BETTER LATE THAN NEVER: A STUDY OF LATE ENTRANTS IN HOUSEHOLD ELECTRICAL EQUIPMENT

JAMAL SHAMSIE,[1]* COREY PHELPS[2] and JEROME KUPERMAN[3]
[1] *Eli Broad School of Business, Michigan State University, East Lansing, Michigan, U.S.A.*
[2] *University of Washington Business School, Seattle, Washington, U.S.A.*
[3] *Department of Business Administration, Minnesota State University Moorhead, Moorhead, Minnesota, U.S.A.*

For the most part, studies on timing of entry have attempted to determine the advantages that early entrants may be able to develop and hold over subsequent entrants. Given that a large number of firms attempt to enter at a much later stage in the development of the market, it is particularly surprising that little research has attempted to examine the differences in the ability of late movers to penetrate the market. In this paper, we focus exclusively on late movers and examine the extent to which their early success can be tied to existing market conditions, their resource strengths, and their strategic positioning. Copyright © 2003 John Wiley & Sons, Ltd.

Although timing of entry has been extensively studied by various researchers (see Lieberman and Montgomery, 1988, 1998, for reviews of this literature), a great deal of emphasis has been given to the benefits that firms can derive from their early entry. Interest in this topic has mostly revolved around the various forms of advantages that can be created and sustained by early entrants. As such, the primary focus of the literature on entry timing has been on the theoretical models and empirical findings that can either confirm or deny the existence of first mover advantages.

In the process, little attention has been paid to the prospects of success among the large number of firms that clearly make their entry well after the early movers have already managed to create a growing market for their relatively new product. A few recent studies (Cho, Kim, and Rhee, 1998; Shankar, Carpenter, and Krishnamurthi, 1998; Zhang and Markman, 1998) have begun to focus on late movers. However, even these have largely concentrated on contrasting the market penetration of later entrants with that of firms that had moved earlier. As such, they have also tended to examine the extent to which their late entry is likely to curtail their chances of grabbing a significant share of the market that has already been developed by earlier entrants.

This study addresses a question that is more crucial for late entrants. It focuses on the key strategic factors that can explain observed differences in the level of early success among the firms that move late. Given that a large number of firms attempt to enter well after the market has begun to grow, it is particularly surprising that few studies have attempted to explain the differences in the levels of market penetration that has been observed among these late entrants. Even in cases where there may be some first mover advantages, late entrants tend to vary in the degree to which they are successful in developing a market for their offerings.

Consequently, this paper tries to link observed differences in the early success among late movers to several factors in addition to their simple order of entry. Several researchers (Fershtman, Mahajan,

and Muller, 1990; Green, Barclay, and Ryans, 1995; Kalyanaram and Urban, 1992; Schilling, 1998; Szymanski, Troy, and Bharadwaj, 1995; VanderWerf and Mahon, 1997) have begun to place considerable emphasis on various factors that can moderate the performance of firms that enter at different times. In broad terms, the relative success of late movers has been tied to a wide range of factors ranging from prevailing industry conditions to specific firm attributes and strategy.

Given the importance of these factors, it is not surprising that Lieberman and Montgomery (1998: 1122) have suggested that studies on entry timing should attempt to investigate the factors that lie behind observed differences in the performance of late movers. In this paper, we therefore attempt to address this important topic that has been largely neglected by past studies. We focus exclusively on a large sample of firms that can be clearly regarded as late entrants. We then attempt to examine and explain the differences among these late movers in their ability to grab a share of the market in spite of strong competition from firms that entered much earlier.

In the next part of the paper, we provide a review of the literature on timing of entry, particularly as it has shifted towards the prospects of success among late movers. Based on this review, we identify three types of factors that can influence the market performance of late movers and develop specific hypotheses that focus on each of them. Next, we test these hypotheses using a sample of 165 late entrants in 15 different categories of household electrical equipment. Our results suggest that conditions that exist at entry have been overemphasized in the literature on entry timing. Instead, we find that the early success of late movers in penetrating the market is more strongly tied to the resources on which they can draw to make their entry and the relative position that they are able to develop in the market shortly after their entry.

PERFORMANCE DIFFERENCES AMONG LATE MOVERS

A considerable amount of research has been carried out on timing of entry. However, the vast majority of studies have attempted to determine whether pioneering firms could use their early entry to develop various forms of advantages that they could maintain over others that enter much later (see Bond and Lean, 1977; Kalyanaram and Urban, 1992; Kalyanaram and Wittink, 1994; Lilien and Yoon, 1990; Makadok, 1998; Miller, Gartner, and Wilson, 1989; Parry and Bass, 1989; Robinson and Fornell, 1985; Schnaars, 1986; Spital, 1983; Urban *et al.*, 1986; Whitten, 1979; for a representative sample of these studies). Consequently, there has been considerable interest in the extent to which early movers could use their advantages to grab the dominant share of the market that they had created.

Most of the research to date has also presumed that the success of the earlier entrants would make it difficult for subsequent entrants to make any significant inroads into the market. More recently, this presumed ability of a pioneering firm to pose hurdles for subsequent entrants has been seriously questioned. Researchers have begun to identify the specific firm attributes and market conditions that could allow an early entrant to create serious obstacles for firms that may choose to enter later (Carpenter and Nakamoto, 1989, 1990; Fershtman *et al.*, 1990; Golder and Tellis, 1993; Kerin, Kalyanaram, and Howard, 1996; Kerin, Varadarajan, and Peterson, 1992; Schilling, 2002; Shankar *et al.*, 1998; Zhang and Markman, 1998). The development of such a contingency perspective has pointed out that several different factors other than a firm's order of entry may account for its relative success in continued dominance over the market.

Nevertheless, little effort has been made to examine the attributes of the later entrant or the conditions associated with its entry that could account for its early success. In particular, there is a need to examine the factors that can explain the significant differences that are observed in the early market shares of all the firms that choose to enter late. The vast majority of firms must follow later, once a few early movers have managed to create a growing market for a newly developed product. Given that these firms have decided to make a late entry, it is important to identify and assess the potential contribution of key factors associated with entry that can increase their probability of early success in the market.

A few recent studies have examined various factors that could affect the relative success of late entrants in penetrating the market (Cho *et al.*, 1998; Shankar *et al.*, 1998; Tellis and Golder, 1996; Zhang and Markman, 1998). In theory, a large number of contingency factors that could affect or influence the outcome of a firm's late

entry may need to be considered. However, a couple of recent surveys (Green *et al.*, 1995; Szymanski *et al.*, 1995) have highlighted some of the key variables that can influence the degree of success that can be achieved by a late entrant.

For the most part, these factors tend to fall into three broad categories. To begin with, the performance of a late mover is likely to depend upon the conditions that it faces on entry. These entry conditions should reflect the extent of opportunity that may still be available in the market at the time that the late mover chooses to enter (Green *et al.*, 1995; Kerin *et al.*, 1992; Szymanski *et al.*, 1995). Next, the organizational resources of the later entrant can also determine the probability of its market success. The availability and relevance of resources can allow a late mover to make various types of investments in order to support its entry (Mitchell, 1989; Robinson, Fornell, and Sullivan, 1992; Schoenecker and Cooper, 1998; Smith and Cooper, 1988). Finally, late entrant success will also tend to result from the performance of its products relative to all others that are available on the market (Carpenter and Nakamoto, 1990; Cho *et al.*, 1998; Green *et al.*, 1995; Lilien and Yoon, 1990; Shankar *et al.*, 1998; Urban *et al.*, 1986; Zhang and Markman, 1998).

In the next section, we develop specific hypotheses that deal separately with the effect of each of these types of factors. Between them, these factors cover the key conditions that can be tied to the success of a late mover. In examining the significance of each of these factors, we expect to be able to gain a better understanding of why some late movers might be able to grab a significant share of the market as a result of their entry.

HYPOTHESES

The research on timing of entry has focused on contrasting the success of first movers from those of all others that enter later. Consequently, most of the existing research has failed to make any distinctions between all of the firms that could be considered to be late movers. Yet late movers tend to differ from each other in many critical aspects. As suggested earlier, late movers differ in the amount of time that they choose to wait, the resources that are available to them at the time of entry, and the strategic position that they are able to develop shortly after their entry. The

relationship of each of these factors associated with entry to the expected performance of late movers is separately considered below.

Market opportunity

To begin with, late movers are expected to show poor performance because of the relative lack of market opportunity at their time of entry. In particular, researchers have claimed that late movers will find it hard to make inroads into a product market that earlier entrants have already developed (Brown and Lattin, 1994; Lieberman and Montgomery, 1988; Prescott and Visscher, 1977; Schmalensee, 1982; Schnaars, 1986). Several studies have shown that late movers typically find little market opportunity due to the existence of many competitors and little room for market growth (Carpenter and Nakamoto, 1989; Lilien and Yoon, 1990; Makadok, 1998; Robinson, Kalyanaram, and Urban, 1994; Schnaars, 1986; Shaw and Shaw, 1984; Teplensky *et al.*, 1993).

But the market opportunity for any given late mover is likely to be determined by the number of firms that have managed to make a successful entry ahead of it and the degree of success that they have had in developing the market. In many cases, there are relatively few early entrants and the market is relatively slow to develop. Case studies of new product categories have shown that there are usually relatively few early entrants and the market can take as much as 15 years to show any signs of real growth (Golder and Tellis, 1997; Schnaars, 1994; Teplensky *et al.*, 1993).

Depending on the time that early entrants may take to establish a viable market, there are likely to be significant differences in the market opportunity that each late mover will face when it decides to enter. Research on firm start-ups has demonstrated that the number of existing competitors and stage of market growth at the time of founding can have considerable effect on their subsequent performance (Bamford, Dean, and McDougall, 1999; Carroll and Delacroix, 1982; Carroll and Hannan, 1989; Eisenhardt and Schoonhoven, 1990; Romanelli, 1989). In a similar vein, recent studies have suggested that the degree of existing rivalry and extent of market saturation are key factors that determine the market opportunity that exists for a given late mover (Green *et al.*, 1995; Szymanski *et al.*, 1995).

Consequently, a late mover is more likely to survive through the early years and to make significant market inroads if they enter before the market opportunity has been sufficiently addressed. The degree of market opportunity will depend on the number of competitors that have already entered and the extent to which they have managed to penetrate the newly created market.

> *Hypothesis 1: Late movers will perform better in the new product category if they enter while there is still sufficient market opportunity.*

Firm resources

Next, late movers are expected to perform poorly because they must deal with the heavy investments that early entrants have already made into the product and market (Eaton and Lipsey, 1981; Lieberman and Montgomery, 1988; Lilien and Yoon, 1990; Makadok, 1998; Miller *et al.*, 1989; Robinson *et al.*, 1994; Schmalensee, 1982; Prescott and Visscher, 1977; Spence, 1977; Whitten, 1979). For the most part, firms that move late are expected to have difficulty in matching or exceeding the considerable investments of various forms that have already been made by the early entrants.

However, the degree to which these investments can pose a challenge to the late mover would depend on the amount and relevance of the resources that it may own. Large firms are able to draw on more resources in making their entry. Even though they may enter late, larger firms have more access to tangible and intangible resources that they can deploy to try and nullify some of the advantages that may have been developed by earlier entrants (Aaker and Day, 1986; Bamford *et al.*, 1999; Mitchell, 1991; Teplensky *et al.*, 1993; Willard and Cooper, 1985).

Similarly, firms with prior experience within the broader industry context may be able to apply some of their existing resources to the new product market. Several studies have found that an industry incumbent that enters late will not find it as difficult to challenge the early movers because it is able to transfer some of its already developed resource-based advantages (Lambkin, 1988; Mascarenhas, 1992; Mitchell, 1989, 1991; Robinson *et al.*, 1992; Schoenecker and Cooper, 1998; Tellis and Golder, 1996; Teplensky *et al.*, 1993). For example, some researchers have shown that incumbent firms may even be able to derive benefits from the use of their

established brand names in new product markets (Kerin *et al.*, 1996; Sullivan, 1991).

The prospects of early success for the late mover in the new product category will also depend on the availability and relevance of its resources. In particular, a firm is likely to develop a significant share of the new market if its large size and its prior experience can allow it to draw upon its considerable resources.

> *Hypothesis 2: Late movers will perform better in the new product category if they enter with considerable resources that can be readily applied to the new opportunity.*

Strategic positioning

Finally, late movers are expected to perform poorly because of the relatively superior positions that others have been able to develop as a result of their earlier entry. Researchers have claimed that first movers are able to use their early entry to develop formidable advantages with their product offerings (Lilien and Yoon, 1990; Moore, Boulding, and Goodstein, 1991; Parry and Bass, 1989; Robinson and Fornell, 1985; Urban *et al.*, 1986). Later entrants would have a difficult time matching these advantages, making it hard for them to make sufficient gains in the market.

However, some late entrants may be able to use their resources to develop a superior position. In fact, various studies have indicated that late movers can be relatively successful if they are able to improve upon the positioning that was adopted by a first mover (Carpenter and Nakamoto, 1990; Cho *et al.*, 1998; Durand and Coeurderoy, 2001; Kalyanaram and Urban, 1992; Romanelli, 1989; Schoonhoven, Eisenhardt, and Lyman, 1990; Shankar *et al.*, 1998; Urban *et al.*, 1986; Zhang and Markman, 1998). In particular, these studies have placed considerable emphasis on the retail price, overall quality, and innovative features of the products that are offered by the late mover.

As such, the prospects for a late mover will depend on the benefits that it is able to offer the consumer. Many later entrants are able to bring prices down significantly while making some marginal improvements to quality and adding some innovative features. These represent key attributes on which consumers can easily make comparisons (Miller, 1988; Zhang and Markman, 1998).

The early success of a late mover in the new product category will also depend on the strategic positioning that it is able to develop. Its performance will therefore be tied to the positioning of its product relative to all other firms that are already in the market.

Hypothesis 3: Late movers will perform better in the new product category if they enter with a strong position in terms of quality, price, and innovation.

RESEARCH METHODOLOGY

Sample selection

In order to test our hypotheses, we examined a total of 165 late entrants in 15 different new product categories. All of these new product categories fell into group 36 of the SIC Code and covered various types of household electrical appliances and equipment. We choose to focus on this broadly defined industry group for three fundamental reasons. First, it provided us with several different new product categories that were relatively similar to each other. This allowed us to avoid the problems that can stem from a multiple industry bias (see Kalyanaram and Urban, 1992; Makadok, 1998; Mascarenhas, 1992; Mitchell, 1991; Parry and Bass, 1989). Second, a great deal of data was available for the entrants into these product categories. Finally, these entrants also showed considerable variation across several dimensions that were relevant to our study.

Although all of the new product categories were drawn from the same major industry group, they did fall into three different industry classifications at the 3-digit SIC level. Eight of the new product categories fell into the 363 industry group made up of household appliances. These consisted of microwave ovens, gas grills, coffee makers, food processors, toaster ovens, can openers, hand-held blow dryers and hand-held vacuum cleaners. The remaining seven new product categories fell into the 365 and 366 industry groups. The former category, household audio and video equipment, consisted of videocassette recorders, personal stereos, compact disc players and camcorders. The latter category, communications equipment, consisted of cordless telephones, telephone answering machines, and smoke detectors.

All of the firms in our sample entered the market during the 13-year period from 1979 to 1991. In order to ensure that all of these firms could be considered to be late entrants, they were only included if they had made their entry at least 3 years after the first mover. Furthermore, all of the firms in our sample of late movers made their entry after the emergence of the new product category had been recognized through a review of competitive offerings in an issue of *Consumer Reports*. Our choice of these criteria was designed to ensure that the late mover could not be reasonably regarded as a quick follower (Lambkin, 1988; Schnaars, 1986).

We also restricted our sample to late movers that were clearly able to make an entry into the U.S. market. As suggested by Robinson *et al.* (1994), we distinguished firms that were actually able to make an entry into the market from those who attempted but failed in their attempt to enter. This definition of an entrant has also been supported by many other studies (Green *et al.*, 1995; Lilien and Yoon, 1990; Mitchell, 1991; Urban *et al.*, 1986; Whitten, 1979). All of these have required a firm to reach a sufficient level of distribution in the marketplace in order for it to be classified as an entrant. Consequently, all of the firms in our sample were identified through product reviews that were published in *Consumer Reports*. Their inclusion in these rating surveys indicated that they had achieved the level of distribution required to establish their market entry.

Measurement of variables

Late mover performance

The early market success of each late entrant was assessed through the use of two different measures deployed in separate stages. To begin with, the early market success of the late mover was determined by its survival in the new product category beyond the first 4 years. Survival was used to assess the ability of the late mover to successfully penetrate the market in order to develop a sufficient base of customers to support its ongoing operations. Among our sample of late entrants, over 90 percent of the firms that had exited by the end of the fourth year were not able to move beyond a 1 percent annual market share.

In all, 62 or about 38 percent of the firms in our sample had exited the market for the new product category by the end of their fourth year.

The exit of each late entrant was verified through a combination of archival records and company interviews. Survival was measured by the use of a dummy variable that took a value of 1 if the later mover had survived the initial 4-year period and 0 if it had dropped out of the market.

Next, the early success of the late movers that survived through their first 4 years was measured by their market share in the third, fourth and fifth years after entry. These values were then used to compute an average market share for this 3-year period. We used a 3-year average because extraneous factors can introduce substantial variability in single year measures (Meyer and Gupta, 1994; Mitchell, 1991).

The third, fourth, and fifth years were considered to represent a reasonable time after entry for assessing the early performance of the late mover. Using market share figures from years closer to the late mover's entry would not provide sufficient time for the effects of the firm's entry strategy to be sufficiently realized. At the same time, using market share figures from later years might introduce the possibility that these could have been influenced by changes that the late entrant may have made to its entry strategy. Other studies (Bamford *et al.*, 1999; Eisenhardt and Schoonhoven, 1990; Romanelli, 1989) have used similar arguments to use a similar time frame in order to assess the effect of the initial resources and strategy of the firm on its early performance.

Market share figures were obtained from a variety of trade publications, such as *Merchandising* and *Appliance* magazines. Market share figures were obtained for specific product categories that have been listed earlier. Steps were taken to ensure that data that were taken from various sources were applicable to the same tightly defined product categories. Furthermore, wherever possible, market share figures for each product category were drawn from the same sources from year to year to minimize discrepancies in the reporting of this data. Finally, a log transformation of the market share average was used in order to reduce problems with heteroscedasticity.[1]

---

[1] Results of a Breusch–Pagen test for heteroscedasticity using the untransformed average market share measure as the dependent variable indicated the presence of significant heteroscedasticity in the full model ($\chi = 160.54$; d.f. = 11). Using a log (base 10) transformation of average market share as the dependent variable eliminated the presence of significant heteroscedasticity ($\chi = 20.50$; d.f. = 11).

Market opportunity

Market conditions at the time of late mover entry were assessed by a couple of variables. Extent of market saturation, as indicated by the percentage of U.S. households that already owned the product, was used as one of the measures. The other measure, number of significant competitors, was used to reflect the degree of competition that had already developed in the market. Again, both of these measures were obtained for the same well-defined product categories.

Market saturation rates were obtained from various industry publications such as *Appliance* and *Merchandising*. Number of significant competitors was obtained from the product reports that were published in *Consumer Reports*. As stated earlier, *Consumer Reports* includes all of the firms that have achieved sufficient national distribution. Both of these variables were assessed for each late entrant in the year that it actually made its entry into the market.

Firm resources

Overall size and prior experience were used to represent the availability and relevance of the resources that the late mover could draw upon to make its entry. Size of the firm at the time of its entry was measured by the log transformation of its total annual sales. Sales were determined for the full year in which the late mover made its entry.

The prior experience of the firm was determined on the basis of its background within the same 4-digit industry grouping. This was measured by the use of dummy variable, which was given a value of 1 if the late entrant had already operated for at least 3 years within the broadly defined 4-digit group as the new product category.

Information about both of these was obtained from various sources, such as annual statements, 10-Ks and reports from various analysts.

Strategic positioning

We used measures of relative price, relative quality, and product innovation as the major components of strategic positioning. We obtained a rating of each of these components of positioning from product surveys published by *Consumer Reports*. In general, product reviews for a late entrant appeared in *Consumer Reports* between 2

and 3 years after they had made their entry. This time lag usually allowed the new entrants to fully develop their new offering and to achieve a significant level of production and distribution.

For the most part, these *Consumer Reports* reviews include all of the products that are most likely to be considered by an average consumer. In the vast majority of cases, the survey provided information on a single product for each of the late entrants. Product price, quality, and innovation data provided for this product were assumed to be representative of the firm's overall positioning. Where information was provided on two products from a late mover, data were used for the product that had the best combination of scores on price, quality, and innovation. This only occurred in 16 percent of the cases.

Measures of relative price and relative quality were obtained using a methodology that was developed by Willard and Cooper (1985). Relative price for each late mover's product was reported as a percentage of the average price calculated from the products of all significant competitors reported in the same survey. Similarly, relative quality on key performance characteristics of each late mover's product was assessed as a percentage of the average quality calculated from the products of all significant competitors reported in the same survey. Measures of product quality were based on the five-point ordinal scale that *Consumer Reports* uses to rate product performance on various characteristics. As such, the price and quality of each late mover's offerings were assessed relative to all others that were available in the market at the same time.

Measures of product innovation were similar to those used by Green *et al.* (1995) in their study of entry timing. Degree of innovation for each late mover's product was measured by a count of new product features listed under advantages in the *Consumer Reports* surveys. A relative measure was then derived by dividing the number of new product features for each late mover by the maximum number of new product features that were listed for other competitors that were covered in the same survey.

Control variables

We used four control variables to ensure the reliability of the effect of the various factors that were included in our model. To begin with, we measured the time lag in the entry of each late mover in order to obtain an estimate of entry order. Such a form of lag variable has been widely employed to assess the presence of early mover advantages in most of the studies of entry timing. The time lag for each late entrant was assessed by the actual number of years that passed since the entry of the first mover. Our sample consisted of firms that entered between 4 and 24 years after a new product category had been created by an early mover.

Next, we included a measure of the age of the firm to control for its influence on our performance measures. In general, the age of the organization would tend to be closely tied to its accumulated resources as reflected by its overall size. However, Baum (1996) has shown that age can also be a significant predictor of organizational performance. Age was measured by subtracting the year in which the firm was founded from the year that it made its late entry into a specific product market.

We also used a variable to represent the average market share that would have been achieved by each late mover if none of the firms in the market had been able to develop any significant competitive advantage. This figure was obtained by dividing the total possible market share of 100 by the total number of firms that existed in the market during the 3-year period in which the performance of the late mover was assessed. Any deviations from this figure would then indicate the presence or absence of some form of advantage for the late mover.

Finally, our sample of late movers was drawn from three different industry groupings within group 36 of the SIC system. We therefore decided to control for possible differences between these industry groupings. A dummy variable was used to separate the household appliance group (SIC 363) from the audio, video, and communications equipment (SIC 365, 366).

Estimation

As discussed above, we used two dependent variables in order to assess the early market success of the late mover. We started with the survival of the firm within the new product category as a measure of early success before turning our attention to the market share of those firms that survived the first 4 years. However, the presence of a high percentage of market exits by late movers in our sample suggests the possibility of a selection bias

if the same factors that can influence the prospects for survival are also likely to exert an influence on market share performance. Employing standard OLS regression techniques to estimate our market share model in the presence of such a selection bias will result in inconsistent and biased coefficient estimates (Greene, 1997). More specifically, if missing observations on those firms which exited are not random, biased estimates are likely to result from the endogeneity of this exit decision (Shaver, 1998).

To correct for this potential bias, we use a standard econometric technique that corrects for self-selection. This technique is based upon the two-stage procedure described by Heckman (1979). In the first stage, we use all observations and estimate a probit model using maximum likelihood to assess the effects of our independent and control variables on the decision to exit from the market. In the second stage, the log of market share of the surviving firms is estimated as a function of these same variables. Self-selection is corrected for in this stage by using a control variable calculated for the uncensored observations (i.e., survival = 1) using estimates obtained from the first stage. This control variable, known as the 'inverse Mill's ratio' (symbolized by λ_i), is calculated as follows:

$$\hat{\lambda}_i = \phi(\hat{\gamma}_i \mathbf{w}_i)/\Phi(\hat{\gamma}_i \mathbf{w}_i)$$

where ϕ is the standard normal density function, $\mathbf{w}_i$ and $\hat{\gamma}_i$ are the vector of independent variables and coefficients from the first stage probit model, and Φ is the standard normal distribution function (Greene, 1997).

The second stage is estimated using least squares regression. The standard errors in the second-stage model, computed using the above equation, are heteroscedastic (Heckman, 1979). We use Greene's (1981) formulation to correct for this heteroscedasticity. These models were estimated using the SELECT procedure in LIMDEP 7.0.

RESULTS

Descriptions of the variables, their means and standard deviations are provided in Table 1. Bivariate product moment correlations are provided in Table 2. As mentioned earlier, log values were used for market share to minimize problems with heteroscedasticity. Log transformations were also used for the total sales figures for each of the late entrants.

Some of the correlations merit attention. Table 2 indicates that there is no significant correlation between the two variables that were used to measure market opportunity. The number of competitors and degree of market saturation do not

Table 1.   Descriptive statistics

Variable	Description	Mean	S.D.
Log market share	Log (base 10) of average market share in new product category for years 3, 4, and 5	1.35	1.00
Survival	Entrant survived in new product category past year 4 (0 = No, 1 = Yes)	0.62	0.49
Number of competitors	Number of competitors present in market in year of entry	12.70	3.48
Market saturation	% of U.S. market utilizing product in year of entry	35.81	22.01
Log firm sales	Log (base 10) of annual sales ($ billions) of firm in year of entry	0.13	1.76
Prior experience	Entrant has at least 3 years of prior experience in same 4-digit SIC (0 = No, 1 = Yes)	0.67	0.50
Relative price	Late mover's price at time of entry/average price of competitors' products at time of entry (expressed in %)	99.38	33.44
Relative quality	Late mover's quality at time of entry/average quality of competitors' products at time of entry (expressed in %)	99.65	19.94
Product innovativeness	Number of new features in late mover product/maximum number of new features possible (expressed in %)	0.45	0.29
Lag in entry	Number of years between pioneer's and late mover's entry	9.36	4.80
Product type	Dummy variable: 0 = SIC 363, 1 = SIC 365, 366	0.51	0.50
Firm age	Year of entry minus year of firm founding	63.33	30.90
Average market share	100/number of competitors for years 3, 4, and 5	8.78	2.78

n = 165, except for Log market share, where *n* = 103

Table 2.   Product moment correlations

	1	2	3	4	5	6	7	8	9	10	11	12
1. Log market share												
2. Survival	0.64***											
3. Number of competitors	−0.11	−0.07										
4. Market saturation	−0.04	−0.11	0.09									
5. Firm sales	0.14†	0.22**	−0.01	−0.09								
6. Prior experience	0.29***	0.29***	0.06	−0.16*	0.10							
7. Relative price	−0.36***	−0.32***	0.13	0.08	0.00	−0.12						
8. Relative quality	0.44***	0.36***	−0.09	−0.06	0.03	0.09	0.03					
9. Product innovativeness	0.23**	0.19*	0.07	−0.03	0.12	0.13†	0.27***	0.21**				
10. Lag in entry	0.02	−0.06	−0.10	0.66***	0.02	0.02	−0.01	−0.02	0.12			
11. Product type	0.01	−0.06	−0.16*	0.35***	−0.16*	−0.01	0.06	0.04	−0.06	0.36***		
12. Firm age	0.05	0.17*	0.13	0.07	0.40***	0.08	0.07	0.10	0.19*	0.07	0.03	
13. Average market share	0.05	0.00	−0.76***	−0.13	−0.04	0.05	−0.09	0.05	0.02	0.27***	0.14†	−0.10

$n = 165$, except for correlations involving Log market share, where $n = 103$. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

appear to be tied to each other, which indicates that these measures capture separate dimensions of this construct. Furthermore, the lag in number of years after the entry of the first mover is not strongly linked to the number of competitors but it is strongly correlated with the level of market saturation. It therefore appears that late movers in our sample did not necessarily face more competitors but they did have to contend with more saturated markets.

The variables used to measure the size and the relevance of the late mover's resources appear to be unrelated to each other. There is, however, a highly significant relationship between the firm's size and its age, suggesting the importance of controlling for age in predicting the early market success of our sample of late movers.

In terms of the strategic positioning variables, there are strong links between product innovativeness and relative quality as well as between product innovativeness and relative price. This suggests that more innovative products are likely to be regarded as higher in quality and tend to command a higher price. However, there does not seem to be any significant correlation between the relative price and the relative quality of the products that are offered by the late mover.

Finally, there is a strong inverse correlation between average market share and the number of competitors. This is to be expected, given that average market share was estimated by dividing a total share of 100 by the number of competitors in the market 3–5 years after the entry of the late mover. However, there do not seem to be any significant problems with multicollinearity by the inclusion of both of these variables in our model.[2]

Each of the hypotheses was then tested by using the two-stage procedure developed by Heckman (1979), which was described earlier. The results for firm survival that were derived from a probit model are presented in Table 3. Table 4 provides the least squares estimates for the market share of the surviving firms. As both of these tables show, there is no support for Hypothesis 1. The results indicate that market conditions at the time of entry

---

[2] Collinearity diagnostics indicate that the presence of a strong correlation does not unduly influence our results. The VIF is 3.29 for average share and 2.79 for number of competitors. Both are well below the value of 10, considered to be indicative of high multicollinearity (Gujarati, 1995). In addition, the results do not change when either average share or number of competitors is dropped from the model.

Table 3.   Probit estimates of the survival model
Dependent variable: Survival
(Note: Positive coefficients indicate greater probability of survival)

Intercept	0.268
	(1.512)
Number of competitors	−0.080
	(0.058)
Market saturation	0.002
	(0.009)
Log firm sales	0.192*
	(0.075)
Prior experience	0.758**
	(0.263)
Relative price	−0.021***
	(0.005)
Relative quality	0.032***
	(0.008)
Product innovativeness	1.18*
	(0.475)
Lag in entry	−0.036
	(0.039)
Product type	0.008
	(0.274)
Firm age	0.614
	(0.001)
Average market share	−0.007
	(0.078)
χ^2(d.f.)	75.78 (11)***

Values not in parentheses are unstandardized coefficients; values in parentheses are standard errors. $n = 165$
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

were not tied to either the survival of the late mover or to market share of those that did survive. Neither of the two measures used to assess market opportunity—number of competitors and degree of market saturation—was found to be significant in either of the regressions. This may suggest that although untapped market opportunity may account for some of the success of early entrants, this does not seem to play a significant role in explaining differences in the market performance among the much larger group of firms that enter relatively late.

The results in Tables 3 and 4 do show strong support for Hypothesis 2, but only for the survival of the late mover. Both the availability of resources, as measured by the log transformation of the late entrant's total sales, and the relevance of these resources, as measured by the late entrant's previous experience, were found to be significantly associated with its survival over its initial 4 years. However, the market share of those that survive

Table 4. Least squares regression estimates of the market share model

Dependent variable: Log(Marked share)

Intercept	0.949
	(1.117)
Number of competitors	−0.049
	(0.039)
Market saturation	0.007
	(0.006)
Log firm sales	0.091
	(0.063)
Prior experience	0.478†
	(0.274)
Relative price	−0.025***
	(0.006)
Relative quality	0.026***
	(0.008)
Product innovativeness	0.995**
	(0.392)
Lag in entry	−0.028
	(0.028)
Product type	0.169
	(0.180)
Firm age	−0.004
	(0.003)
Average market share	−0.022
	(0.051)
Lambda	0.329
	(0.579)
F (d.f.)	5.73 (12, 90)***

Values shown are unstandardized least square regression coefficients with standard errors in parentheses. $n = 103$
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; † $p < 0.1$

was not significantly tied to either of these measures of their resources. The prior experience of the late mover seems to have a small effect, which is significant only at the 0.1 level. Clearly, the resources of the late mover do have an impact on its chances for survival, but not on the level of market penetration achieved by those who survive.

Finally, Tables 3 and 4 provide strong support for Hypothesis 3. Both of the measures of market performance of the late mover were linked to the relative competitive position that it is able to achieve shortly after its entry into the market. All three of the components of this positioning—price, quality, and innovation—were found to be significant indicators of the late entrant's potential for success. As expected, price was negatively associated with survival and market share, while quality and innovation were positively associated with these two performance measures.

Taken together, these results indicate considerable support for the significance of the resources that the late entrant can draw upon and the relative position that it is able to develop in the marketplace. More importantly, the results do not indicate that diminished market opportunity may pose a serious hurdle for late movers that are able to use their resources to launch a competitive product offering into the market.

In closing, it is important to emphasize that none of the control variables were significant indicators of late mover performance. In particular, there is little effect of the number of years that separate the entry of the late mover from the entry of the pioneering firm. This would indicate that if a firm does not enter in the first 3 years after an early entrant has managed to create a growing market, then any further delay does not appear to influence the level of market share that it is able to develop after its entry.

DISCUSSION

Most of the literature on timing of entry has focused on contrasting the benefits of early entry with those that can be obtained from late entry. Because of this emphasis, late movers have tended to be thrown together regardless of the conditions that they may face upon entry, the strengths that they may possess, or the competitive positioning that they may achieve. In fact, there has been relatively little attention given to the factors that can increase the chances of a late mover's success in penetrating the market.

In this paper, we have focused exclusively on late movers. By doing so, we can address the question: 'What factors can increase the chances of a firm's early market success given that it is a late mover?' Our results provide some interesting answers to this question. They challenge the view that all late movers must face serious obstacles in penetrating the market because the success of earlier entrants is likely to diminish their prospects for success. Instead, we find that the ability of a late mover to penetrate the market is strongly linked to its own resources and its own strategy. Above all, the results indicate that conditions at the time of entry have been overemphasized in the literature on timing of entry.

Since we only considered late movers for our study, we cannot make any claims regarding the success of late movers relative to those who made an earlier entry. Consequently, the findings of

this study do not necessarily bring into the question the possibility of substantial first movement advantages. We can nevertheless suggest that if a firm does not manage to move fast enough to be included among the relatively small group of early entrants, it does not have to be overly concerned with the length of time that it may then choose to wait before making its entry.

More specifically, the results indicate there was little effect of degree of developed competition or extent of market saturation upon the early success of the late movers in our sample. These findings are generally inconsistent with the research on the effect of founding conditions on the survival of firms (Bamford *et al.*, 1999; Carroll and Delacroix, 1982; Carroll and Hannan, 1989; Eisenhardt and Schoonhoven, 1990; Romanelli, 1989; Swaminathan, 1996). However, these studies focused exclusively on organizational start-ups that had to make a late entry into markets that had already been developed by earlier entrants. Our study, by contrast, consisted almost entirely of established firms that were diversifying through their entry into these same markets. The existing level of market demand and the degree of developed competition are more likely to have an effect on new firms that have to develop a broad spectrum of resources in order to penetrate an existing market. Established firms, however, can deal with environmental challenges through the effective use of resources that they already control.

In fact, our findings did clearly indicate that the early success of late entrants is tied to the size and relevance of the resource base that they have already developed. In other words, there was considerable support for the belief that larger firms with related experience can more easily afford to wait before they enter (King and Tucci, 2002; Lambkin, 1988; Mitchell, 1991; Schnaars, 1986; Schoenecker and Cooper, 1998). In particular, the size and relevance of the resource base play a key role in determining whether a late mover is able to last out the critical early years when it is trying to make inroads into the market. Late movers that lack the necessary resources are more likely to fold within the first 4 years of their entry.

We found even stronger support for the role of strategic positioning in the success of late movers. The strategic positioning of the late mover was strongly tied to its ability to survive through the first 4 years and to develop a sizeable share of the market. These results clearly indicate that late movers need to be able to compete with all other products on attributes such as price, quality, and innovation. These findings are consistent with several of the studies that have compared the performance of late movers with first movers (Carpenter and Nakamoto, 1990; Kalyanaram and Urban, 1992; Lilien and Yoon, 1990; Shankar *et al.*, 1998; Urban *et al.*, 1986; Zhang and Markman, 1998). Consequently, late movers can do well against all other challengers if they can successfully develop a superior position within the market.

In overall terms, the results suggest that the size and relevance of a late mover's resources can help to increase its chances for survival even in the face of substantial competition from earlier entrants. But the simple presence of these resources is not likely to lead to superior market performance. Instead, the extent of a late mover's success in the market will be tied to the specific use that it can make of its resources. More specifically, the share of the market that late mover is able to develop tends to be more closely associated with the application of resources to offer products that have higher quality, innovative features, and a better price.

The results of this study are well supported by specific case studies that have been provided in the literature on timing of entry. Kerin *et al.* (1992) claimed that Matsushita was frequently able to use its vast resource base to be successful as a late entrant in many product categories. In his study of newly developed technical subfields within the imaging industry, Mitchell (1991) found that industry incumbents ended up with dominant positions despite their relatively late entry. Finally, several studies (Aaker and Day, 1986; Urban *et al.*, 1986; Shankar *et al.*, 1998) have cited the well-known example of Nestlé's late entry in the freeze-dried coffee market with *Taster's Choice*. Nestle was able to draw on its considerable resources in developing a superior-tasting product which quickly took over the lead from General Food's *Maxim*.

CONCLUSIONS

Timing of entry has received considerable attention in the strategic management literature. There have been strong arguments in this literature for the relative lack of opportunity for firms that make a late entry, especially if earlier entrants have had

considerable success in developing the market. In general, this study did find that late movers do face considerable hurdles in trying to penetrate the market. Our sample for this study was restricted to those firms that entered on a sufficiently wide scale by developing sufficient distribution for their products. Even with a sufficient distribution network, about 38 percent of the firms did not survive the first 4 years and about 41 percent of the surviving firms did not manage to attain more than 2 percent of the market during their first 5 years.

Nevertheless, the findings of this study do clearly indicate that existing market opportunity at the time of entry does not seem to be a critical variable in predicting the degree of market penetration that a firm can achieve with a late entry. The early market performance of firms that enter later is much more dependent on the resource pool that they can draw upon. Furthermore, the success of late movers is driven by the quality, price, and innovativeness of their products relative to those offered by their competitors.

Based on these results, our study does also contribute to the current debate on the role of industry conditions and firm attributes on firm performance (Brush, Bromiley, and Hendrickx, 1999; Hawawini, Subramanian, and Verdin, 2003; Mauri and Michaels, 1998; McGahan and Porter, 1997; Powell, 1996; Rumelt, 1991). In terms of timing of entry, firms that enter at different times tend to face different conditions of supply and demand. The results of this study suggest that these industry conditions do not play a significant role in their early success. By contrast, firms are more likely achieve success in the new market if they have access to relevant resources and can use these to achieve a strong position in terms of the product's overall quality, retail price, and innovative features. These findings indicate the relative importance of firm attributes over industry conditions for the survival and market share of the firms that fell within the narrow spectrum of industries that were studied.

Above all, our results suggest that each firm needs to make an informed choice about its own optimal timing of entry. The early success of late entrants is dependent on factors other than the conditions that exist at the time of entry. A number of studies have already pointed to the links that are likely to exist between a firm's timing of entry, its resource base, and its relative market positioning (Cho *et al.*, 1998; Durand and Coeurderoy, 2001; Green *et al.*, 1995; Lambkin, 1988; Lieberman

and Montgomery, 1998; Mitchell, 1989; Moore *et al.*, 1991; Robinson *et al.*, 1992; Schoenecker and Cooper, 1998; Shankar *et al.*, 1998; Szymanski *et al.*, 1995; Teplensky *et al.*, 1993). The results of this study build on this research by demonstrating that a firm can enter late if it has the required resources and can use these to develop a superior competitive position.

It is important, however, to emphasize that we focused on the early success of the late movers in penetrating markets that have already been developed by pioneering firms. Such a focus on the early performance of firms shortly after their entry is similar to that of a group of studies on new ventures (Bamford *et al.*, 1999; Bantel, 1998; Eisenhardt and Schoonhoven, 1990; Romanelli, 1989). Our measures of performance were therefore confined to a reasonably short period of time after their entry. Consequently, this study cannot make any claims about the performance of late movers over a longer term. In particular, both the prospects for survival and the market share of the late entrants in our sample during subsequent years would also depend to a considerable degree on factors that were not measured in this study. They would be affected by the evolving market conditions, subsequent moves that are made by the late movers, and the reactions of the other competitors to these moves.

Future studies could expand on this research by examining the performance of late moving firms over a longer period in other types of industries. They could examine the extent to which market conditions and firm attributes at the time of entry are likely to have some form of enduring effect on the performance of later entrants over time. The effect of these initial conditions and attributes could also be contrasted with the effect of evolving market conditions and shifts in strategic positioning on their performance over a longer term. Several researchers have already been making attempts to carry out such a longitudinal form of research (Bamford *et al.*, 1999; Boeker, 1989; Eisenhardt and Schoonhoven, 1990; Swaminathan, 1996).

To conclude, the results of this study can offer hope to firms that do not manage to move fast enough to be included among the select group of early entrants. It suggests that even if they enter relatively late, they do not necessarily have to lower their performance expectations. From a strategic perspective, the time at which a firm chooses to enter is just one of the factors that is

likely to affect its performance. Firms are more likely to attract enough customers to ensure their survival even if they enter later as long as they have some prior experience within the industry and can draw upon a sufficient pool of resources. More critically, the late mover's prospects for more substantial market success is dependent on its ability to develop a superior position relative to all other competitors. As such, the question for all late movers is not simply when to enter but also how to enter.

ACKNOWLEDGEMENTS

REFERENCES

Aaker DA, Day GS. 1986. The perils of high-growth markets. *Strategic Management Journal* **7**(5): 409–421.

Bamford CE, Dean TJ, McDougall PP. 1999. An examination of the impact of initial founding conditions and decisions upon the performance of new bank start-ups. *Journal of Business Venturing* **15**: 253–277.

Bantel KA. 1998. Technology-based "adolescent" firm configurations: strategy identification, context, and performance. *Journal of Business Venturing* **13**: 205–230.

Baum JAC. 1996. Organizational ecology. In *Handbook of Organization Studies*, Clegg S, Hardy C, Nord W (eds). Sage: London; 77–114.

Boeker W. 1989. Strategic change: the effects of founding and history. *Academy of Management Journal* **32**: 489–515.

Bond RS, Lean DF. 1977. Sales, promotion and product differentiation in two prescription drug markets. Working paper, U.S. Federal Trade Commission, Washington, DC.

Brown CL, Lattin JM. 1994. Investigating the relationship between time in market and pioneering advantage. *Management Science* **40**: 1361–1369.

Brush TH, Bromiley P, Hendrickx M. 1999. The relative influence of industry and corporation on business segment performance: an alternative estimate. *Strategic Management Journal* **20**(6): 519–547.

Carpenter GS, Nakamoto K. 1989. Consumer preference formation and pioneering advantage. *Journal of Marketing Research* **26**: 285–298.

Carpenter GS, Nakamoto K. 1990. Competitive strategies for late entry into a market with a dominant brand. *Management Science* **36**: 1268–1278.

Carroll GR, Delacroix J. 1982. Organizational morality in the newspaper industries of Argentina and Ireland: an ecological approach. *Administrative Science Quarterly* **27**: 169–198.

Carroll GR, Hannan MT. 1989. Density delay in the evolution of organizational populations: a model and five empirical tests. *Administrative Science Quarterly* **34**: 411–430.

Cho D-S, Kim D-J, Rhee DK. 1998. Latecomer strategies: evidence from the semiconductor industry in Japan and Korea. *Organization Science* **9**(4): 489–505.

Durand R, Coeurderoy R. 2001. Age, order of entry, strategic orientation, and organizational performance. *Journal of Business Venturing* **16**: 471–494.

Eaton BC, Lipsey R. 1981. Capital, commitment and entry equilibrium. *Bell Journal of Economics* **12**: 593–604.

Eisenhardt K, Schoonhoven CB. 1990. Organizational growth: linking founding team, strategy, environment, and growth among U.S. semiconductor ventures, 1978–1988. *Administrative Science Quarterly* **35**: 504–529.

Fershtman C, Mahajan V, Muller E. 1990. Market share pioneering advantage: a theoretical approach. *Management Science* **36**: 900–918.

Golder PN, Tellis GJ. 1993. Pioneer advantage: marketing logic or marketing legend? *Journal of Marketing Research* **30**: 158–170.

Golder PN, Tellis GJ. 1997. Will it ever fly? Modelling the takeoff of really new consumer durables. *Marketing Science* **16**: 256–270.

Green DH, Barclay DW, Ryans AB. 1995. Entry strategy and long term performance: conceptualization and empirical examination. *Journal of Marketing* **59**: (October): 1–16.

Greene WH. 1981. Sample selection bias as specification error: comment. *Econometrica* **49**: 795–798.

Greene WH. 1997. *Econometric Analysis* (3rd edn). Prentice-Hall: Upper Saddle River, NJ.

Gujarati DN. 1995. *Basic Econometrics* (3rd edn). McGraw-Hill: New York.

Hawawini G, Subramanian V, Verdin P. 2003. Is performance driven by industry- or firm-specific factors? A new look at the evidence. *Strategic Management Journal* **24**(1): 1–16.

Heckman JJ. 1979. Sample selection bias as a specification error. *Econometrica* **47**(1): 153–161.

Kalyanaram G, Urban GL. 1992. Dynamic effects of the order of entry on market share, trial penetration, and repeat purchases for frequently purchased consumer goods. *Marketing Science* **11**: 235–250.

Kalyanaram G, Wittink DR. 1994. Heterogeneity in entry effects between nondurable consumer product categories. *International Journal of Research in Marketing* **11**: 219–231.

Kerin RA, Kalyanaram G, Howard DJ. 1996. Product hierarchy and brand strategy influences on the order of entry effect for consumer packaged goods. *Journal of Product Innovation Management* **13**: 21–34.

Kerin RA, Varadarajan PR, Peterson RA. 1992. First-mover advantage: a synthesis, conceptual framework

and research propositions. *Journal of Marketing* **56**(5): 33–52.

King A, Tucci C. 2002. Incumbent entry into new market niches: the role of experience in the creation of dynamic capabilities. *Management Science* **48**: 171–186.

Lambkin M. 1988. Order of entry and performance in new markets. *Strategic Management Journal*, Summer Special Issue **9**: 127–140.

Lieberman MB, Montgomery DB. 1988. First mover advantages. *Strategic Management Journal*, Summer Special Issue **9**: 41–58.

Lieberman MB, Montgomery DB. 1998. First mover (dis)advantages: retrospective and link with the resource-based view. *Strategic Management Journal* **19**(12): 1111–1125.

Lilien GL, Yoon E. 1990. The timing of competitive market entry: an exploratory study of new industrial products. *Management Science* **36**: 568–585.

Makadok R. 1998. Can first-mover and early-mover advantages be sustained in an industry with low barriers to entry/imitation? *Strategic Management Journal* **19**(7): 683–696.

Mascarenhas B. 1992. First-mover in multiple dynamic markets. *Strategic Management Journal* **13**(3): 237–243.

Mauri AJ, Michaels MP. 1998. Firm and industry effects within strategic management: an empirical examination. *Strategic Management Journal* **19**(3): 211–219.

McGahan AM, Porter ME. 1997. How much does industry matter, really? *Strategic Management Journal*, Summer Special Issue **18**: 15–30.

Meyer M, Gupta V. 1994. The performance paradox. In *Research in Organizational Behavior*, Vol. 16, Staw BM, Cummings LL (eds). JAI Press: Greenwich, CT; 171–213.

Miller A, Gartner WB, Wilson R. 1989. Entry order, market share, and competitive advantage: a study of their relationships in new corporate ventures. *Journal of Business Venturing* **4**: 197–209.

Miller D. 1988. Relating Porter's business strategies to environment and structure. *Academy of Management Journal* **31**: 280–308.

Mitchell W. 1989. Whether and when: probability and timing of incumbents' entry into emerging industrial subfields. *Administrative Science Quarterly* **34**: 208–230.

Mitchell W. 1991. Dual clocks: entry order influences on incumbent and newcomer market share and survival when specialized assets retain their value. *Strategic Management Journal* **12**(2): 85–100.

Moore MJ, Boulding W, Goodstein RC. 1991. Pioneering and market share: Is entry time endogenous and does it matter? *Journal of Marketing Research* **28**: 97–104.

Parry M, Bass FM. 1989. When to lead or follow? It depends. *Marketing Letters* **1**(3): 187–198.

Powell TC. 1996. How much does industry matter? An alternative empirical test. *Strategic Management Journal* **17**(4): 323–334.

Prescott EC, Visscher M. 1977. Sequential location among firms with foresight. *Bell Journal of Economics* **8**: 378–393.

Robinson WT, Fornell C. 1985. Sources of market pioneer advantages in consumer goods industries. *Journal of Marketing Research* **22**: 305–317.

Robinson WT, Fornell C, Sullivan M. 1992. Are market pioneers intrinsically stronger than later entrants? *Strategic Management Journal* **13**(8): 609–624.

Robinson WT, Kalyanaram G, Urban G. 1994. First-mover advantages from pioneering new markets: a survey of empirical evidence. *Review of Industrial Organization* **22**: 1–23.

Romanelli E. 1989. Environments and strategies of organization start-up: effects on early survival. *Administrative Science Quarterly* **34**: 369–387.

Rumelt RP. 1991. How much does industry matter? *Strategic Management Journal* **12**(3): 167–185.

Schilling MA. 1998. Technological lock out: an integrative model of the economic and strategic factors driving technology success and failure. *Academy of Management Review* **23**: 267–284.

Schilling MA. 2002. Technology success and failure in winner-take-all markets: testing a model of technological lock out. *Academy of Management Journal* **45**: 387–398.

Schmalensee R. 1982. Product differentiation advantages of pioneering brands. *American Economic Review* **72**: 349–365.

Schnaars SP. 1986. When entering growth markets, are pioneers better than poachers? *Business Horizons* **29**(2): 27–36.

Schnaars SP. 1994. *Managing Imitation Strategies*. Free Press: New York.

Schoenecker TS, Cooper AC. 1998. The role of firm resources and organizational attributes in determining entry timing: a cross-industry study. *Strategic Management Journal* **19**(12): 1127–1143.

Schoonhoven CB, Eisenhardt KM, Lyman K. 1990. Speeding products to market: waiting time to first product introduction in new firms. *Administrative Science Quarterly* **35**: 177–207.

Shankar V, Carpenter GS, Krishnamurthi L. 1998. Late mover advantage: how innovative late entrants outsell pioneers. *Journal of Marketing Research* **35**(1): 54–70.

Shaver JM. 1998. Accounting for endogeneity when assessing strategy performance: does entry mode choice affect FDI survival? *Management Science* **44**: 571–585.

Shaw RW, Shaw SA. 1984. Late entry, market shares and competitive survival: the case of synthetic fibers. *Managerial and Decision Economics* **5**: 72–79.

Smith CG, Cooper AC. 1988. Established companies diversifying into young industries: a comparison of firms with different levels of performance. *Strategic Management Journal* **9**(12): 111–121.

Spence AM. 1977. Entry, capacity, investment and oligopolistic pricing. *Bell Journal of Economics* **8**: 534–544.

Spital FC. 1983. Gaining market share advantage in the semiconductor industry by lead time in innovation. In

Research on Technological Innovation, Management and Policy, Vol. 1, Rosenbloom RS (ed). JAI Press: Greenwich, CT; 55–67.

Sullivan M. 1991. *Brand Extension and Order of Entry*. Marketing Science Institute: Cambridge, MA.

Swaminathan A. 1996. Environmental conditions at founding and organizational mortality: a trial-by-fire model. *Academy of Management Journal* **39**: 1350–1377.

Szymanski DM, Troy LC, Bharadwaj SG. 1995. Order of entry and business performance: an empirical synthesis and reexamination. *Journal of Marketing* **59**(5): 17–33.

Tellis GJ, Golder PN. 1996. First to market, first to fail? Real causes of enduring market leadership. *Sloan Management Review* **36**: 65–75.

Teplensky JD, Kimberly JR, Hillman AL, Schwartz JS. 1993. Scope, timing and strategic adjustment in emerging markets: manufacturer strategies and the case of MRI. *Strategic Management Journal* **14**(7): 505–527.

Urban GL, Carter T, Gaskin S, Mucha Z. 1986. Market share rewards to pioneering brands: an empirical analysis and strategic implications. *Management Science* **32**: 645–659.

VanderWerf PA, Mahon JF. 1997. Meta-analysis of the impact of research methods on findings of first-mover advantage. *Management Science* **43**: 1510–1519.

Whitten IT. 1979. Brand performance in the cigarette industry and the advantage of early entry, 1913–74. Working paper, U.S. Federal Trade Commission, Washington, DC.

Willard GE, Cooper AC. 1985. Survivors of industry shakeouts: the case of the U.S. color television set industry. *Strategic Management Journal* **6**(4): 299–318.

Zhang S, Markman AB. 1998. Overcoming the early entrant advantage: the role of alignable and non-alignable differences. *Journal of Marketing Research* **35**: 413–426.