

COMMENTARY ON 'ENTRY INTO NEW MARKET SEGMENTS IN MATURE INDUSTRIES: ENDOGENOUS AND EXOGENOUS SEGMENTATION IN THE U.S. BREWING INDUSTRY' BY A. SWAMINATHAN

WILL MITCHELL*

University of Michigan Business School, Ann Arbor, Michigan, U.S.A.

Anand Swaminathan's paper, 'Entry into new market segments in mature industries: Endogenous and exogenous segmentation in the U.S. brewing industry', offers three contributions. First, the focal purpose of the paper is to test competing ecological predictions about how new industry segments arise. Second, the implications of the conceptual argument and empirical analysis help us understand how the interplay between exogenous environmental change, endogenous industrial change, and firm capabilities shapes industry evolution. Third, the study provides an example of how to reach generalizable conclusions about the effects of idiosyncratic firm capabilities. The first contribution provides a useful bridge between organizational ecology theory and strategy research, while the second and third contributions are fundamentally important in shaping our understanding of business strategy and our approaches to strategy research.

The primary focus of the paper is to compare niche formation and resource partitioning, which are two ecological theories about industry segmentation, as alternative predictors of entry rates to new industry segments in mature industries. Niche formation theory emphasizes exogenous changes such as new consumer preferences, regulatory regimes, and technology as the drivers of segmentation. In the niche formation view, the size of a new exogenously created segment

determines the rate of new entry into the segment. Larger new segments will tend to have more new entrants, where sales revenue or unit sales offer possible measures of segment size.

By contrast with the niche formation view, resource partitioning models argue that new industry segments often arise as the result of endogenous changes within the context of existing competition in an industry. In this view, incumbent firms tend to grow by undertaking the most general and highest volume activities in an industry. By doing so, the incumbent firms leave specialty segments for new entrants to the industry. With an argument that closely parallels the development of current ideas in the strategy literature concerning firm-specific business capabilities, resource partitioning theory argues that the specialized niches arise because the commercial capabilities of the generalists do not suit many specialized activities. A core underlying assumption of this view is that opportunities for new entrants in a mature industry occur because the general capabilities that suit the mature market do not fit the narrow needs of more specialized market segments, rather than because of managerial myopia of the incumbent firms. Indeed, the process of creating general capabilities may actively conflict with attempts to create specialized capabilities. In this view, it is the endogenous process of resource partitioning within a mature industry that creates the incentives for firms to enter newly emerging segments. The greater the degree of partitioning, which ecologists often measure in terms of industry concentration, the greater the rate of new entry into new segments.

Thus, the niche formation and resource par-

Key words: exogenous and endogenous industry change; disequilibrium

* Correspondence to: Will Mitchell, University of Michigan Business School, 701 Tappan St., Ann Arbor, MI 48109-1237, U.S.A.

tioning ecological views provide different perspectives on entry to mature industries and, in turn, on industry evolution. If new market segments arise as the result of environmental changes outside the context of existing competition in an industry, then segment sales potential will be a strong predictor of entry into new segments. Alternatively, if new market segments arise as the result of changes in the capabilities of firms within the context of existing competition, then industry concentration will be a strong predictor of entry rates into new segments. The niche formation view is akin to a punctuated equilibrium view of industry evolution, in which external changes can disturb a stable industry. The resource partitioning view, by contrast, posits an ongoing disequilibrium, in which an industry never stabilizes.

The paper tests the two views in the context of the U.S. brewing industry, by examining entries into the microbrewery and brew pub segments of the industry. The data include 335 microbrewery foundings from 1939 to 1995, plus 588 brew pub foundings from 1982 to 1995. This data set includes almost the full history of microbrewery and brew pub foundings in the United States including all 50 states plus the District of Columbia. The focal dependent variable is the number of foundings in a given state during a given year. The focal independent variables are the volume of imports and beer industry concentration. The paper defines both import volume and industry concentration in terms of the total beer industry, including mass producers as well as brew pubs and microbreweries. Import volume provides a measure of exogenous change in consumer tastes for beer. If niche formation is the primary explanation for industry segmentation, then entry into the microbrewery and brew pub segments will tend to rise with import volume of imported beer. Industry concentration provides a measure of endogenous change in the competitive conditions of the beer industry. If resource partitioning is the primary explanation for industry segmentation, then entry into the microbrewery and brew pub segments will tend to rise with industry concentration across the total beer industry. The analysis also controls for key alternative and ancillary influences on entry rates, including potential market size, legitimizing and competitive influences of competitive density, institutional support in the political environment,

and annual production output of firms in the new segments. Several of the control variables have important results, which I will address later in this comment.

The empirical analysis in the paper, which I summarize in Table 1 of this comment, supports the exogenous niche formation argument for industry segmentation, while conflicting with the resource partitioning view. In both the microbrewery segment and the brew pub segment, volume of imports is a significant predictor of entry (row 10 of Table 1), while beer industry concentration has no significant effect on entry to either new segment (row 11 of Table 1). This comparative result contributes to the development of ecological research, by providing analysis that ecological researchers can test and compare within an existing cumulative body of empirical research.

One strength of this paper is that it presents ecological reasoning in a language and style that are relevant to strategy researchers. Table 1 in this comment attempts to further clarify and integrate the use of ecological and strategic language. The strategic aspect of the contribution is particularly important given the unfortunate tendency of much ecological research to cloud its core ideas in theory-specific terminology and structure. The obscurity of ecological language sometimes hides the fact that many of the core ideas of ecological research directly apply to understanding industrial change and business strategy and performance. Indeed, strategy researchers can gather substantial insights from behind the veil of ecological research. This paper helps push aside some of that veil of terminology.

An immediate pay-off of the clarity is that Anand identifies an intriguing possible interaction between industry-level processes, which are the focus of ecological theory, and individual decision making, which is often deemphasized in ecological research while being a key part of strategic analysis. He finds that initial microbrewery density has a lesser legitimizing influence in states in which brew pubs are legal. Row 9 of Table 1 in this comment summarizes the result. A partial explanation for the result may simply be that legitimacy deriving from competitive presence is less necessary in states in which brewing legitimacy partially derives from legal sanction. An additional explanation that Anand presents, though, is that potential entrants will quickly switch from considering microbrewery entry as

Table 1. Summary of empirical results in Tables 3 and 4 of 'Entry into new market segments in mature industries' (Anand Swaminathan)^a

Variable in Table 3 (Table 4)	Strategy terminology	(1) Microbrewery foundings 1939–95 Table 3, Model 6	(2) Brewpub foundings 1982–95 Table 4, Model 11
1 State per capita annual personal income	Potential market size	(+)	.
2 State per capita annual beer consumption	Potential market size	.	.
3 Percentage of state population living in dry areas	Potential market size	.	.
4 Brewpub legality	Legal conditions	+	.
5 State microbrewery (brewpub) density, density square	No. of direct competitors	+,-	+,-
6 Out-of-state microbrewery (brewpub) density	Regional trends	+	(+)
7 State brewpub (microbrewery) density	No. of producers of complementary goods	.	+
8 National mass producer density	No. of producers of substitute goods	-	.
9 Brewpub legality × state microbrewery density	Complement availability × direct competition	-	.
10 Niche formation variable; volume of imports	Exogenously determined segment sales potential	+	+
11 Resource partitioning variable; industry concentration	Endogenous creation of specialized segments	.	.

^aSigns indicate statistically significant results; signs in parentheses are borderline significant.

competition increases if they have the choice of considering brew pub entry as an alternative. Thus, population- and firm-level processes may intertwine in a generalizable fashion.

Well beyond the simple clarification of ecological and strategic language and the demonstration that industry- and firm-level processes can coexist within an ecological approach, the paper provides substantial insights concerning business strategy. Strategy researchers will not be surprised to discover that exogenous changes in industrial environments have major influences on industry entry. We have long documented that entrants respond to changes in environmental factors such as new consumer tastes, technological change, and regulatory change. There is a risk, though, in leaving the implications at that first stopping point, that is, in concluding that exogenous change is the dominant explanation for industry evolution and that endogenous change plays at most an ancillary role. While this conclusion might attract those who prefer exogenously determined equilibrium models of industry evolution,

the simple reading of the empirical results of this paper obscures a deeper set of endogenously influenced disequilibrium processes.

Let us start by examining the effect of several other variables in the analysis, which Table 1 also summarizes. I am particularly intrigued by the results concerning the number of producers of substitute goods (row 8), the number of direct competitors (row 5), and the number of producers of complementary goods (row 7). Singly and jointly, these results suggest a process of exogenous and endogenous industry evolution.

Row 8 of Table 1 demonstrates a first interaction between exogenous and endogenous industry evolution. Here, we find that microbrewery foundings decline with number of producers of substitute goods (column 1), that is, the number of mass brewers, while brew pub foundings have no relationship with mass producer density (column 2). It is reasonable to assume that beer produced by mass producers is a closer substitute for microbrewed beer than for the output of a brew pub, because a brew pub serves as a res-

restaurant and entertainment site as well as a beer producer. Consistent with this assumption, then, the presence of many producers of substitute goods and, by further assumption, with a greater variety of substitute goods, discouraged the entry of new firms into the new segment. Thus, the results suggest an endogenous process in which competitive conditions within the core industry influence entry rates into an exogenously created new segment of close substitutes. Even if a new industry segment arises as a result of exogenous changes in taste and technology, then, the state of the existing industry at the time of the exogenous change will influence the rate at which new entrants respond to the change.

The second interaction arises in row 5 of Table 1, which summarizes the influence of the variables that deal with legitimization and competition. These variables show a common ecological influence, in which increasing competition first creates legitimacy for a segment and encourages entry and then inhibits further entry once the number of competitors reaches some critical mass. This, in itself, is an endogenous process in which competition both encourages and inhibits entry within even an exogenously created new segment.

The third interaction arises in row 7 of Table 1, which shows that microbrewery foundings influence brew pub foundings (column 2), but that the reverse relationship does not hold (column 1). If we view microbreweries and brew pubs as producers of complementary goods, rather than direct competitors, this asymmetric result has intriguing implications. The assumption of complementary is reasonable, as people who drink in brew pubs are likely to be particularly common purchasers of microbrewery beer. The asymmetric influence of microbrewery density on brew pub founding rates most likely stems from an endogenous temporal process, where the endogeneity arises at the fringes of the mass industry and occurs as one new industry segment leads to the growth of a second new segment. Recall that microbreweries emerged before brew pubs. As microbreweries diffused through the various states, the results then suggest that the diffusion led to the founding of an even more specialized form of beer consumption, the brew pub. The likely causality here is that beer drinkers who came to like the microbrewery product gained an increased taste for similar products sold in brew pubs. More generally, this result suggests a proc-

ess in which the exogenous creation of one new market segment leads to the endogenous creation of a complementary new market segment. Thus, the results of influences that at first seem to be simply control variables help shape our understanding of interactions between exogenous and endogenous industrial change.

Together, these results suggest a set of three interrelated evolutionary processes. First, the state of competition in the core industry influences entry into a new segment. Second, entry into the new segment first encourages and then discourages further entry into the segment, with the legitimizing effect ending sooner when there are alternative segments in which to consider entry. Third, the growth of the new segment encourages entry into a complementary new segment. Thus, an erroneous initial conclusion that exogenous influences dominate would obscure a more complex interaction of exogenous and endogenous industry evolution. The existence of such an interrelated process should ring true to strategy researchers who study how firms and industries change over time, and are well familiar with the way in which unanticipated events can set off chain reactions of subsequent events within an industry. The pattern of the results helps generalize our expectations of how these chain reactions will occur.

In addition to the insights concerning interactions between exogenous and endogenous industry-level evolution, the results hint at issues concerning business-level capabilities. I am again intrigued by the complementary producer results in row 7 of Table 1, which raise a business-level question in addition to their implications for understanding influences on segment-level entry rates. The question is why the presence of microbreweries encourages the entry of brew pubs, which typically are not owned by the microbreweries, rather than the diversification of the microbreweries into the brew pub segment. Indeed, this question also arises at an earlier stage of industry evolution, in the sense that the mass producers for the most part left the new microbreweries to develop the microbrewery segment, rather than diversifying themselves.

Two possible explanations for the prevalence of new entrants in new market segments come to mind, stemming from very different behavioral processes. One possible explanation for the predominance of new entrants is that the mass pro-

ducers suffered ongoing mass myopia concerning the potential of the microbrewery market, and that the microbrewers then suffered similar myopia concerning the brew pub opportunity. This first explanation is not especially satisfying, especially given the decades-long duration of the posited blindness. At the very least, the explanation would suggest that we have been doing a particularly bad job when we try to teach business students, who then become business managers, about how to recognize and respond to changes in their competitive environments. A second possible explanation is that the new segments required firms to have very different business capabilities than those needed in the earlier mass production core of the industry and, later, in the microbrewery segment. In the second view, the established firms tended to avoid the new segments because they did not fit in them, rather than because they did not see the changes in the market. This second explanation seems more likely than the first, particularly when we couple it with the observation that each established segment of the market continued to offer substantial sales and growth opportunities as each new segment emerged. Thus, established firms had incentives to concentrate on adapting and strengthening what they already knew how to do, rather than diversify into market segments that required different capabilities and knowledge.

Recent trends in the discount retail markets correspond to the industry and firm-level patterns that this study of the beer industry suggest. The mass discount retail market became established during the late 1960s and 1970s in the United States, with firms such as Kmart, Walmart, and Target playing leading roles. More specialized discount retail market segments then arose during the late 1970s and 1980s, in product areas such as hardware, sporting goods, books, and office supplies. The first new specialized discount segments arose at least in part due to exogenous changes in consumer taste, mall growth, road construction, and suburbanization. In turn, though, the success of the earlier specialized discount retail segments, such as hardware, provided models and gave impetus to the birth and growth of later complementary segments, such as books. Notably, few of the mass discount retailers expanded into the specialty discount retail segments, judging that the specialized segments required different skills than those they needed

to compete in the mass discount core of the industry. Equally notably, the one mass discount generalist that undertook a major expansion into specialized discount retailing, Kmart, failed and had exited specialty retail by 1997 after incurring severe losses. The mass discount retailers that focused on adapting to changes within the core elements of the mass discount market, such as Walmart's development of multiline super stores, were much more successful. Although the evolution of the beer and discount retail industries differ on many details, there is an intriguing core similarity on these dimensions.

Before concluding this note, I would like to comment briefly on a more general issue concerning this fit between this paper and trends in strategy research. One recent emphasis in strategy research is to consider strategy as an interaction of multiple causes at multiple levels of analysis. In part, this tendency mirrors trends in disciplines that closely relate to strategy, such as economics and organizational theory. In part, though, researchers working within the tradition of strategic management may be uniquely able to undertake such multilevel and multicausal research.

A historic strength of the strategic management field has been that strategy researchers have been willing to study subjects that cut across existing conceptual boundaries. The fundamental questions of strategy research, concerning why businesses act and how those actions affect business performance, involve multiple causes. The causes are often idiosyncratic to particular businesses. They often involve many levels of analysis, including individual managers, intraorganizational groups, organizational routines, business and corporate units, interorganizational business alliances and social relationships, vertical and horizontal industry relationships, market boundaries, and societal forces. This disorderliness grates on many research norms and, perhaps as a result, researchers in many established fields have shied from addressing these kinds of issues, preferring instead to focus on small elements of business strategy that stem from more discrete causes. Strategy research, by contrast, has been willing to take on the complexity of business, sometimes within individual studies and more generally across the field of strategy research.

In some sense, one can liken the phenomenon of business strategy to an apple, which is delightful to look at and taste, and results from a

complex interweaving of sun, soil, color, scent, texture, and flavor. Many research traditions view the strategy apple as too complicated a subject to study as a whole. Rather than study the apple, one can instead choose to study its seeds, or its scent, or the tree on which the apple matures, or the soil in which the tree grows, or the orchardist who grows the tree, or the people who pick the fruit. Such reductionist approaches are necessary. The studies and fields often provide precise characterizations of their subjects and, in turn, we unquestionably learn much of value about the elements that define the context of the apple. A risk of relying only on reductionist approaches, though, is that we may forget that we are studying apples or, at least, that we may lose sight of the complex interactions that make up the apple as a whole. A deeper risk, which has a central impact on our conceptual understanding of the objects of our research, is that we may mischaracterize the whole by studying only the parts. For instance, an apple will not reproduce itself from its own seeds. That is, if one plants the seeds of an apple of which one is particularly fond, a tree bearing the same type of apple will not emerge. If a tree grows at all, it may bear wizened fruit or no fruit, or very occasionally, a delightful product that bears little or no resemblance to its progenitor. If one wants to reproduce a particular type of apple, one must graft its branches to another tree, rather than plant the seed that grew within the piece of fruit. Indeed, the most successful reproduction of apples often involves using root stock from different types of fruit altogether, such as plum trees. Moreover, the appropriate rootstock varies drastically depending on local temperature, light, and soil. Thus, if one studies only the seeds of an apple or the tree on which a particular apple grows, one can reach little understanding of how that apple came into being and even less understanding of how to reproduce it. The strength of the strategy research literature is that it has been willing, as a field, to study the complex and disorderly phenomenon that is the strategy apple.¹

At the core, then, a grounding in strategic management is a reflection of the idea that one needs something other than extensions of traditional theories of market and social environ-

ments, social organizations, or individual behaviors to understand the determinants of firm performance. Instead, one needs perspectives that focus on how the intersections among individual, organizational, and environmental incentives produce the entities that we recognize as business organizations and the activities and performance that we recognize as business strategy.

Nonetheless, despite the real strength and value of the strategy literature, its disorder is sometimes a weakness. Perhaps most centrally, it is sometimes difficult to generalize beyond the bounds of a single research study or a small set of studies because of fundamental differences in the structure of strategy research studies. As a result, to introduce another analogy from the physical sciences, many well-crafted and insightful pieces of research become single beacons casting beams of light through lenses with individual shapes, focal lengths, and filters. The resulting kaleidoscope of overlapping colors offers observers a wonderful pastiche of images and may provide precise characterizations of individual business circumstances. The kaleidoscope of images, though, sometimes provides too little of a general recognizable picture. The field of strategy research would offer clearer contributions if the field provided more generalizable methods and results that help us understand why businesses undertake actions and how the actions affect business performance outside the precise context of individual research studies.

The challenge for the field of strategy research, then, is to increase its generalizability while retaining its willingness to address the disorderly multilevel and multicausal phenomena of business activity and performance. This is a substantial challenge, to put it mildly. Meeting the challenge will require many conceptual arguments and many sets of research studies.

Anand Swaminathan's study of segmentation in the brewing industry offers an example of one approach to this challenge. The study has an underlying causal argument about firm capabilities that closely aligns with many current arguments in what is becoming known as the resource-based view of the firm. In addition, though, the study suggests some of the ways in which such idiosyncratic firm-specific capabilities can interact with industry-level factors to influence business activity and industry evolution. In doing so, the study offers one example of how researchers

¹ I appreciate Rebecca Henderson's comments concerning an earlier version of this analogy.

can generalize the implications of firm-specific capabilities for business strategy.

This study provides specific insights concerning the process of industry evolution and a useful example of how to carry out generalizable research about idiosyncratic firms. The initial results of the paper support the view that industry segmentation often results from exogenous changes in factors such as tastes, tech-

nology, and regulation. Further analysis of the results then reveals a more complex process in which exogenous environmental change, endogenous industrial change, and firm capabilities interact to shape industry evolution jointly. The results and the underlying arguments mesh nicely with current strategy research, while providing conceptual and empirical approaches to extending that research.