STRATEGIC RESPONSES TO MULTIPLE DIMENSIONS OF LOW-COST-COUNTRY COMPETITION

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Abstract:
This paper presents theoretical and empirical analyses of strategic responses to competition from low-cost countries (LCCs). Surveying 423 firms in the U.S. and Germany, we consider the nature of low-cost competition and strategic responses by advanced market incumbents. The theoretical framework develops multiple dimensions of foreign competition, i.e. intensity and quality, and introduces three new strategic responses, relocation, avoidance and deterrence. The results strongly support the hypotheses that firms employ relocation, avoidance, and marketing differentiation strategies when LCC competition rises. As LCC product quality increases, firms increasingly use relocation strategies but reduce their reliance on avoidance and market differentiation.

Running headline: Multiple dimensions of LCC competition

Keywords: Import penetration, low-cost countries, business strategy, product quality

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INTRODUCTION

Over recent decades competitors from low-cost countries have made considerable inroads into advanced economies. While the footwear and textile industries were among the first to experience pressure from low-cost imports sourced in less-developed countries such as China (Bernard, Jensen, and Schott, 2006), other industries have become increasingly threatened lately as well. From 1997 to 2002 manufacturing imports into the U.S. from low-cost countries grew faster than overall imports, averaging 10.7 percent per year, and by 2002 accounted for 9.2 percent of total U.S. consumption (ASM, 2005; USITC, 2005) [see Figure 1][1]. The distribution of low-cost imports across industries varies widely, but recent trends suggest that new industries such as home appliances, furniture and communication equipment are facing substantial competition from developing country imports and that other sectors are not far behind. In spite of this wave of competition from new locations around the world, the nature of the low-cost competition and the strategic responses of domestic producers remain relatively unexplored.

This paper develops a theoretical framework and empirical analysis of strategic responses to competition from low-cost countries (LCCs).[2] Our theoretical work is the first to emphasize multiple dimensions of foreign competition, i.e. quality as well as intensity.

[1] The second form of competition with low-cost countries is through foreign direct investments (FDI) but is of negligible magnitude: the import share of low cost countries of total imports is 31.2% (USITC, 2005) while FDI from low-cost countries account only for 2.1% of total inflows (BEA, 2005).

[2] For the purposes of our study we define low-cost countries (LCCs) to include Brazil, China, Czech Republic, Hungary, India, Indonesia, Malaysia, Mexico, Philippines, Poland, Rumania, Russia, Slovakia, Thailand, Vietnam

We also expand the set of potential strategic responses in light of the unique nature of low-cost-country competition. Using original surveys of more than 400 firms in two advanced economies we consider both the nature of low-cost competition itself as well as the responses by advanced market incumbents. The empirical results yield strong support for the existence of at least two dimensions of competition from low-cost countries. We also find that the choice of strategic responses depends both on the intensity and the quality of competition from low-cost countries.

The idea that international competition as one environmental factor affects strategic behavior is as old as the strategy field itself (e.g., compare Andrews, 1971; Schendel and Hofer, 1979). Research at the industry level suggests that, as foreign competition increases, price-cost margins are negatively effected (Katics and Petersen, 1994; Siotis, 2003), productivity levels rise as weak firms exit (Bernard *et al.*, 2003; MacDonald, 1994), and wages face downward pressure (Revenga, 1992).

These industry-level findings are complemented by observations made on individual businesses. Companies that rely solely on cost reduction/cost leadership strategies in response to foreign competition lose market share and see their relative competitive position eroded (Carr, 1993; Eden and Molot, 1996). In contrast, companies that respond by exploiting comparative advantage through international sourcing activities and differentiation strategies are able to maintain or even increase their competitive strength over foreign rivals (Kalafsky and MacPherson, 2003; Langlois and Steinmueller, 2000).

Much research has been conducted strategic responses to domestic low-cost competition, both conceptual (e.g. Porter 1980, 1985) and empirical (e.g. Campbell-Hunt, 2000). When facing domestic low-cost competition scholars have pointed out that market incumbents need to carefully analyze their new rivals, identify their source of competitive

strength, and adapt their strategies accordingly (Kumar, 2006). When a low-cost entrant reduces average profit margins within an industry, companies respond by differentiating their products, cutting prices, or doing both at the time (Spanos, Zaralis, and Lioukas, 2004). However, low-cost-country competition differs significantly to domestic low-cost competition in at least two aspects. First, replicating the cost structure of a low-cost-country rival is in many cases impossible to achieve for an incumbent located in a high-cost country. High domestic labor costs, tight national regulations, and rigid organizational structures reduce the flexibility and choice of strategic responses to low-cost-country competition. Second, and potentially even more important, low-cost-country competition embodies a dimension of ambiguity and lack of available information that fundamentally differentiates it from domestic low-cost pressure. Imitating the competitive advantage of new low-cost-country rivals becomes more difficult as they operate out of distant markets where reliable information is harder to obtain. Consequently the set and correlations of strategic choices with low-cost competition is likely to be different in the international case.

The strategy literature on foreign competition rarely refers specifically to low-cost-country competition, but rather considers overall international competition that increases the competitive pressure on the home market and reduces market share and profitability (Simon, 2005). However, competitors from low-cost countries differ from their advanced country counterparts as they typically benefit from low wages and from low input costs more generally, i.e. endowment-based comparative advantage, which they transform into competitive advantage for challenging advanced country markets (Kogut, 1985).

Strategic responses to low-cost country competition differ from those triggered by international competition in general. Low-cost countries are characterized by lower factor

costs, especially wages for less skilled workers. These factor costs are low even after adjusting for the lower productivity typically found in emerging markets (The Boston Consulting Group, 2004). Market incumbents in the advanced economies face unique challenges in responding to low-cost competitive pressure as standard strategies based on cost reduction are not typically viable. Theories in international management such as the international product life-cycle (Vernon, 1966) or the technological gap theory (Posner, 1961) suggest that competing with less-developed countries is fundamentally different than competing with developed countries. Competition from advanced countries is akin to domestic competition because similar technologies are accessible and factor costs are comparable. In contrast, less-developed countries lack access to and experience in the latest technologies but enjoy significant advantages in factor costs. In order to sustain competitive advantage, companies in advanced countries have to consider strategies that focus on technology- and skill-intensive products which are not easily imitated by low-cost-country competitors rather than price-based strategies. The few studies on low-cost-country competition support this idea: companies that face increased levels of low-cost imports move into market segments that require higher skill and capital intensity (Bernard, Jensen, and Schott, 2006; Feenstra and Hanson, 1996) rather than competing directly through cost efficiency strategies with LCC competitors (Grant, 1989).

To date, research on the effects of foreign competition on strategic choice consistently treats foreign competition as having a single dimension. The standard measurement approach usually relies on one variable, e.g. the import share of total consumption, as a proxy for the existence and intensity of foreign competition (Bowen and Wiersema, 2005; Hambrick and Lei, 1985). This is somewhat surprising as studies on domestic market competition often consider multiple dimensions of competition (e.g., Shankar, 1999). In

addition, recent work on the nature of imports from developing countries has emphasized the wide variation in quality across countries at similar levels of development and changes in those quality levels over time (Hallak and Schott, 2005).

In this paper we extend the nature of foreign competition from low-cost countries to not only reflect the intensity of such competition, but also to incorporate the levels of market experience, product quality, and product advantage brought to the market by firms in these emerging economies. Higher market experience of newcomers has been found to provoke a stronger reaction of market incumbents (Bowman and Gatignon, 1995; Shankar, 1999). Furthermore, true competitive advantages achieved through higher entrant product quality and product advantage facilitate entry and lead to higher market shares (Gatignon, Weitz, and Bansal, 1990).

Competitors from low-cost countries may exhibit a wide range of experience and product quality. Subsidiaries of advanced country multinationals will be closer to the leading edge of technology and experience, while domestic low-cost exporters, such as state-owned enterprises, may be at the low end of experience, quality and product advantage. We develop a multi-dimensional measure of low-cost competition to capture both the intensity of competition as well as the characteristics of the competitors themselves.

Despite the increasing relevance of low-cost-country competition, it has drawn little attention within strategic management research. This is the case even though international management theories suggest that competing with low-cost countries is fundamentally different to international competition in general (e.g., Vernon, 1966). We extend existing theoretical work on strategic responses to international competition by focusing on the increasingly important case of low-cost countries. In particular, we extend the range of

strategic responses by incumbent firms in several directions. We augment the general cost leadership strategy to include relocation of production processes to LCCs by the incumbents themselves. We also add two new elements to previous work on environmental strategies, avoidance and deterrence. Firms may seek to change their environment through avoidance by switching to skill-intensive or capital-intensive products that face less direct competition from LCCs. On the other hand, deterrence strategies seek to prevent LCC market entry in the first place through pricing strategies or government action.

We test the predictions of the theoretical framework on survey data from 423 U.S. and German firms. We find that both intensity and quality dimensions of LCC competition are important in determining strategic choices. Increases in the intensity of LCC competition are associated with greater use marketing differentiation, avoidance, relocation and deterrence strategies. However firms are less likely to employ production differentiation and avoidance strategies when the quality of LCCs imports is high. Instead they increase their relocation of the production processes to the LCCs themselves.

THEORY AND HYPOTHESES

A key aspect of the analysis of a firm's strategy is the interaction between the strategic choice and its environmental context. Strategy scholars have found that operating in a global industry context is an important element in determining the organizational-environmental fit (e.g., Hambrick and Lei, 1985; Hamel and Prahalad, 1985; Porter, 1986; Venkatraman and Prescott, 1990). For domestic firms facing global competition, industry

imports impose an additional competitive challenge that differs from purely domestic competition (Ghoshal, 1987).

Though import competition is only one of a number of critical contingencies identified by Hambrick and Lei (1985), it corresponds to the comprehensive classification schemes frequently applied to the description of the environment. Import competition comprises uncertainty (Duncan, 1972; Lawrence and Lorsch, 1967) as well as complexity and dynamism (Dill, 1958; Duncan, 1972; Thompson, 1967). The degree of uncertainty is increased by foreign competition because it can present significantly different sources of competitive advantage, e.g. endowment-based comparative advantage in the case of low-cost-country competition (Kogut, 1985). Furthermore, foreign sources of competition that significantly fluctuate over time increase the complexity and dynamism of the firm's environment. Khandwalla (1976) shows that, when managers perceive their environment as uncertain and dynamic, their strategies are more comprehensive or multifaceted, suggesting that import competition will play a major role in determining strategic actions.

Our overall theoretical framework builds upon the concept of dynamic fit, i.e. that environment and strategy interact in a dynamic coalignment process (Miller, 1988), with resulting performance implications. Even though in this paper we do not explicitly consider performance implications of this process of dynamic fit, we implicitly assume that firms adjust their strategy in response to increased low-cost-country competition in order to maximize subsequent economic performance. In developing our hypotheses for the interaction between low-cost country competition and strategic responses, we draw upon the predictions made by both resource-based and strategic choice theories.

According to the resource-based theory, the competitive advantage of a firm draws on its internal resources and competences (Mahoney and Pandian, 1992; Penrose, 1995;

Peteraf, 1993; Wernerfelt, 1984). In this paradigm, a company can be considered as a bundle of resources that makes it unique if the resources are valuable, rare, hard to imitate, and difficult to substitute (Barney, 1991). For firms operating in a highly competitive environment a distinctive strategic orientation is needed, requiring the exploitation of critical resources in order to gain competitive advantage. In case of an environment characterized by low-cost-country competition the resources and competences of domestic firms differ dramatically from those of their low-cost-country competitors. The strategic responses of domestic firms will focus on those competences that are difficult to imitate or substitute. In such an environment, measuring import competition as an aggregate variable reflecting the intensity of low-cost imports can be misleading as it does not capture important dimensions of quality and technology. A preferred approach considers multiple elements of low-cost-country competition, including those that reflect the competences of the foreign firms. In practice we split low-cost-country competition into two dimensions: LCC intensity, a measure that combines elements of the intensity of competition, cost advantage, and market experience, and LCC quality, a measure that reflects the relative product quality and product characteristics of low-cost-country products.

Consistent with the resource-based view, Mintzberg (1973) considers strategy as a pattern stream of decisions which allocate resources to reach consistency between a firm's strategy and its environment. However, in case of inconsistency, strategic choice theory (Child, 1972) suggests two distinct categories of strategic action to resolve this misfit. 'Organizational strategies' refer to situations where companies seek to actively fit their strategies to the existing environment; the environment is perceived as being given, while the strategy can be adapted. Alternatively, 'environmental strategies' aim at manipulating the environment in such a way that fit between strategy and the environment is established,

i.e. strategy is largely fixed while the environment is mutable. Such a change can either be achieved if firms relocate themselves into a more favorable environment or if the environment is actively manipulated in favor of the firm's strategy. In the context of low-cost-country competition, strategic choice theory suggests that companies either can remain in their given environment pursuing a dedicated strategy best suited in response or can decide to change the environment by moving into product segments with little low-cost-country competition or by erecting entry barriers to thwart imports from low-cost countries.

We explicitly incorporate these dimensions of strategic choice theory into our theoretical framework by distinguishing the set of strategies into those that aim to compete with low-cost-country imports directly and those that seek to alter the environment to reduce low-cost-country competition. We build on Porter's typology (1980, 1985) of cost leadership, differentiation, and niche strategy both because this typology has been extensively tested and verified in various country and industry settings and because meta-analysis on generic competitive strategy yields a similar, though more comprehensive, set of generic strategies (Campbell-Hunt, 2000).

We develop a total of six strategies as potential responses to low-cost-country competition. The first set includes 'organizational strategies' that emphasize direct competition with low-cost-country imports. Cost efficiency, product differentiation, and marketing differentiation are standard strategies available to the firms facing all forms of competition. We augment the cost leadership strategy by considering relocation of the value chain to low-cost countries. While firms may undertake relocation in the face of any competitive threat this strategic choice takes on a special role when the threat comes from the LCCs themselves. The final set of strategies corresponds to 'environmental strategies'

and are aimed at changing the existing environment in the face of LCC competition. One type of environmental change involves the avoidance of low-cost-country competition by changing products or industries. A very different strategic choice aims at deterrence of market entry by low-cost-country competitors. We emphasize that these six choices reflect different components of the strategic response available to firms but, for an individual company, they are not mutually exclusive [see Figure 2].

Hypotheses development

In light of the six proposed strategies, we now discuss specific hypotheses about the interaction of firm choices and the multiple dimensions of low-cost country competition. We begin with the expected impact of LCC intensity on each of the six strategic responses and then discuss the second dimension of LCC quality. In particular we highlight those hypotheses where we expect firm responses to vary between the intensity and quality dimensions.

Responses to increased intensity of LCC competition

The underlying rationale of a cost efficiency strategy is to outperform competitors in the same market segment by lowering prices. This strategy is only possible if the costs are kept as low as possible (e.g., Porter, 1985). The very nature of low-cost-country competition, however, is based on lower costs due to the comparative advantage of lower labor costs in final assembly and as well as in upstream component suppliers. The resource-based theory posits if domestic companies try to compete with low-cost-country competitors on price they have to offset the competitive advantage of LCCs, which is only possible if they build upon other resources that substitute for labor, e.g. capital for automation (de Meyer, 1986). But such a substitution is limited to those segments only where product changes are rare and sufficient economies of scales are achievable.

Therefore, a pure cost-reduction strategy alone seems to be of limited effectiveness when overseas suppliers have a substantial cost advantage (Grant, 1989). Nevertheless, studies on foreign competition have consistently shown that import competition negatively affects price-cost margins, thus increasing the pressure on market incumbents to further shed costs.

Hypothesis 1a: Cost efficiency strategies are (weakly) positively related to the level of LCC intensity.

As an alternative component of the cost leadership strategy, a relocation strategy complements the domestic cost efficiency strategy by shifting activities within the firm to low-cost foreign countries. Through the transfer of parts of the value chain to low-cost countries, firms benefit from the same comparative cost advantages as their LCC competitors. According to the resource-based theory such a behavior is best described as imitating the competitive advantage of LCC producers by becoming themselves LCC competitors. Additionally, once a market incumbent has achieved competitive advantage over his domestic rivals through the relocation of production to LCCs, other advanced market firms will feel pressure to follow suit, an behavior referred to as oligopolistic parallel behavior (Knickerbocker, 1973).

Hypothesis 2a: Relocation strategies are positively related to the level of LCC intensity.

Product differentiation strategies strive to create unique products that are not easily be matched by other competitors and thereby alleviate cost pressure on the firm (e.g., Porter, 1985). Companies in advanced countries can develop resources and competences that are difficult for their LCC rivals to imitate. Increased LCC competition drives increased use

of product differentiation strategies in terms of innovation, speed, and offered services to the customer for a variety of reasons. Availability of the latest technology that is crucial for product innovation is more likely to exist in developed countries than in less-developed countries (Lee and Suh, 1998; Posner, 1961). Market knowledge allows domestic companies to be more nimble than LCC competitors at least in the early stages of competition. Only the most advanced LCC competitors will typically be able provide the necessary range of supporting services for advanced products (Zou, Fang, and Zhao, 2003).

Hypothesis 3a: Product differentiation strategies are positively related to the level of LCC intensity.

Marketing as a differentiation strategy is especially interesting in the context of LCC competition because marketing knowledge is an intangible asset not as easily imitated as physical products. Many LCC competitors operate in their home market in 'less marketized' environments (Davies and Walters, 2004) reducing the opportunity to develop organically distinctive competences. LCC competitors sometimes can compensate for missing marketing knowledge by relying upon large wholesalers and international trading companies (Arpan, de la Torre, and Toyne 1981). However, even in those cases, the development of a strong brand identity and customer awareness is a lengthy and costly undertaking. LCC competitors still suffer from the general perception that products from LCCs are inferior to domestic products (Insch, 2003), i.e. the product can be tainted by the reputation of the country of origin.

Hypothesis 4a: Marketing differentiation strategies are positively related to the level of LCC intensity.

Following the strategic choice theory, market incumbents can also avoid direct competition with LCCs by switching into market segments that are less affected. Such a move constitutes a defensive strategy which is only possible if similar but more attractive niches exist in the market. Typically those segments are characterized by higher skill and capital intensity (Bernard, Jensen, and Schott, 2006). In case of increasing LCC intensity, we expect companies to switch their market segment or industry to avoid LCC competition.

Hypothesis 5a: Avoidance strategies are positively related to the level of LCC intensity.

Another strategy focused on environmental change aims to raise market entry costs. In the case of increasing LCC competition, this may take the form of lobbying for tariffs or quotas, a dramatic build-up of capacity, or aggressive pricing. An entry deterrence strategy built upon aggressive pricing and over-capacity may require companies to forgo short-term profitability in the hopes that they may maintain a long term market presence (Porter, 1985). Alternatively companies may attempt to prevent higher levels of LCC competition by calling for national regulation and protectionism through the government (Schuler, Rehbein, and Cramer, 2002).

Hypothesis 6a: Deterrence strategies are positively related to the level of LCC intensity.

Responses to increased quality of LCC competition

We now turn to the interaction of strategic choice and the quality dimension of LCC competition. While greater intensity of LCC competition is expected to be positively

associated with all six strategies, increases in the quality of LCC competition do not have uniform effects across the firm's strategic choices.

Higher quality of LCC competition increases the likelihood of following a cost efficiency strategy. To achieve higher levels of quality, the LCC producers must incur additional costs, such as quality control, scrapping costs for products of minor quality, etc. In this case cost differentials between domestic and low-cost producers will become smaller, making a cost efficiency strategy more viable.

Hypothesis 1b: Cost efficiency strategies are positively related to the level of LCC quality.

With increasing levels of LCC quality it is even more probable that relocation strategies are part of the firm's activities. When advanced market firms decide to serve their domestic market from LCC subsidiaries, one key concern is related to product quality. Domestic companies facing LCC competition will be encouraged to move to LCCs if they discover that imports match domestic quality standards. Additionally, as product quality becomes comparable, the strategic set of responses becomes more limited, exacerbating product differentiation strategies based on quality and thereby shifting the focus to other dimensions.

Hypothesis 2b: Relocation strategies are positively related to the level of LCC quality.

Strategic responses in terms of product differentiation are less clear-cut when LCC quality is rising. One possible response is that market incumbents attempt to keep up with the new competition by further differentiating their products (Robinson, 1988). Conversely, the

advantages of a product differentiation strategy are lower when the quality of LCC competitors is high, suggesting a shift toward alternative strategies.

Hypothesis 3b: Product differentiation strategies are ambiguously related to the level of LCC quality.

For marketing differentiation strategies, again higher LCC quality may lead to positive as well as to negative reactions. On the one hand, if LCC quality is high, incumbents have to respond strongly to neutralize this advantage by establishing brand identities (Shankar, 1999). On the other hand, entry based on high quality has been shown to reduce the effectiveness of marketing differentiation strategies (Shankar, Carpenter, and Krishnamurthi, 1998). Marketing differentiation is more effective if LCC quality is low because it acts to highlight quality in the incumbent's own product. Furthermore, it may be optimal to forgo marketing differentiation strategies when LCC product quality is high as it may draw attention to the quality of the LCC product (Carpenter and Nakamoto, 1989).

Hypothesis 4b: Marketing differentiation strategies are negatively related to the level of LCC quality.

The rationale of adopting an avoidance strategy is to move out of the way of LCC competition by changing the product mix towards more skill and technology-intensive products. The assumption is that the competences of LCC competitors do not allow them to compete in the new products. However, if LCC competitors already are capable of producing at the high end of the quality range, such a strategy does little to change the environment facing the firm.

Hypothesis 5b: Avoidance strategies are negatively related to the level of LCC quality.

In order to prevent entry by LCC competitors, the incumbent firm will want to increase setup and entry costs for the potential market entrant. Preventing initial market entry becomes more desirable for the incumbent when the LCC firm is able to produce products of comparable quality.

Hypothesis 6b: Deterrence strategies are positively related to the level of LCC quality.

In this section we have introduced the multiple dimensions of low-cost competition and expected strategic responses. While greater intensity of LCC competition has a positive expected relationship with the six strategic choices, greater quality of LCC competitors is expected to reduce the emphasis on differentiation strategies and avoidance.

METHODOLOGY

Sample and survey instrument

The information needed to analyze LCC competition and strategic choice is either not publicly available or, when available, does not capture the strategies of interest. As a result, we chose to employ a survey methodology. The survey was conducted among U.S. and German firms in 2005 in six manufacturing industries: furniture, chemicals, rubber and plastics, industrial machinery, motor vehicles and parts, and electro/electronics. These industries were chosen because they had experienced above average import growth from low-cost countries in recent years and thus the surveyed firms were more likely to have made strategic choices in response to LCC imports. For the identification of U.S.

companies we used the online database of Dun and Bradstreet yielding contacts and addresses of 2,263 U.S.-headquartered firms with revenues greater than $30 million. For the survey in Germany, assistance was sought from the respective industry associations after they were briefed on both the subject and the need to provide a sample properly reflecting the industry in terms of company size and ownership. As a result the six industry associations together identified 1,020 companies to be included in the German sample.

Given the relatively large number of firms in the two samples we decided to rely on a standardized questionnaire to be sent out by mail. A preliminary version of the questionnaire was tested onsite among a group of 14 executives. As a result only some minor adaptations had to be incorporated into the questionnaire. In order to control for consistency between the English and the German version of the questionnaire a translation-backtranslation procedure was applied (Brislin, 1970). The final questionnaire was then mailed to CEOs/Presidents/Chairmen of the U.S. firms. We targeted top management positions to ensure that the respondents are involved in long-term strategic decisions and are aware of the external environment facing the firm. In order to improve response rates we followed the propositions by Dillman (1991) and sent out a first reminder two weeks and a second reminder four weeks after the initial mailing. On the basis of follow-up phone calls and undeliverable mail we eliminated 272 companies from the sample. In Germany the industry associations maintained full responsibility for the mailing and data collection processes.

In total 423 usable questionnaires were returned, 213 from the U.S. and 210 from Germany. The effective response rate of 14.0 percent is satisfactory considering the length of the survey and the relatively high level of targeted informants; top management survey-response rates are typically in the range of 15 - 20 percent (Menon *et al.*, 1999). To test for

a potential non-response bias we compared the values of early vs. late-respondents (Armstrong and Overton, 1977). The assumption behind this test is that late respondents are closer to non-respondents than early respondents. For this purpose the sample was split into three equal parts according to the date of response. A t-test applied to the mean values of the dependent variables indicated no statistically significant differences ($p < 0.05$). This finding provides reasonable evidence that non-response bias is not a serious issue.

Table 1 presents a summary of the sample of firms. The four largest industries in the data are industrial machinery, electronics, auto parts, and chemicals, 25, 20, 16 and 13 percent respectively. Furniture and rubber and plastics each comprise smaller shares. 13 percent of firms indicate that they either are not in one of the categories or produce in multiple industries. We apply a χ^2-test to check for industry representativeness of the U.S. and German samples. Both samples appear to adequately reflect the industry composition with p-values of 0.15 and 0.22 respectively.

The respondents are generally high-ranking employees of the firm. 63 percent of the respondents hold a position of general manager or higher and a further 30 percent are vice presidents or above. This high share of top management positions suggests familiarity both with the strategies chosen by the firm and with the environment.

Firms in the sample are actively engaged in foreign markets with 93 percent reporting positive international sales. On average, 29 percent of total sales are outside the home market with 11 percent destined for LCCs. As expected given the selected industries, firms report substantial growth in LCC import competition, averaging 10-15 percent per year over the previous 5 years while LCCs competitors have average market shares of 10-15

percent. In terms of potential competitors, China is viewed as by far the most significant threat.

The multiple dimensions of LCC competition

Unlike previous studies that rely on a single proxy variable for international competition such as the import share of domestic consumption (e.g., Bowen and Wiersema, 2005; Clark and Swayer, 1993; Miles, Snow, and Sharfman, 1993), we allow for a more comprehensive and complex approach. To do so, we draw on the marketing and industrial organization literatures and their analyses of new market entrants. Specifically we focus on the scale or intensity of market entry, entrant's market experience, relative product quality, and relative product advantage (e.g., Shankar, 1999; Song and Parry, 1997). To those four factors we add relative cost advantage, which is crucial in the context of LCC competition. Our measure of cost advantage incorporates the possibility that the lower factor prices in LCCs may be offset by lower productivity levels and high export costs and thus may not translate directly to lower costs.

The measurement of constructs recently has received significant attention (see Boyd, Gove, and Hitt, 2005). Wherever possible we rely on existing and proven scales to construct the latent factors in order to reduce the burden of an overly lengthy questionnaire and to ensure higher reliability. We employ five items specified by Davies and Walters (2004) for the factor focusing on the intensity of market entry by LCC competitors, three items described by Luo and Peng (1999) in measuring market experience, six items proposed by Sweeny and Soutar (2001) to gauge relative product quality, and four items outlined by Song and Parry (1997) to establish product advantage (see Appendix 1 for details of each item). Following the recommendations of DeVellis (2003) for the

development of new scales and after intensive discussions during the 14 pre-test interviews, we develop two new items for the relative-cost-advantage factor.

To uncover the underlying factor structure of the identified items we apply an exploratory factor analysis, using the standard criterion of eigenvalues greater than one in order to determine the number of factors to be extracted (Gorsuch, 1983). As a priori specified a five-factor solution emerges from this preliminary analysis. However, the intensity of LCC competition and relative product quality show by far the highest eigenvalues and account for most of the explained variance. From the factor structure it is apparent that entrant-related factors such as intensity, cost advantage, and market experience are a single set of linked variables while product quality and advantage are a second set of variables related to product characteristics. Therefore we decided to re-run the factor analysis with a pre-specified two factor solution. Appendix 1 shows the results with ten items loading on each of the two factors. Labeling of the two new factors follows the factors that previously showed the highest influence, i.e. LCC intensity and LCC quality respectively. Additionally we apply the conventional criterion coefficient alpha for the assessment of reliability of the measurement (Nunnally, 1978), obtaining values near 0.9, well above the conservative threshold of 0.7 and suggesting good internal consistency.

Strategic responses to LCC competition

The six strategies in response to LCC competition outlined previously constitute the dependent variables in our model. The three generic strategies of cost efficiency, product differentiation, and marketing differentiation are derived out of existing scales while the LCC-specific strategies of relocation, avoidance, and deterrence are newly developed.

Our implementation for the first three generic strategies follows the approach by Miller (1987), incorporating the adaptations made by Johnson (1995), and Davies and Walters

(2004). This approach results in six items describing each strategy as shown in Appendix 2. The relocation strategy is described by five items that remained after the extensive discussion with academic researchers and industry experts.

The second LCC-specific strategy, avoidance, is new in this paper. We create three items to reflect previous work that finds U.S. firms facing low wage competition shift their production into more skill and capital-intensive industries and toward products facing less direct LCC competition (Bernard, Jensen, and Schott, 2006). Lastly, although there is an overlap between the strategy and industrial organization domains, the strategy of entry deterrence is seldom the focus of strategy researchers. The measurement of the entry deterrence factor relies on four items based on studies in industrial organization (Singh, Utton, and Waterson, 1998; Smiley, 1988).

Appendix 2 presents the results of the factor analysis confirming the existence of a six factor structure with all items loading on the constructs as previously specified. In terms of reliability all factors clearly exceed the lower threshold of 0.7 with the exception of entry deterrence. We proceed with the entry deterrence factor as the more liberal benchmark of 0.6 for newly developed scales still holds (DeVellis, 2003).

Control variables

While our interest is on the relationship between the two measures of LCC competition and the six potential strategic choices we recognize the importance of adequately controlling for other environmental factors. While we provide a comprehensive set of control variables to ensure the robustness of results, none of the results are sensitive to the specific controls included. Besides commonly-used industry and country dummies we incorporate a set of nine control variables, six at the level of the industry and three specific to the firm itself, in line with previous research in similar research settings (e.g., Bowen and Wiersema, 2005).

Consistent with the construction of the independent and other dependent variables, we rely on existing scales for the development of industry-level variables and use multiple items in order to reduce measurement errors wherever possible.

Three variables that are consistently cited as environmental variables impacting strategic behavior are market attractiveness, competition intensity, and technological turbulence (e.g., Caves, 1980; Doz, 1980; Hambrick and Lei, 1985; Jaworski and Kohli, 1993). For the measurement of market attractiveness we use five items successfully applied by Davies and Walters (2004) and for competition intensity, as well as for technological turbulence, we refer to the scale promoted by Jaworski and Kohli (1993) with six and four items measuring the respective factors.

The development of measurement scales for the additional three factors of immobility, producer and consumer-related entry barriers is more complex as previous studies either relied on single measurement items in the case of immobility (e.g., DuBois, Toyne, and Oliff, 1993; Moxon, 1975) or scored insufficient reliability values in the case of entry barriers (e.g., Davies and Walters, 2004). We introduce new measurement instruments resulting into two items measuring immobility, four items addressing producer-related entry barriers and three items for consumer-related entry barriers.

The results of the exploratory factor analysis for the multi-item factors are given in Appendix 3 and confirm the a priori specified factor structure. Coefficient alpha values are well above the 0.7 threshold for the three existing scales while values for newly developed items lie above 0.6. Additionally, we include three univariate company-specific measures, company size, foreign sales share, and LCC sales share.

RESULTS

To test the hypotheses on the effects of LCC competition on firm strategy, we use a simple multivariate regression framework controlling for general forms of heteroskedasticity through robust standard errors. Table 2 presents descriptive statistics, mean and standard deviation, as well as the correlations among the set of variables. As we use a principal component extraction that is orthogonally rotated (VARIMAX), all the variables that belong either to the multiple dimensions of LCC competition, strategic responses, or environmental groupings are uncorrelated by construction and therefore their fields are left empty in the correlation matrix. We proceed in two stages, first running a series of regressions with each of the strategic responses to LCC competition as the dependent variable and LCC intensity and LCC quality as the independent variables. In the second stage we add control variables to the regressions including interactions of the main regressors, environmental variables, and company characteristics. All our specifications include industry dummies and a country dummy to absorb industry-invariant components that are not modeled.

In Table 3, results from the first basic set of regressions variables are presented. The measure of LCC intensity is positive and statistically significant for four of the six strategies. The relocation strategy shows the strongest positive correlation among all the strategies in response to increased intensity of LCC competition, statistically significant at the 1 percent level. This finding confirms the expected positive link between LCC intensity and relocation and supports Hypothesis 2a. Similarly, the organizational strategy of marketing differentiation and the environment strategy of avoidance are positively and significantly related with LCC intensity at the 1 percent level, delivering support for Hypotheses 4a and

5a. Entry deterrence also shows the expected positive sign and is statistically significant at the 5 percent level, confirming the prediction in Hypothesis 6a.

However, the predictions of positive correlations between LCC intensity and both cost efficiency and product differentiation are not confirmed in the data, rejecting Hypotheses 1a and 3a. Examining the descriptive statistics for both strategies in Table 2, we find that each of these strategies is widespread among the firms in the sample, with the highest means, 4.3 out of 5, and the lowest standard deviations among all six strategies. Cost efficiency and product differentiation strategies are pursued regardless of the intensity of LCC competition.

The measure of LCC quality is significant for four out of the six strategies. As predicted by the theoretical framework, the cost leadership strategies of cost efficiency (Hypothesis 1b) and relocation (Hypothesis 2b) are each positively and significantly correlated with LCC quality at the 5 percent and 1 percent levels respectively. As predicted by the theory (Hypotheses 4b and 5b), marketing differentiation and avoidance strategies are negatively correlated with LCC quality and are significant at the 5 percent level. Product differentiation shows no significant correlation with the quality dimension of LCC competition, as anticipated in Hypothesis 3b. Finally the measure of deterrence strategy is uncorrelated with LCC quality, rejecting Hypothesis 6b.

The included country dummy indicates that three strategic responses, relocation, avoidance, and deterrence, are significantly more likely to be employed by the U.S. firms than by German firms. Adjusted r^2 values for relocation and deterrence strategy of 0.28 and 0.26 rank highest while there is hardly any explanation in variation for cost efficiency and product differentiation strategies.

Table 4 reports the results from the second set of specifications including interaction terms and an extended set of control variables. The first two interaction terms represent the product of an environmental indicator and LCC quality and LCC intensity respectively. The environmental indicator represents the sum of six individual environmental variables market attractiveness, competition intensity, technological turbulence, immobility, producer-related, and consumer-related entry barriers that are also separately included in the regressions. The second pair of interaction terms stems from the product of the country dummy and LCC quality and LCC intensity. In addition we incorporate three company characteristics, firm size, foreign sales share, and LCC sales share.

The strong message from Table 4 is that the results on the correlations of LCC intensity and strategic responses remain largely unchanged. Relocation, marketing differentiation, and avoidance are all significantly and positively correlated with LCC intensity at the 1% level. The main differences is that LCC intensity is no longer significantly or positively correlated with deterrence strategy. Even with the inclusion of a variety of interaction and control variables we still find support for hypotheses 2a, 4a, and 5a.

For the relationship between LCC quality and strategic responses, the results also remain similar. Relocation is positively and significantly correlated with LCC quality at the 1% level while marketing differentiation and avoidance are negatively and significantly correlated at the 5% and 10% levels respectively, further supporting Hypotheses 2b, 4b, and 5b. However, LCC quality is no longer significantly correlated with cost efficiency once interaction terms and control variables are added to the regressions. The relationship between product differentiation and LCC quality remains ambiguous.

None of the interaction terms that are related to the environment appears to be significant and only two of the interaction terms involving the country dummy and LCC

intensity are significant, and then only at the 10% level. Under intensive LCC pressure, U.S. companies reduce their use avoidance strategies but increase their focused on product differentiation. The country dummy itself again suggests that U.S. firms are more likely to pursue relocation, avoidance, and deterrence strategies. While several significant correlations exist among the comprehensive set of control variables, we refrain from discussing them in greater detail as they do not materially affect the main results. Consistent with the earlier table, the adjusted r^2 values are highest for relocation and deterrence strategies, 0.39 and 0.31 respectively, while regressions for cost efficiency and product differentiation strategies show very low values.

DISCUSSION

This paper breaks new ground by extending the evolving strategy literature on international competition to cover the recent phenomenon of imports from low-cost countries. While international competitors from advanced countries possess characteristics similar to those of market incumbents, LCC entrants vary widely in terms of their product advantage, technological sophistication and product quality. Foreign subsidiaries of advanced country multinationals are often at the frontier in terms of quality and expertise while state-owned enterprises of emerging market countries are typically laggards in terms of both product quality and market experience.

This additional dimension of heterogeneity calls for an expansion of the concept of international competition to include not only the intensity of foreign competition but also its quality. We implement this new paradigm by employing a multi-dimensional factor analysis

of LCC competition allowing for separate roles for relative product quality and relative product advantage from those for intensity, cost advantage and market experience.

Our paper also provides new insight into the strategic choices available to firms when they face competition from low-cost countries. While traditional strategies of cost leadership and differentiation, both marketing and product, are still available to the firm, we introduce three new strategic choices that are relevant in the face of international competition. The relocation of incumbent firm activities to LCCs is an additional component of a cost leadership strategy that allows the incumbent firm direct access to the competitive advantage enjoyed by LCC entrants. Avoidance strategy by the incumbent is a specific form of niche strategy that seeks to minimize direct engagement between incumbents and LCC competitors. The deterrence strategy combines elements of political action and pricing strategy in an attempt to deter LCC firms from entering the market. These additions to the strategy space reflect the different nature of LCC competition in advanced markets.

The theoretical framework provides two distinct sets of predictions on the relationship between LCC competition and firm strategic choice. In the first case, an increase in the intensity of foreign competition, especially from low-cost countries, increases the need for strategic action by the firm. Strategies based on cost leadership and differentiation as well as relocation, avoidance and deterrence are all positively related to LCC competition.

The second area of interaction between LCC competition and strategic responses by the firm depends on the nature of the foreign threat. Competition in the form of higher quality products increases the advantages of cost leadership strategies, especially that of relocation of the value chain to LCCs. In contrast, the value of differentiation is smaller in the presence of high quality LCC competition. The arrival of high quality products from

LCCs makes it more difficult for incumbents to distinguish their own offerings. Similarly, the ability of firms to pursue a niche strategy of avoidance is reduced as more capital and skill intensive products are now directly threatened by LCC competitors.

To test the theoretical predictions of the impact of low-cost competition on firm strategy, we examine the findings of a survey of 423 firms in the U.S. and Germany. Cost efficiency and product differentiation strategies are widespread choices among the firms surveyed, and are largely unrelated to the degree of LCC competition. In contrast, marketing differentiation, relocation, avoidance and deterrence strategies are far less prevalent and are all positively correlated with the intensity of LCC competition. The findings suggest that most firms in these manufacturing industries have already started to pursue cost efficiency and product differentiation strategies. However, only in the presence of high levels of LCC competition are firms widening their strategic set to incorporate the new strategies of avoidance, relocation and deterrence. Remembering that many manufacturing industries in advanced countries are still facing low levels of imports from LCCs, these results strongly suggest that these strategies will be important for an increasing number of firms and industries.

However, we also find important differences across the strategic responses depending on the nature of the LCC competition rather than just the intensity. As predicted by the theory, marketing differentiation and avoidance strategies are less effective, and significantly less often employed, when the incumbents face high quality products from LCC competitors. Instead, relocating the value chain to LCCs takes on increased importance. These results provide an explanation for two recent observations, first that U.S. firms are increasingly relocating parts of their production processes to LCCs, especially China, and, second, that the quality of Chinese imports has been increasing across a

range of goods (Schott, 2006). If the trends of rising levels of LCCs imports and increasing quality continue, the process of relocation will spread to new industries and avoidance and marketing differentiation strategies will be reduced in importance.

This study just begins to address the complex issue of LCC competition and the strategic response of incumbent firms. Due to the cross-sectional nature of the survey, we are unable to adequately assess the performance response to the strategic choices or to the multiple dimensions of LCC competition. The subjective nature of the data suggests the need for follow-up studies using panel data on larger numbers of firms with objective measures of performance and competition.

An important omission from the current work is any focus on the ownership structure of the firm. As indicated by the results on relocation strategies, firms are increasing shifting parts of the value chain to LCCs, either through arm's-length contracting or through ownership of foreign subsidiaries. The rise of LCC imports and the increasing quality of those imports mean that firms' strategic responses and performance will increasing depend on the global scope of their activities.

CONCLUSION

This paper introduces low-cost country competition into the field of business strategy. The unique attributes of LCC competition, i.e. lower factor prices stemming from endowment-based comparative advantage, raise the need for new theoretical frameworks for both measuring competition and for the scope of strategic responses by incumbent firms. Variation in the quality of the imported products from LCCs provides an important new dimension of foreign competition.

The set of strategic responses by the firm is also expanded in the face of LCC competition. Cost leadership strategies can include the relocation of parts of the production chain to the LCCs themselves, while product switching towards more skill and capital intensive products augment the set of niche strategies.

The interaction between the dimensions of LCC competition and firm strategies are clearly seen in the empirical findings. Increases in the intensity of LCC competition are associated with greater use marketing differentiation, avoidance, relocation and deterrence strategies. However firms are less likely to employ production differentiation and avoidance strategies when the quality of LCCs imports is high. Instead they increase their relocation of the production processes to the LCCs themselves.

Import penetration by LCCs is still at relatively low levels in most advanced economies. However, growth rates of LCC imports far exceed those of developed economies and LCCs are increasingly moving into more skill and technology-intensive sectors. As a result of this combination of rapid growth and rising quality levels, a large number of sectors in advanced countries will soon confront a new range of strategic choices.

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FIGURES

Figure 1: LCC import share and LCC import growth in the USA

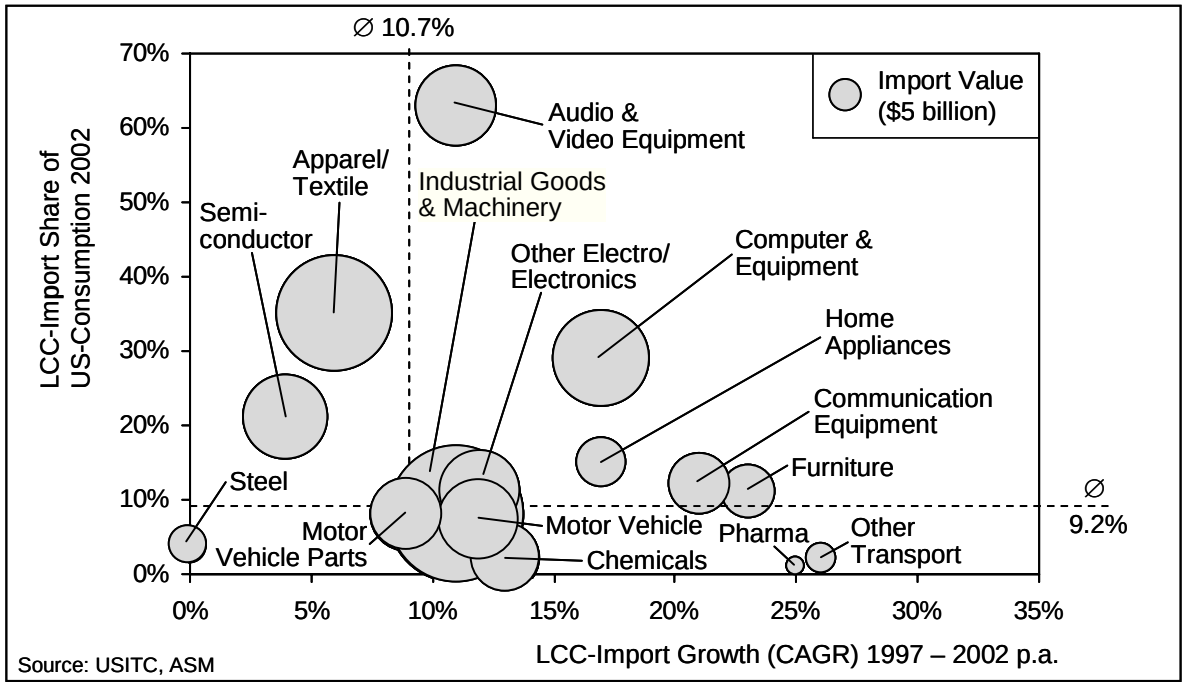

Figure 2: Organizational and environmental strategies

	Strategy	Description	Key references
Organizational strategies	Cost efficiency	Competing on costs through relentless focus on efficiency and max. utilization in operations	Porter (1980, 1985); Hambrick and Lei (1985); Miller (1987)
	Relocation	Competing on costs through exploitation of lower factor costs in LCCs	Moxon (1975); DuBois, Toyne, and Oliff (1993)
	Product differentiation	Creating unique products and product features which are difficult to imitate	Porter (1980, 1985); Hambrick and Lei (1985); Miller (1987); Campbell-Hunt (2000)
	Marketing differentiation	Establishing of a strong brand and exclusive distribution channels to increase customer loyalty	
Environmental strategies	Avoidance	Avoiding direct competition through shifts into segments with higher skill and capital intensity	Child (1972); Bernard, Jensen, and Schott (2006)
	Deterrence	Deterring entry of new competitors through aggressive pricing, excess capacity, and regulation	Porter (1985); Schuler, Rehbein, and Cramer (2002)

TABLES

Table 1: Sample composition

Number of observations	423
USA	213
Germany	210
Industry distribution	
Industrial machinery	25%
Electro/electronics	20%
Motor vehicles and parts	16%
Chemicals	13%
Furniture	7%
Rubber and plastics	5%
Other	13%
Size distribution	
< $50 million	30%
$50 - $99 million	22%
$100 - $249 million	18%
$250 - $499 million	9%
$500 - $999 million	5%
$1,000 - $4,999 million	9%
> $5,000 million	6%
Share of companies with foreign sales	93%
Average foreign sales share	29%
Average LCC sales share	11%
Position held by respondents	
General manager, CEO, president	63%
Senior manager (COO, SVP, VP)	30%
Other	7%
LCCs imports	
growth over the next 5 years p.a.	10 - 15%
import share today	10 - 15%
Threat from selected LCCs over the next 5 years *(1 = no threat, 5 = major threat):*	
China	3.5
India	2.6
Central & Eastern Europe	2.5
South-East Asia	2.3
Other LCCs	2.0

Table 2: Correlation matrix

	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) LCC Intensity	3.165	0.804	1									
(2) LCC Quality	2.724	0.747		1								
(3) Cost efficiency	4.263	0.647	0.081	0.110*	1							
(4) Relocation	2.694	1.181	0.269*	0.359*		1						
(5) Product differentiation	4.251	0.649	-0.001	-0.003			1					
(6) Marketing differentiation	3.274	0.836	0.151*	-0.129*				1				
(7) Avoidance	2.667	1.071	0.187*	-0.099*					1			
(8) Deterrence	2.690	0.785	0.151*	0.048						1		
(9) Market attractiveness	2.378	0.800	-0.076	0.066	-0.049	0.047	0.001	0.188*	-0.006	0.118*	1	
(10) Competition intensity	3.544	0.733	0.327*	0.075	0.103*	0.111*	0.013	0.093	-0.079	0.084		1
(11) Technological turbulence	3.018	0.922	0.006	-0.058	0.083	0.079	0.105*	0.123*	0.124*	0.017		
(12) Immobility	2.960	1.126	-0.074	0.008	0.168*	-0.150*	-0.014	-0.036	0.043	0.248*		
(13) Entry barriers - producer	3.170	0.786	-0.229*	-0.023	0.039	-0.021	0.036	-0.230*	-0.056	-0.071		
(14) Entry barriers - consumer	2.712	0.786	-0.222*	-0.107*	-0.057	-0.091	-0.014	0.317*	-0.076	-0.233*		
(15) Firm size	3.728	2.040	-0.090	0.160*	0.069	0.305*	-0.068	-0.049	-0.083	-0.035	0.098*	-0.018
(16) Foreign sales share	0.289	0.225	-0.104*	0.081	-0.029	0.234*	-0.090	-0.018	-0.110*	-0.157*	0.102*	0.013
(17) LCC sales share	0.117	0.137	0.048	0.085	0.032	0.318*	-0.046	-0.040	-0.055	-0.074	0.023	0.055
(18) LCC intensity - environment	-0.045	0.418	0.044	0.086	-0.010	0.083	0.031	0.089	0.083	0.093	0.051	-0.099*
(19) LCC quality - environment	-0.006	0.486	0.074	0.133*	0.037	0.063	0.001	-0.021	0.036	0.008	-0.064	0.058

	Mean	S.D.	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(10) Competition intensity	3.544	0.733	1									
(11) Technological turbulence	3.018	0.922		1								
(12) Immobility	2.960	1.126			1							
(13) Entry barriers - producer	3.170	0.786				1						
(14) Entry barriers - consumer	2.712	0.786					1					
(15) Firm size	3.728	2.040	-0.018	0.131*	0.080	0.161*	0.008	1				
(16) Foreign sales share	0.289	0.225	0.013	0.157*	-0.137*	0.242*	0.116*	0.397*	1			
(17) LCC sales share	0.117	0.137	0.055	0.087	-0.063	0.121*	0.001	0.236*	0.670*	1		
(18) LCC intensity - environment	-0.045	0.418	-0.099*	0.136*	0.133*	0.020	0.061	-0.015	0.004	0.036	1	
(19) LCC quality - environment	-0.006	0.486	0.058	-0.013	-0.079	0.039	0.029	0.067	0.068	0.042	0.012	1

*Note: Empty cells represent variables that are uncorrelated by construction, i.e. factors created by varimax rotation of a principal components extraction. * significant at 5%*

Table 3: Strategic responses to the dimensions of low-cost competition

	Cost efficiency	Relocation	Product differentiation	Marketing differentiation	Avoidance	Deterrence
LCC Intensity	0.070	0.255	-0.003	0.136	0.159	0.089
	(0.045)	(0.048)**	(0.051)	(0.048)**	(0.052)**	(0.045)*
LCC Quality	0.102	0.321	-0.010	-0.114	-0.120	0.004
	(0.046)*	(0.042)**	(0.048)	(0.048)*	(0.050)*	(0.044)
US dummy	0.077	0.402	0.042	0.092	0.570	0.978
	(0.103)	(0.096)**	(0.108)	(0.103)	(0.100)**	(0.092)**
Adjusted r^2	0.02	0.28	0.00	0.09	0.10	0.26

*Note: Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%; n = 423*
All specifications include industry dummies.

Table 4: Strategic responses to low-cost competition with interactions and moderating variables

	Cost efficiency	Relocation	Product differentiation	Marketing differentiation	Avoidance	Deterrence
LCC Intensity	0.006	0.177	-0.114	0.224	0.287	-0.058
	(0.081)	(0.066)**	(0.080)	(0.072)**	(0.076)**	(0.075)
LCC Quality	0.062	0.284	-0.002	-0.119	-0.134	-0.036
	(0.066)	(0.056)**	(0.072)	(0.058)*	(0.070)+	(0.060)
LCC Intensity - environment	-0.120	0.118	0.034	0.154	0.044	0.128
	(0.099)	(0.099)	(0.138)	(0.099)	(0.132)	(0.118)
LCC Quality - environment	0.035	-0.065	0.016	-0.013	0.129	0.061
	(0.085)	(0.078)	(0.094)	(0.083)	(0.105)	(0.087)
LCC Intensity - US dummy	0.102	0.066	0.176	-0.113	-0.209	0.117
	(0.090)	(0.089)	(0.103)+	(0.089)	(0.108)+	(0.086)
LCC Quality - US dummy	0.105	-0.016	0.021	0.057	0.092	0.025
	(0.098)	(0.086)	(0.102)	(0.090)	(0.103)	(0.087)
Market attractiveness	-0.049	0.001	0.023	0.190	0.004	0.051
	(0.048)	(0.038)	(0.050)	(0.044)**	(0.050)	(0.046)
Competition intensity	0.070	0.027	0.010	0.062	-0.092	0.176
	(0.050)	(0.046)	(0.058)	(0.051)	(0.055)+	(0.059)**
Technological turbulence	0.096	0.019	0.109	0.153	0.141	0.012
	(0.049)+	(0.043)	(0.055)*	(0.045)**	(0.050)**	(0.045)
Immobility	0.144	-0.187	-0.029	-0.074	-0.006	0.119
	(0.055)**	(0.044)**	(0.052)	(0.044)+	(0.054)	(0.045)**
Entry barriers - producer	0.065	-0.010	0.057	-0.124	0.048	0.021
	(0.052)	(0.042)	(0.057)	(0.048)**	(0.052)	(0.041)
Entry barriers - consumer	-0.008	0.002	-0.001	0.341	-0.004	-0.160
	(0.055)	(0.041)	(0.060)	(0.046)**	(0.052)	(0.047)**
Firm size	0.013	0.103	-0.033	0.015	-0.035	-0.037
	(0.028)	(0.023)**	(0.031)	(0.023)	(0.027)	(0.024)
Foreign sales share	-0.041	-0.027	-0.063	-0.006	-0.027	-0.031
	(0.032)	(0.027)	(0.039)	(0.032)	(0.030)	(0.029)
LCC sales share	0.051	0.200	0.030	-0.009	0.010	0.015
	(0.043)	(0.041)**	(0.051)	(0.048)	(0.042)	(0.040)
US dummy	0.050	0.492	0.058	0.115	0.536	0.951
	(0.110)	(0.096)**	(0.116)	(0.098)	(0.111)**	(0.096)**
Adjusted r^2	0.05	0.39	0.00	0.27	0.12	0.31

*Note: Robust standard errors in parentheses; + significant at 10%; * significant at 5%; ** significant at 1%; n = 423*
All specifications include industry dummies.

Appendix 1: Multiple dimensions of LCC competition

	Component 1	2
Intensity of LCC competition		
There are a great number of competitors offering products from LCCs.		0.823
Competitors offering products from LCCs act very aggressively on the market.		0.781
Competition with companies offering products from LCCs in this industry is very strong.		0.848
Competitors offering products from LCCs often try to take away our customers.		0.771
It would be easy for our customers to find an alternative supplier offering products from LCCs.		0.729
Relative cost advantage		
Products from LCCs enjoy significant cost advantages in manufacturing compared to competing products.		0.522
Products from LCCs can be sold at lower costs on the national market than competing products.		0.635
Relative market experience		
Competitors offering products from LCCs offer a great variety of products.		0.571
Competitors offering products from LCCs serve a great range of wholesale and retail markets.		0.586
Competitors offering products from LCCs serve a great diversity of customers.		0.632
Relative product quality		
Products from LCCs have a consistently high quality.	0.828	
Products from LCCs are well made.	0.833	
Products from LCCs have an acceptable standard of quality.	0.757	
Products from LCCs last a long time.	0.778	
Products from LCCs perform consistently and reliably.	0.840	
Products from LCCs are of higher quality than the average of competing products.	0.587	
Relative product advantage		
Products from LCCs are at least comparable to competing products in terms of meeting customers' needs.	0.764	
Products from LCCs are at least comparable to competing products in terms of technical performance.	0.768	
Products from LCCs offer features or attributes that are at least comparable to those of competing products.	0.745	
Products from LCCs permit the customer to do a job that is at least comparable to the job permitted by competing products.	0.699	
Eigenvalue and variance explained, %	8.14/28.4%	3.55/24.8%
Coefficient alpha	0.93	0.89

Note: Rotated (VARIMAX) principal component extraction with eigenvalue greater than 3, only loading greater than 0.5 are shown

Appendix 2: Strategic responses to LCC competition

	Component					
	1	2	3	4	5	6
Cost efficiency						
Maximization of plant capacity utilization				0.732		
Optimization of operating efficiency				0.822		
Efficiency in getting materials and components				0.662		
Emphasis on modern plant and equipment				0.702		
Reduction of production costs				0.659		
Relocation						
We procure a large share of components and finished products from LCCs.	0.816					
We produce components and finished products in LCCs.	0.802					
The share of value created in LCCs for our finished product is very high.	0.876					
We can gain a significant cost advantage due to our activities in LCCs.	0.888					
We can gain a great competitive advantage due to our activities in LCCs.	0.871					
Product differentiation						
Creativity and innovation			0.667			
Product customization			0.722			
Rapid product development and adjustment			0.760			
Rapid product introduction into the national market			0.635			
Support and after sales service			0.631			
Speed of delivering products to the customer			0.605			
Marketing differentiation						
Building strong brand identification		0.713				
Spending heavily on advertising		0.825				
Making an intensive marketing effort		0.817				
Developing and deploying innovative marketing techniques		0.794				
Development and maintenance of exclusive distribution channels		0.620				
Control of distribution channels		0.552				
Avoidance						
Products that faced significant competition with LCCs were replaced by products, that face lower levels of competition with LCCs.						0.803
Products that faced significant competition with LCCs were replaced by products, that require a higher skill intensity.						0.871
Products that faced significant competition with LCCs were replaced by products, that require a higher capital intensity.						0.809
Deterrence						
Creating excess capacity					0.615	
Aggressive low-price policy					0.760	
Prices at or below competitive price levels					0.581	
Call for national regulation / protectionism					0.665	
Eigenvalue and variance explained, %	5.6/13.3%	3.9/12.3%	2.7/10.3%	2.5/10.0%	1.8/7.9%	1.3/7.6%
Coefficient alpha	0.91	0.83	0.80	0.78	0.66	0.81

Note: only loading greater than 0.5 are shown

Appendix 3: Environmental variables

	Component					
	1	2	3	4	5	6
Market attractiveness						
Short-term market growth rate (next 3 years) will be high.		0.815				
Long-term market growth rate (next 10 years) will be high.		0.822				
Your industry is at the introductory phase of its life cycle.		0.643				
Prospects for future profits are high.		0.765				
The average industry gross margin is high.		0.693				
Competition intensity						
Competition in our industry is very strong.	0.773					
There are many price wars in our industry.	0.823					
Anything that one competitor can offer, others can match readily.	0.665					
Price competition is a hallmark of our industry.	0.751					
One hears of a new competitive move almost every day.	0.659					
Our competitors are relatively strong.	0.671					
Technological turbulence						
The technology in our industry is changing rapidly.			0.847			
Technological changes provide big opportunities in our industry.			0.787			
A large number of new product ideas have been made possible through technological breakthroughs in our industry.			0.768			
Technological changes in our industry happen quite frequently.			0.861			
Immobility						
The primary products of our industry have adverse transportation economics (weight, volume, deterioration, etc.).						0.841
Geographical proximity of production and sales is very important.						0.851
Entry barriers - producer						
A high industry-specific reputation is necessary for market entry.					0.559	
A high capital investment is necessary for market entry.					0.737	
Switching costs for customers between products are very high.					0.543	
The technological entry barriers are very high.					0.683	
Entry barriers - consumer						
There exists a high aversion towards products coming from LCCs.				0.677		
Brand identity and customer loyalty are widespread.				0.765		
Highly culture- specific advertising expertise is necessary for market entry.				0.668		
Eigenvalue and variance explained, %	5.4/13.9%	3.2/12.9%	1.9/12.6%	1.8/8.4%	1.5/8.1%	1.2/6.6%
Coefficient alpha	0.83	0.84	0.87	0.61	0.67	0.68

Note: only loading greater than 0.5 are shown