

ORDER OF MARKET ENTRY: ESTABLISHED EMPIRICAL GENERALIZATIONS, EMERGING EMPIRICAL GENERALIZATIONS, AND FUTURE RESEARCH

GURUMURTHY KALYANARAM, WILLIAM T. ROBINSON,
AND GLEN L. URBAN

The University of Texas at Dallas
The University of Michigan
Massachusetts Institute of Technology

Three established and four emerging empirical generalizations are identified below. The first established generalization is that there is a negative relationship between order of market entry and market share. Second, for consumer packaged goods and prescription anti-ulcer drugs, the entrant's market share divided by the first entrant's share roughly equals one divided by the square root of order of market entry. Third, in mature markets, market pioneer share advantages slowly decline over time. While the emerging generalizations require additional research support, the initial findings suggest: (1) for consumer packaged goods, order of market entry has a stronger negative relationship with trial penetration than with repeat purchase; (2) market pioneers have broader product lines than late entrants; (3) skill and resource profiles differ across market pioneers, early followers, and late entrants; and (4) order of market entry is not related to long-term survival rates. Future research topics are also discussed.

(Order of Market Entry, Early Entry Advantage, and Market Pioneer)

1. Introduction

A market pioneer typically is defined as the first entrant in a new market. Theoretical research on first-mover advantages points to potential sources of long-term revenue gains for pioneers. For example, a first mover can benefit from risk averse consumers (Schmalensee 1982), be recognized as the industry standard (Carpenter and Nakamoto 1989), and preempt competition with broader product lines (Prescott and Visscher 1977). First movers, though, can suffer disadvantages when a later entrant free-rides on a pioneer's investments or leverages a change in either technology or consumer needs (Lieberman and Montgomery 1988). Thus, the extent to which first-mover advantages are offset by first-mover disadvantages is an empirical issue.

Empirical research on market pioneers began with Bond and Lean's (1977) study of two prescription drug markets. See Lean (1994) and Scherer (1994). Even though empirical research on market pioneers began in economics, the majority of work has been done in marketing. For example, in his comment on empirical research on market pioneers, Scherer (1994, p. 173) says "we are in debt to business scholars for illuminating the relevant relationships."

G212

0732-2399/95/1403/G212\$01.25

Copyright © 1995, Institute for Operations Research and the Management Sciences

This paper summarizes empirical generalizations for market pioneers. We distill the broad empirical research surveyed by Lieberman and Montgomery (1988), Kerin et al. (1992), and Robinson et al. (1994) into three established and four emerging generalizations. An “established empirical generalization” has consistent support across multiple studies with multiple data bases. Thus, an established generalization has consistent empirical results, reported in at least two studies, that use at least two different data bases. An “emerging empirical generalization” arises from inconsistent results across multiple studies, results from a single data base, or results from a single research study. This paper also provides new insights into key definitions and future research topics.

2. Key Definitions

Empirical research on order of market entry requires that market boundaries be established. Major differences in market boundaries can generate major differences in average pioneer market share levels. When broader market boundaries increase the number of competitors, average market share levels typically decrease for both market pioneers and later entrants.

For example, relatively narrow market boundaries in Urban et al. (1986) average only four competitors per market. Market boundaries for consumer goods in the PIMS data average 12 competitors per market (Robinson 1992). While Golder and Tellis (1993) do not estimate the number of competitors per market, their historical analysis should yield the broadest categories. Because average pioneer market share equals 42% in Urban et al., 29% in Robinson and Fornell’s PIMS study, and 19% in Golder and Tellis, these three studies yield the expected negative relationship between market boundary breadth and average pioneer market share.

Given the difficulties in establishing market boundaries and their important influence on average market share levels, how should first-mover market share advantages be estimated? We recommend that market share advantages be estimated by applying a given set of definitions to a sample that includes both market pioneers and later entrants. Examining differences between market pioneers and later entrants helps control for definitional differences across studies.

A second key definitional issue is whether or not the entrant survived. Because most empirical research on order of market entry examines survivors, the three established generalizations immediately below cover market survivors. We will return to the survivorship issue in the discussion of emerging generalizations.¹

3. Three Established Empirical Generalizations for Market Survivors

Table 1 describes the data behind the established empirical generalizations. This yields insights into their domain of application. The first established generalization (G1) addresses the directional relationship between order of market entry and market share. Because the empirical studies are dominated by mature markets, the results support long-term or sustainable pioneer market share advantages.

GENERALIZATION 1. *For mature consumer and industrial goods, there is a negative relationship between order of market entry and market share.*

Empirical Evidence. Industry specific studies surveyed by Kerin et al. (1992) and Robinson et al. (1994) tend to support a negative relationship between order of market entry and market share. The industries cover pharmaceutical products, cigarettes, oil drilling rigs, investment banks, semiconductors, French industrial products, and medical diagnostic imaging devices.

¹ Robinson et al. (1994, p. 2–5) provide insights into other key definitions.

TABLE 1

Data Behind the Three Established Generalizations

G1: For mature consumer and industrial goods, market pioneers have sustainable market share advantages versus later entrants.*

Cross-sectional Results at the Brand Level

For frequently purchased consumer packaged goods, Urban et al. (1986), Kalyanaram and Urban (1992), and Kalyanaram and Wittink (1994) all report a negative relationship between order of market entry and relative market share. The Urban et al. (1986) Assessor data cover 129 brands in 36 product categories. Most of the product categories were started in the 20th century, but prior to 1975. The Kalyanaram and Urban (1992) BehaviorScan data cover 28 brands in eight product categories. The product categories were started during the 1980s. BehaviorScan data provide both cross-sectional and time-series insights. Kalyanaram and Wittink (1994) examine sample heterogeneity within five of the eight product categories from the Kalyanaram and Urban (1992) BehaviorScan data.

Across 36 categories of consumer brands, Golder and Tellis (1993) estimate market share for pioneers and early market leaders. Historical analysis guided their data gathering. The product category age ranges from cameras that were pioneered in 1839, to camcorders that were pioneered in 1982. The data include both surviving and nonsurviving pioneers.

Cross-sectional Results at the Business Unit Level

For mature businesses in the PIMS data, Robinson and Fornell (1985) and Robinson (1988) also report a negative relationship between order of entry and market share. The Robinson and Fornell (1985) sample covers 371 consumer goods businesses that primarily sell either consumer durables or nondurables. Robinson's (1988) sample covers 1209 industrial goods businesses that primarily sell either capital goods, raw or semi-finished materials, components, or industrial supplies. Most of these mature markets were started in the 20th century, but prior to 1970.

Parry and Bass (1990) also examine mature consumer and industrial goods in the PIMS data. A concentrated market arises when the sum of the market share levels for the four leading competitors is 55% or higher. A fragmented market is less than 55%. They report a stronger order of entry advantage in concentrated versus fragmented markets.

G2: For consumer packaged goods and anti-ulcer drugs, the entrant's market share divided by the first entrant's market share roughly equals one divided by the square root of order of entry.

Cross-sectional Results at the Brand Level

The square root functional form is reported in two data bases of consumer packaged goods. These are the Urban et al. (1986) Assessor data and the Kalyanaram and Urban (1992) BehaviorScan data. Both data bases are described above.

Industry Level Result

For four brands in the prescription anti-ulcer drug market, Berndt et al. (1994) also report the square root functional form. The data cover 189 monthly observations that start in September 1977.

G3: In mature consumer and industrial goods markets, market pioneer share advantages slowly decline over time.

Cross-sectional Results at the Brand Level

Brown and Lattin (1994) and Huff and Robinson (1994) both use the Urban et al. (1986) data described above.

Cross-sectional Results at the Business Unit Level

Robinson and Fornell (1985) and Robinson (1988) use the PIMS data described above.

* To simplify the table, data descriptions from the numerous industry studies that address G1 are not included. Surveys by both Kerin et al. (1992) and Robinson et al. (1994) discuss these industry specific insights.

For consumer packaged goods, Urban et al.'s (1986) Assessor data yield a negative relationship between order of market entry and relative market share. Relative market share is the entrant's market share relative to the pioneer's market share. Ceteris paribus, the second entrant's market share is roughly 71% of the first entrant's market share. Similar brand level results are reported using BehaviorScan data (Kalyanaram and Urban 1992 and Kalyanaram and Wittink 1994), which yield a pooled cross-sectional and time-

series analysis. While Golder and Tellis (1993) do not have data on later entrants, they report an average market share of 19% for surviving pioneers, which should be higher versus surviving later entrants.²

For mature consumer goods businesses in the PIMS data, market pioneers have important and sustainable market share advantages over both early followers and late entrants (Robinson and Fornell 1985).³ For example, market pioneers have an average market share of 29%, early followers 17%, and late entrants 12%. Robinson (1988) reports similar results for mature industrial goods. Using the PIMS data, Parry and Bass (1990) find a stronger order of entry advantage in concentrated markets than in fragmented markets. This difference should arise because sustainable market pioneer advantages are based on some type of entry barrier, and a fragmented market often has limited or no entry barriers.

Theoretical Evidence. Sustainable market pioneer advantages can arise at the consumer level, in distribution channels, or at the firm level. At the consumer level, theoretical research predicts that consumer risk aversion (Schmalensee 1982), pioneer prototypicality (Carpenter and Nakamoto 1989), and consumer learning (Kardes and Kalyanaram 1992) can aid the market pioneer. In distribution channels, it can be easier for pioneers to gain intensive distribution (Porter 1974) and to dominate scarce retail shelf space (White 1983). At the firm level, scale economy or experience advantages can lead to higher quality and lower costs (Scherer and Ross 1990). Market pioneering firms also have the opportunity to develop a broad product line, while later entrants are often forced to enter a market niche with a narrow line (Prescott and Visscher 1977).

Given the large number of theoretical first-mover advantages and the long time horizon required to assess sustainable advantages, it is very difficult to link empirically individual first-mover advantages to pioneer market share advantages. Thus, empirical research that estimates individual sources of pioneer advantages is more suggestive than definitive. For example, while survey research of consumers yields relatively precise measures in an experimental setting, the results have not been linked to long-term market share advantages. Because of the difficulties in linking individual first-mover advantages to sustainable market share advantages, none of the established generalizations address sources of market pioneer advantages. Generalization 2 and Generalization 3 though can address the magnitude of the relationship between order of market entry and market share.

GENERALIZATION 2. *For consumer packaged goods and prescription anti-ulcer drugs, the entrant's forecasted market share divided by the first entrant's market share roughly equals one divided by the square root of order of market entry.*

Empirical Evidence. While different data bases and different model specifications make it difficult to compare magnitudes across studies, one consistent result arises in Urban et al.'s (1986) Assessor data, Kalyanaram and Urban's (1992) BehaviorScan data, and Berndt et al.'s (1994) prescription anti-ulcer drug data.⁴ Holding marketing mix elements constant, Table 2 shows the entrant's forecasted market share divided by the pioneer's market share roughly equals one divided by the square root of order of entry. Thus, the fourth entrant's market share roughly equals one divided by the square root of four, or one-half of the pioneer's share.

² If the average number of competitors is six or more, market pioneers in Golder and Tellis in all likelihood should have a higher average market share than later entrants. This is because average market share equals 100 divided by the number of competitors. For six competitors, this yields an average market share of 17%. Because the Golder and Tellis market boundaries are relatively broad, the average number of competitors should be six or more.

³ In the PIMS data, a market pioneer is defined as "one of the pioneers in first developing such products or services." This definition is broader than other studies that examine the first entrant in a new market.

⁴ Hauser and Wernerfelt (1990) and Huff and Robinson (1994) also analyze the Urban et al. data. Empirical results from both studies are generally consistent with the square root functional form.

TABLE 2
*Order of Market Entry and Market Share for Consumer Packaged Goods
 and Prescription Anti-Ulcer Drugs*

Entry Order	Forecasted Market Share Relative to the Pioneering Brand		
	Consumer Packaged Goods		Prescription Anti-Ulcer Drugs
	Urban et al. (1986)	Kalyanaram and Urban (1992)	Berndt et al. (1994)
First	1.00	1.00	1.00
Second	0.71	0.76	0.70
Third	0.58	0.64	0.57
Fourth	0.51	0.57	0.49
Fifth	0.45	0.53	0.44
Sixth	0.41	0.49	0.40

Theoretical Evidence. While the square root functional form is an empirical result, theory predicts a diminishing marginal impact for later entrants, which is consistent with the square root functional form. For example, as the number of brands in a market increases, it becomes increasingly difficult for a new brand to enter a consumer's consideration set. This is because the expected incremental benefits from a new brand declines as the number of brands increases (Hauser and Wernerfelt 1990). Also, Prescott and Visscher's (1977) analytical model indicates that the opportunity to serve an important unmet consumer need declines as the number of brands increases. Thus, while there are often important differences between the market segments selected by the first and second entrants, the fourth and fifth entrants may be sorting through the remaining crumbs. This also yields a diminishing marginal return.

Generalization 3 addresses the question as to how first-mover advantages are influenced by the passing of time. When a market pioneer starts a new market, their initial market share is 100%. As the market evolves, competitive entry will reduce the pioneer's market share. Because most entry arises in relatively young and growing markets (Siegfried and Evans 1994), what happens in a mature market when entry is typically limited?

GENERALIZATION 3. *In mature consumer and industrial goods markets, early entrant market share advantages slowly decline over time.*

Empirical Evidence. While early entrant market share advantages decline over time, the decline is slow in the sense that market pioneers tend to maintain a market share advantage over later entrants. This result arises for consumer packaged goods that use the Assessor data (Brown and Lattin 1994 and Huff and Robinson 1994), PIMS consumer goods businesses (Robinson and Fornell 1985), and PIMS industrial goods businesses (Robinson 1988). For example, consider a three-brand consumer packaged goods market that is 25 years old. Brown and Lattin (1994) predict market share levels of 43% for the pioneer, 32% for the second entrant, and 25% for the third entrant. As market age approaches infinity, the predicted market share levels are 36%, 33%, and 31%.

Theoretical Evidence. While theory has not directly addressed market pioneers, a market share decline is suggested by the economics literature on dominant firms (Scherer and Ross 1990, Ch. 10). If a dominant firm does not have an important cost or image advantage, it is usually more profitable to slowly sell off market share than to fight to hold on to each and every customer. Also, Geroski (1989, p. 162) concludes that "dominant firms decline when they become sleepy and thus vulnerable to a sudden, innovative

challenge.” Thus, a dominant firm’s market share can decline when they do not have an important competitive advantage or when they become sleepy.

4. Four Emerging Empirical Generalizations

The four emerging generalizations have empirical support, but the support is limited in terms of being based on either a single study, a single database, or having some contradictory findings. In view of these limitations, the emerging generalizations (EG) need further testing and replication. The first three emerging generalizations are for survivors. The fourth addresses the complex relationship between order of entry and survival.

EMPIRICAL GENERALIZATION 1. *For consumer packaged goods, order of market entry has a stronger negative relationship with trial penetration than with repeat purchase.*

For consumer packaged goods, Kalyanaram and Urban (1992) report that order of market entry has a stronger negative impact on trial penetration than on repeat purchase. Trial rewards for market pioneers can arise from consumer risk aversion (Schmalensee 1982) and when pioneers are included more often in consumers consideration set (Hauser and Wernerfelt 1990 and Kardes et al. 1993). If product quality is roughly similar, this yields a greater order of entry advantage for trial than for repeat purchase. When later entrants follow a market niche strategy, this can also yield a stronger impact on trial than on repeat purchase. This is because a market niche strategy often appeals to a few customers who are highly loyal.

EMPIRICAL GENERALIZATION 2. *For mature consumer and industrial goods businesses, market pioneers tend to have broader product lines than late entrants.*

Why do pioneering businesses have a higher average market share than late entrants? Higher product quality, product patent and trade secret protection, lower prices, and lower direct costs from learning and scale economies have all been considered. In two PIMS studies, Robinson and Fornell (1985) and Robinson (1988) find that none of these factors are as important as having broader product lines. As mentioned above, a market pioneer often has the opportunity to introduce numerous products for the biggest and best market segments. This can force a late entrant to target a smaller market niche with a more focused product line.

EMPIRICAL GENERALIZATION 3. *Skill and resource profiles for market pioneers differ from early followers and late entrants.*

Lieberman and Montgomery (1988) and Lambkin and Day (1989) predict different skill and resource profiles for market pioneers, early followers, and late entrants. The empirical results support different skill and resource profiles. For example, first entrants are the least likely to leverage a parent’s brand name or goodwill (Sullivan 1992a and Robinson et al. 1992). Sharing an existing brand name can provide an unwanted psychological link to an established market (Carpenter and Nakamoto 1989) and risk damaging the established name (Aaker and Keller 1990). Early followers tend to leverage a parent’s manufacturing facilities (Lambkin 1988) and enter the market by means of acquisition (Robinson et al. 1992). Both factors help speed market entry. While measuring skill differences is subjective, late entrants tend to report the strongest marketing skills (Lilien and Yoon 1990 and Robinson et al. 1992). Strong marketing skills can help a late entrant target an overlooked market niche.⁵

While all the established and emerging generalizations above pertain to survivors,

⁵ Other studies in this area include Vanhonacker and Day (1987), Keck and Rao (1987), and Moore et al. (1991).

Empirical Generalization 4 addresses the relationship between order of market entry and survival.

EMPIRICAL GENERALIZATION 4. *Order of market entry is not related to long-term survival rates.*

Across 36 categories of consumer brands, Golder and Tellis (1993) report a long-term survival rate for market pioneers of only 53%. While Golder and Tellis do not have data on later entrants, other studies directly compare long-term survival rates for market pioneers and later entrants. Across seven cigarette markets, Whitten (1979) reports that all seven market pioneers survived. No difference in survival rates is reported across 18 markets for Iowa newspapers (Glazer 1985), 39 markets for chemical products (Lieberman 1989), and 11 markets for consumer nondurables (Sullivan 1992b). In contrast, Mitchell (1991) finds lower pioneer survival rates in five subfields of the medical diagnostic imaging industry. While more research is needed, the preliminary evidence indicates that order of market entry is not related to long-term survival rates.

5. Future Research

The seven empirical generalizations above attempt to summarize the state of the art for empirical research on order of market entry. This yields insight into how far the field has gone. The future research topics below highlight important topics that have not yet been fully resolved or, in some cases, have not yet been addressed.

More Evidence

More evidence is needed to test the results suggested by the emerging generalizations. This provides an opportunity to strengthen the portfolio of established generalizations. Research can also examine the established generalizations in other industries and settings, which provides an opportunity to broaden their domain of application. Broadening the domain of application is important because the established generalizations rely heavily on North American manufactured goods that are included in either the Urban et al. Assessor data or the PIMS data. Thus, research is still needed on pioneer market share advantages for services, retailers, and in emerging markets.

Behavioral Models

Initial behavioral insights into market pioneer rewards are encouraging. As mentioned above, these insights indicate that consumer risk aversion, consideration set advantages, and prototypicality all tend to benefit the market pioneer. While these behavioral mechanisms apply mainly to consumer goods, do similar mechanisms arise for industrial goods? Would similar experimental results arise in an emerging market such as mainland China? For example, if a new product category in an emerging market is considered more novel than one in a developed market such as the United States, greater novelty should encourage even greater consumer learning. If so, there may be an even greater consideration set advantage and consumer preference advantage for a pioneering brand in an emerging market.

Data Gathering Difficulties

The most serious challenge in this stream of research is that data gathering is often costly and time consuming. For example, Golder and Tellis (1993) gathered usable information from more than 450 articles and 125 books. While their research generated valuable insights into market pioneers and early market leaders, it only covered 36 markets and did not cover later entrants. Also, even when an electronic data source such as BehaviorScan is available, it is not unusual to spend a year or more cleaning data and resurrecting the product category history.

While time consuming, data should be available to link order of market entry to stock market returns. A key advantage to using stock market returns is that a stock's financial performance discounts expected "future" cash flows. In contrast, accounting profits evaluate only "historical" financial performance. Because entry is a dynamic process, stock market returns provide important and relatively objective information. Recent studies that link stock market returns to company name changes, new product introductions, and perceived quality highlight the research potential for using stock market returns. See Horsky and Swyngedouw (1987), Chaney et al. (1991), and Aaker and Jacobson (1994).

It should also be possible to gather data on both short-term and long-term survival rates. This is an important topic because only limited research, such as Golder and Tellis (1993), examines survival rates. Short-term survival covers the first few years of commercialization. In their first few years of commercialization, the authors speculate that market pioneers have lower survival rates than later entrants. This is because of the unusually high demand and technological uncertainties in the market's early years. For businesses that survive the first few years of commercialization, market pioneers should have higher survival rates. This is because surviving pioneers tend to have higher market shares, and Lieberman (1990) points out that high share firms have relatively low exit rates. These two offsetting forces may explain why research to date does not report a clear relationship between order of market entry and survival rates.

Finally, numerous studies in industrial economics provide survey research insights into the costs, risks, and returns of R&D spending (see Scherer and Ross 1990, Ch. 17). While most studies provide industry specific insights, some studies such as Mansfield et al. (1981) and Levin et al. (1987) are cross-sectional. The cross-sectional results yield insights into general tendencies. Similar research approaches could be used to survey managers on key tradeoffs for market pioneering versus later entry.

6. Conclusion

Because market pioneers tend to have higher market shares than later entrants, should every business attempt to pioneer new markets? Market pioneering is not for a risk averse or financially strapped business. A business should attempt to pioneer a new market only if it has an appropriate skill and resource profile and is willing to pursue a high risk—high return strategy.

Acknowledgment. The authors thank participants at both a University of Michigan Marketing workshop and the Wharton Conference on Empirical Generalizations in Marketing for many valuable comments. The author ordering is alphabetical.

References

- Aaker, D. A. and R. Jacobson (1994), "The Financial Information Content of Perceived Quality," *Journal of Marketing Research*, 31 (May), 191–201.
- and K. L. Keller (1990), "Consumer Evaluations of Brand Extensions," *Journal of Marketing*, 54 (January), 27–41.
- Bond, R. S. and D. F. Lean (1977), *Sales, Promotion, and Product Differentiation in Two Prescription Drug Markets*, Washington, DC: Federal Trade Commission.
- Berndt, E., L. T. Bui, D. H. Reiley, and G. L. Urban (1994), "The Roles of Marketing, Product Quality, and Price Competition in the Growth and Composition of the U.S. Anti-Ulcer Drug Industry," Working Paper #19-94 (May), Sloan School, MIT.
- Brown, C. L. and J. M. Lattin (1994), "Investigating the Relationship Between Time in the Market and Pioneering Advantage," *Management Science*, 40 (October), 1361–1369.
- Carpenter, G. S. and K. Nakamoto (1989), "Consumer Preference Formation and Pioneering Advantage," *Journal of Marketing Research*, 26 (August), 285–298.
- Chaney, P. K., T. M. Devinney, and R. S. Winer (1991), "The Impact of New Product Introductions on the Market Value of Firms," *Journal of Business*, 64 (October), 573–610.

- Geroski, P. A. (1989), "Do Dominant Firms Decline?," in D. Hay and J. Vickers (Eds.), *The Economics of Market Dominance*, New York: Basil Blackwell, 143-167.
- Glazer, A. (1985), "The Advantages of Being First," *American Economic Review*, 75 (June), 473-480.
- Golder, P. N. and G. J. Tellis (1993), "Pioneer Advantage: Marketing Logic or Marketing Legend?," *Journal of Marketing Research*, 30 (May), 158-170.
- Hauser, J. R. and B. Wernerfelt (1990), "An Evaluation Cost Model of Consideration Sets," *Journal of Consumer Research*, 16 (March), 393-408.
- Horsky, D. and P. Swyngedouw (1987), "Does It Pay to Change Your Company's Name? A Stock Market Perspective," *Marketing Science*, 6 (Fall), 320-335.
- Huff, L. C. and W. T. Robinson (1994), "The Impact of Leadtime and Years of Competitive Rivalry on Pioneer Market Share Advantages," *Management Science*, 40 (October), 1370-1377.
- Kalyanaram, G. and G. L. Urban (1992), "Dynamic Effects of the Order of Entry on Market Share, Trial Penetration, and Repeat Purchases for Frequently Purchased Consumer Goods," *Marketing Science*, 11 (Summer), 235-250.
- and D. R. Wittink (1994), "Heterogeneity in Entry Effects Between Nondurable Consumer Product Categories," *International Journal of Research in Marketing*.
- Kardes, F. R. and G. Kalyanaram (1992), "Order-of-Entry Effects on Consumer Memory and Judgment: An Information Integration Perspective," *Journal of Marketing Research*, 29 (August), 343-357.
- , ———, M. Chandrashekar, and R. J. Dornoff (1993), "Brand Retrieval, Consideration Set Composition, Consumer Choice, and the Pioneering Advantage," *Journal of Consumer Research*, 20 (June), 62-75.
- Keck, K. and R. C. Rao (1987), "Segmentation and Endogenous Entry Under Consumer Uncertainty of Novel Technologies," *Annales des Telecommunications*, 42, 686-692.
- Kerin, R. A., P. R. Varadarajan, and R. A. Peterson (1992), "First-Mover Advantage: A Synthesis, Conceptual Framework, and Research Propositions," *Journal of Marketing*, 56 (October), 33-52.
- Lambkin, M. B. (1988), "Order of Entry and Performance in New Markets," *Strategic Management Journal*, 9 (Summer), 127-140.
- and G. S. Day (1989), "Evolutionary Processes in Competitive Markets: Beyond the Product Life Cycle," *Journal of Marketing*, 53 (July), 4-20.
- Lean, D. F. (1994), "Comment," *Review of Industrial Organization*, 9 (April), 177-180.
- Levin, R. C., A. K. Klevorick, R. R. Nelson, and S. G. Winter (1987), "Appropriating the Returns from Industrial Research and Development," *Brookings Papers on Economic Activity*, 783-820.
- Lieberman, M. B. (1989), "The Learning Curve, Technology Barriers to Entry, and Competitive Survival in the Chemical Processing Industries," *Strategic Management Journal*, 10 (September-October), 431-447.
- (1990), "Exit from Declining Industries: 'Shakeout' or 'Stakeout,'" *RAND Journal of Economics*, 21, 538-554.
- and D. B. Montgomery (1988), "First-Mover Advantages," *Strategic Management Journal*, 9 (Summer), 41-58.
- Lilien, G. L. and E. Yoon (1990), "The Timing of Competitive Market Entry: An Exploratory Study of New Industrial Products," *Management Science*, 36 (May), 568-585.
- Mansfield, E., M. Schwartz, and S. Wagner (1981), "Imitation Costs and Patents: An Empirical Study," *Economic Journal*, 91 (December), 907-918.
- 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 (January-February), 85-100.
- Moore, M. J., W. Boulding, and R. C. Goodstein (1991), "Pioneering and Market Share: Is Entry Time Endogenous and Does It Matter?," *Journal of Marketing Research*, 28 (February), 97-104.
- Parry, M. and F. M. Bass (1990), "When to Lead or Follow? It Depends," *Marketing Letters*, 1 (November), 187-198.
- Porter, M. E. (1974), "Consumer Behavior, Retailer Power, and Market Performance in Consumer Goods Industries," *Review of Economics and Statistics*, 56, 419-436.
- Prescott, E. C. and M. Visscher (1977), "Sequential Location Among Firms with Foresight," *Bell Journal of Economics*, 8, 378-393.
- Robinson, W. T. and C. Fornell (1985), "Sources of Market Pioneer Advantages in Consumer Goods Industries," *Journal of Marketing Research*, 22 (August), 305-317.
- (1988), "Sources of Market Pioneer Advantages: The Case of Industrial Goods Industries," *Journal of Marketing Research*, 25 (February), 87-94.
- , ———, and M. W. Sullivan (1992), "Are Market Pioneers Intrinsically Stronger than Later Entrants?," *Strategic Management Journal*, 13 (November), 609-624.
- (1992), "Explaining the Number of Competitors Across Markets," University of Michigan, Working Paper (April).

- , G. Kalyanaram, and G. L. Urban (1994), "First-Mover Advantages from Pioneering New Markets: A Survey of Empirical Evidence," *Review of Industrial Organization*, 9 (February), 1–23.
- Scherer, F. M. (1994), "Comment," *Review of Industrial Organization*, 9 (April), 173–176.
- and D. Ross (1990), *Industrial Market Structure and Economic Performance*, (third Ed.), Boston: Houghton Mifflin.
- Schmalensee, R. (1982), "Product Differentiation Advantages of Pioneering Brands," *American Economic Review*, 72 (June), 349–365.
- Siegfried, J. J. and L. B. Evans (1994), "Empirical Studies of Entry and Exit: A Survey of the Evidence," *Review of Industrial Organization*, 9 (April), 121–155.
- Sullivan, M. W. (1992a), "Brand Extensions: When to Use Them," *Management Science*, 38 (June), 793–806.
- (1992b), "The Effect of Brand Extension and Other Entry Decisions on Survival Time," Working Paper, Graduate School of Business, University of Chicago.
- Urban, G. L., T. Carter, S. Gaskin, and Z. Mucha (1986), "Market Share Rewards to Pioneering Brands: An Empirical Analysis and Strategic Implications," *Management Science*, 32 (June), 645–659.
- Vanhonacker, W. R. and D. Day (1987), "Cross-Sectional Estimation in Marketing: Direct versus Reverse Regression," *Marketing Science*, 6 (Summer), 254–267.
- White, A. P. (1983), *The Dominant Firm: A Study of Market Power*, Ann Arbor, MI: UMI Research Press.
- Whitten, I. T. (1979), *Brand Performance in the Cigarette Industry and the Advantage to Early Entry*, 1913–74, Staff Report to the Federal Trade Commission, June.