterprise, but it also relies to a great extent on central planning; the Swedish system relies very heavily on private enterprise for profit, as does the United States, and the government is not actively involved in market exchange decisions; and in Japan, the government develops a national plan that serves as a guide for private business decisions. Would differences be found in the ESP relationship if comparisons were made between market structures such as these? What would be the nature of the ESP relationship in such market structures? Answers to questions such as these would have practical implications for developing global strategies in an increasingly global environment. Hopefully, results reported in this paper will serve as an impetus for future research to provide answers to these and other questions related to the ESP relationship.

## REFERENCES

- Aaker, D.A. & Jacobson, R. (1987). The role of risk in explaining differences in profitability. *Academy of Management Journal*, 30, 277-296.
- Alwin, D.F. & Jackson, D.J. (1980). Measurement models for response errors in surveys: Issues and applications. In K.F. Schuessler (Ed.), *Sociological Methodology 1980*, San Francisco: Jossey-Bass, 68-199.
- Anderson, J.C. (1987). Structural equation models in the social and behavioral sciences: Model building. *Child Development*, 58, 49-64.
- Anderson, C. & Payne, S. (1978). PIMS: A critical evaluation. *Academy of Management Review*, 3, 602-612.
- Archer, M. (1990). Theory, culture and post-industrial society. In M. Featherstone (Ed.), *Global culture: Nationalism, globalization and modernity*, Newbury Park, CA: Sage Publications.
- Asher, H.B. (1983). *Causal Modeling*. Beverly Hills, CA: Sage Publications.
- Bain, J.S. (1951). Relation of profit rate to industry concentration: American manufacturing 1936-1940. *Quarterly Journal of Economics*, 65, 293-324.
- Bain, J.S. (1956). *Barriers to competition*. Cambridge, MA: Harvard University Press.

- Bargas, S.E. (1988). Direct investment positions for 1997 country and industry detail. *Survey of Current Business, July 20*: [www.bea.doc.gov](http://www.bea.doc.gov).
- Baron, R.M. & Kenny, D. (1986). The mediator-moderator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Barney, J.B., Edwards, F.L., & Ringleb, A.H. (1992). Organizational responses to legal liability: Employee exposure to hazardous materials, vertical integration, and small firm production. *Academy of Management Journal, 35*, 328-349.
- Bass, F.M., Cattin, P., & Wittink, D.R. (1977). Market structure and industry influence on profitability. In H.B. Thorelli (Ed.). *Strategy + structure = performance*. Bloomington: Indiana University Press, 181-197.
- Booz, Allen & Hamilton, Inc. (1982). *New product management for the 1980s*. New York: Booz, Allen, and Hamilton, Inc.
- Bourgeois, L.J. (1985). Strategic goals, perceived uncertainty, and economic performance in volatile environments. *Academy of Management Journal, 28*, 548-573.
- Browne, M.W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In K.A. Bollen & J.S. Long (Eds.), *Testing structural equation models*. Beverly Hills, CA: Sage Publications, 94-118.
- Buzzell, R.D. (1983). Is vertical integration profitable? *Harvard Business Review, 61*, 92-102.
- Buzzell, R. D. & Gale, B.T. (1987). *The PIMS principles: Linking strategy to performance*. New York: Free Press.
- Byrne, B.M. (1989). *A primer of LISREL basic applications and programming for confirmatory factor analytical models*. New York: Springer-Verlag.
- Cateora, P. & Keaveney, S. (1987). *Marketing: An international perspective*. Homewood, IL: Irwin.
- Chatterjee, S. (1991). Gains in vertical acquisitions and market power: Theory and evidence. *Academy of Management Journal, 34*, 436-448.
- Cooper, R.G. (1986). *Winning at new products*. Reading, MA: Addison-Wesley Publishing Company, Inc.
- Daniels, J.D., Ogram, E.W., Jr., & Radebaugh, L.H. (1976). *International business: Environments and operations*. Reading, MA: Addison-Wesley.
- Day, G.S. (1986). *Analysis for strategic market decisions*. St. Paul: West.
- Demetz, H. (1973). Industry structure, market rivalry, and public policy. *Journal of Law and Economics, 17*, 1-19.
- Douglas, S.P. & Craig, S.C. (1991). Spatial dimensions of international markets. In A. Ghosh & C.A. Ingene (Eds.). *Research in marketing, Suppl. 5*, Greenwich, CT: JAI Press, Inc.
- Downie, N.M. & Starry, A.R. (1977). *Descriptive and inferential statistics*. New York: Harper & Row Publishers.
- Dudley, J.W. (1990) *1992: Understanding the new European market*. Dearborn, MI: Financial Publishing Inc.
- Eckbo, B.E. (1985). Mergers and the market concentration doctrine: Evidence from the capital market. *Journal of Business, 11*, 119-139.
- Elenkov, D.S. (1997). Strategic uncertainty and environmental scanning: The case for institutional influences on scanning behavior. *Strategic Management Journal, 18*, 287-302.
- Fine, C.H. (1983). Quality control and learning in productive systems. Ph.D. dissertation, Stanford University, Graduate School of Business.
- Fredrickson, J.W. (1984). The comprehensiveness of strategic decision processes: Extensions, observations, and future directions. *Academy of Management Journal, 27*, 445-466.
- Fredrickson, J.W. & Iaquinto, A.L. (1989). Inertia and creeping rationality in strategic decision processes. *Academy of Management Journal, 32*, 543-576.

- Fredrickson, J.W. & Mitchell, T.R. (1984). Strategic decision processes: Comprehensiveness and performance in an industry with a stable environment. *Academy of Management Journal*, 27, 399-423.
- Gale, B. & Branch, B. (1982). Concentration versus market share: What determines performance and why does it matter? *Antitrust Bulletin*, 27, 83-106.
- Garvin, D.A. (1988). *Managing quality*. New York: The Free Press.
- Goldberger, A.S. & Duncan, O.D. (1973). *Structural equation models in the social sciences*. New York: Seminar Press.
- Goll, I. & Rasheed, A.M. (1997). Rational decision-making and firm performance: The moderating role of environment. *Strategic Management Journal*, 18, 583-591.
- Gordon, R.J. (1984). *Macroeconomics*. Boston: Little Brown and Company.
- Grosse, R. & Kujawa, D. (1988). *International business: Theory and managerial applications*. Homewood, IL: Irwin.
- Hambrick, D.C. (1988). Strategies for mature industrial-product businesses: A taxonomical approach. In J.H. Grant (Ed.), *Strategic management frontiers*, Greenwich, Conn: JAI Press, 107-145.
- Hambrick, D.C. (1982). Strategic attributes and performance in the B.C.G. Matrix: A PIMS-based analysis of industrial product business. *Academy of Management Journal*, 25, 510-531.
- Harrigan, K. (1984). Formulating vertical integration strategies. *Academy of Management Review*, 9, 638-652.
- Hitt, M.A., Ireland, R.D., & Stadter, G. (1982). Functional importance and company performance: Moderating effects of grand strategy and industry type. *Strategic Management Journal*, 3, 315-330.
- Hofer, C., & Schendel, D. (1978). *Strategy formulation: Analytical concepts*. St. Paul: West.
- Hogan, B.J. (1986). Opportunities solid in spite of slower growth. *Business America*, 6, 8-9.
- Jauch, L.R., Osborn, R.W., & Glueck, W.F. (1980). Short-term financial success in large business organizations: The environment-strategy connection. *Strategic Management Journal*, 1, 49-63.
- Joreskog, K.G. & Sorbom, D. (1989). *Lisrel 7: A guide to the program and applications*. Chicago: SPSS Inc.
- Keats, B.W. & Hitt, M.A. (1988). A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of Management Journal*, 31, 570-598.
- Kenny, I. (1986). Management trends in Europe. In P. Grub, F. Ghadar, & D. Khambata (Eds.), *The multinational enterprise in transition*, Princeton, NJ: Darwin, 110-120.
- Lawrence, P.R., & Lorsch, J. (1967). *Organization and environment*. Homewood, IL: Richard D. Irwin.
- Lewis, B.R. (1991). Service quality: An international comparison of bank customers' expectations and perceptions. *Journal of Marketing Management*, 7, 47-62.
- Lubatkin, M. & Rogers, R. (1989). Diversification, systematic risk and shareholder return: The capital market extension of Rumelt's study. *Academy of Management Journal*, 32, 454-465.
- Lustgarten, S.H. (1975). The impact of buyer concentration in manufacturing industries. *Review of Economics and Statistics*, 57, 125-132.
- Maidique, M.A. & Hayes, R.H. (1984). The art of high-technology management. *Sloan Management Review*, 26, 1-31.
- Miller, D. (1987). The structural and environmental correlates of business strategy. *Strategic Management Journal*, 8, 55-76.
- Miller, D. (1988). Relating Porter's business strategies to environment and structure: Analysis and performance implications. *Academy of Management Journal*, 31, 280-308.
- Moore, J. (1992). British privatization: Taking capitalism to the people. *Harvard Business Review*, 70, 115-124.



- Morrison, E. & Craswell, R. (1980). *Papers on business strategy and anti-trust*. Office of Policy and Planning, Federal Trade Commission.
- Ohmae, K. (1987). The triad world view. *Journal of Business Strategy*, 7, 8-19.
- Peters, T.J. & Waterman, R.H. Jr., (1982). *In search of excellence: Lessons from America's best run companies*. New York: Harper & Row.
- Phillips, L.W., Chang, D.R., & Buzzell, R.D. (1983). Product quality, cost position and business performance. *Journal of Marketing*, 47, 26-43.
- Pfeffer, J. & Salancik, G.R. (1978). *The external control of organizations*. New York: Harper & Row.
- Porter, M.E. (1979). The structure within industries' and companies' performance. *Review of Economic and Statistics*, 61, 214-227.
- Porter, M.E. (1980). *Competitive strategy*. New York: Free Press.
- Porter, M.E. (1981). The contributions of industrial organization to strategic management. *Academy of Management Review*, 6, 609-620.
- Prescott, J.E. (1986). Environments as moderators of the relationship between strategy and performance. *Academy of Management Journal*, 29, 329-346.
- Ravenscraft, D.J. (1983). Structure-profit relationships at the line of business and industry level. *Review of Economics and Statistics*, 65, 22-31.
- Reddy, J. (1980). Incorporating quality in competitive strategies. *Sloan Management Review*, 21, 53-60.
- Reece, J. & Cool, W. (1979). Measuring investment center performance. *Harvard Business Review*, 52, 137-145.
- Rumelt, R.P. (1974). *Strategy, structure and economic performance*. Boston: Division of Research, Harvard University Graduate School of Business Administration.
- Scherer, F.M. (1980). *Industrial market structure and economic performance*. Chicago: Rand McNally.
- Schneider, S.C. & DeMeyer, A. (1991). Interpreting and responding to strategic issues: The impact of national culture. *Strategic Management Journal*, 12, 307-320.
- Shapiro, B.P. (1977). Can marketing and manufacturing coexist? *Harvard Business Review*, 56, 104-114.
- Smith, A.D. (1990). Towards a global culture? In M. Featherstone (Ed.), *Global culture: Nationalism, globalization and modernity*, Newbury Park, CA: Sage Publications.
- Smith, W.C. (1980). Finding new opportunities for profitability in manufacturing cost. *Management Review*, 69, 60-62.
- Szymanski, D.M., Bharadwaj, S.G., & Varadarajan, P. (1993). Standardization versus adaptation of international marketing strategy: An empirical investigation. *Journal of Marketing*, 57, 1-17.
- Terpstra, V. (1988). *International dimensions of marketing*. Boston: PWS-Kent Publishing.
- The 1998 Competitive White Paper. <http://dtiinfo1.dti.gov.uk>.
- Tillier, A. (1992). *Doing business in today's Western Europe*. Lincolnwood, IL: NTC Business Books.
- Webster, A.L. (1996). The concentration, profitability relationship in American industry: A varying parameters model. *Journal of Applied Business Research*, 12, 44-52.
- Wheaton, B., Muthen, B., Alwin, D., & Summers, G. (1977). Assessing reliability and stability in panel models. In D. Heise (Ed.), *Sociological Methodology*, San Francisco: Jossey-Bass, 84-136.
- Wheelwright, S.C. (1981). Japan: Where operations really are strategic. *Harvard Business Review*, 59, 67-74.
- Williamson, O. (1975). *Markets and hierarchies*. New York: The Free Press.