



MULTIMARKET COMPETITION

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Abstract: This article provides an introduction to multimarket competition and the research stream that examines it. Multimarket competition occurs when firms meet their competitors in multiple markets and compete with them by coordinating their strategies across those markets. In this article, we present a concise exposition of the theoretical foundations of the literature on multimarket competition and illustrate how empirical research projects are typically designed in this literature. We also provide some directions for future work in this area and discuss implications for research in organization design.

Keywords: Multimarket competition, multimarket contact, mutual forbearance, competitive intensity

It is common for large firms to operate in multiple markets. Multinational firms operate in numerous countries, diversified firms operate in several industries, firms with branch structures operate in various cities, and so on. One consequence of multimarket operations is that firms tend to face the same rivals in a number of markets. Consider, for example, the market overlap between Ford and Renault in multiple countries, Unilever and Procter & Gamble in multiple consumer product categories, or Bank of America and Citibank in multiple cities. These overlaps can be intentional (e.g., to follow a leading firm into a new market) or a consequence of other, unrelated strategic choices (e.g., mergers and acquisitions). Regardless of their origins, multimarket overlaps increase firms' range of possible competitive actions and responses. For example, Ford can respond to a price cut by Renault in Poland with a price cut in Hungary, or Unilever can respond to an aggressive advertisement campaign by Procter & Gamble in toothpastes with a campaign in shampoos. When this is the case, firms may have an incentive to coordinate their competitive actions (e.g., pricing, capacity, marketing) across markets. Consequently, multimarket operations give rise to multimarket competition.

Multimarket competition has increasingly been subject to theoretical and empirical analyses in antitrust, industrial organization, and strategy research due to its important implications for both theory and practice. Antitrust research has pointed out that "extended" strategic interdependence among large firms can lead to collusion, which diminishes consumer surplus to the benefit of firms. In addition, industrial organization economists have acknowledged that multimarket competition can affect firms' optimal choices and market equilibria. Strategy and management scholars, on their part, have been interested in the implications of multimarket competition for firm competitive behavior and performance. The theoretical and practical relevance of multimarket competition has undoubtedly increased in the past decades as more businesses compete across industries, geographies, and product markets.

This article is a primer on multimarket competition (see Jayachandran, Gimeno, & Varadarajan, 1999 and Yu & Cannella, 2013 for reviews). In the following sections, we first describe multimarket competition, the outcomes associated with it, as well as the mechanisms linking multimarket contact to these outcomes. We then discuss the assumptions that underlie existing theory, the unit of analysis, and the key constructs. Building on this foundation, we then illustrate how to design and implement an empirical research project on multimarket competition. We conclude by outlining implications for organization design as well as directions for future research.

HISTORICAL DEVELOPMENT OF THE LITERATURE

Multimarket contact and its potential effects on competition were first discussed in a 1955 paper by economist Corwin Edwards, who previously held senior positions at the Justice Department and the Federal Trade Commission. Edwards studied the rise of large conglomerates, the market power that accrued to them, and the potentially negative consequences this could have on competition. One of the phenomena he described was that when large companies come into contact in multiple markets they may, in response to fear of retaliation, avoid pricing below their competition. Building on Edwards' insight, antitrust economists in subsequent decades began analyzing the consequences of multimarket contact between large firms for economic conduct and social welfare. Specifically, they posited that multimarket contact could lead to reciprocity (i.e., preferential treatment and buying agreements) and extended interdependence (i.e., recognition of strategic interdependence beyond a focal market) between large firms, both of which may have dampening effects on competition (e.g., Adams, 1974; Areeda & Turner, 1979; Mueller, 1971; Stocking & Mueller, 1957).

This research in antitrust laid the foundation for further work by industrial organization economists in the 1970s and 1980s. Their main goal, beyond some elaborations of the theory (e.g., Kantarelis & Veendorp, 1988; Porter, 1984), was to empirically detect whether multimarket (or multipoint) competition led to lower levels of competition as Edwards and others had predicted. The ensuing work on bank holding companies and diversified firms, which was mostly cross-sectional, found mixed support for Edwards' thesis (e.g., Feinberg, 1984; Heggestad & Rhoades, 1978; Scott, 1982, 1991; Solomon, 1970; Strickland, 1985).

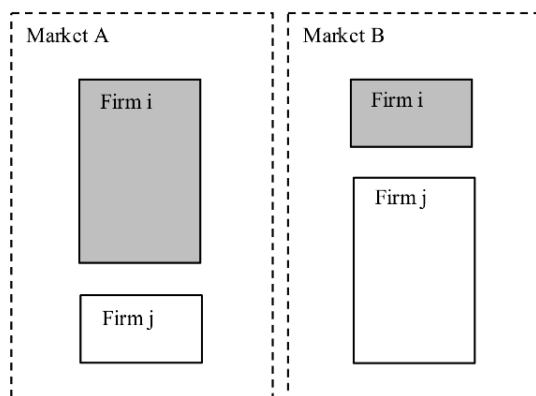
Bernheim and Whinston's (1990) study was a turning point in multimarket competition research. It paved the way for research to go beyond a direct cause-effect relationship between multimarket contact and competitive behavior and to explore the antecedents, consequences, and boundary conditions of multimarket competition. Their game theoretic study showed that multimarket competition resulted in collusion when firms' discount rates were low enough (such that they took into consideration the effect of their actions today for outcomes in the future) and there existed some asymmetry with respect to the firms or the markets (such that firms had an incentive to exercise market power in one market to affect outcomes in another). A stream of work soon flourished around testing the predictions of Bernheim and Whinston's model (e.g., Evans & Kessides, 1994; Gimeno, 1994; Parker & Roller, 1997).

Strategy research began examining multimarket competition in the mid-1980s due to its implications for firm competitive behavior and performance (Karnani & Wernerfelt, 1985; Porter, 1985). Multimarket competition, however, only became a central topic of interest in strategy and management in the mid-1990s, after a series of empirical studies began exploring the effects of multimarket competition (e.g., Gimeno & Woo, 1996; Smith & Wilson, 1995). Since then, an increasingly sophisticated literature has emerged around the empirical examination of the antecedents and consequences of multimarket competition, as well as the factors that moderate the relationship between multimarket competition and firm competitive behavior and performance, such as economies of scope (Gimeno & Woo, 1999) and the degree of strategic similarity between firms (Fuentelsaz & Gómez, 2006).

MULTIMARKET COMPETITION AND THE MUTUAL FORBEARANCE HYPOTHESIS

In its simplest form, multimarket competition can take place when two firms (Firm *i* and Firm *j*) compete with each other in two markets (Market A and Market B). If Firm *j* takes a competitive action in Market A and, for instance, cuts its price, Firm *i* can respond in Market A, in Market B, or both. In the example of Ford and Renault described earlier, Ford could respond to a competitive action by Renault in Poland by taking an action there or in any of the other markets in which it competes with Renault. Yet, for such competitive spillovers to occur, the appropriate incentives for the firms must exist. More specifically, a multimarket firm is likely to respond to competitive actions by its rivals in a focal market with actions in another market, only if the cost of the response is lower and the damage to the competitor is higher than responding directly in the focal market.

This is especially likely to be the case when the focal market is important to the firm. Then, escalating competition in the focal market can be particularly detrimental to the firm's performance. On the other hand, if there are other markets that are important to the firm's multimarket rivals, but relatively less central to the firm itself, escalating competition in those markets will be less costly for the firm but particularly detrimental to its multimarket rivals. Consider, for example, multimarket contact between Firm i and Firm j as depicted in Figure 1. Firm i has a dominant market share in Market A, which accounts for a large amount of its revenues. Similarly, Firm j has a dominant market share in Market B, which accounts for a large amount of its revenues.



This figure shows two firms, i and j, competing in two markets, A and B. The rectangles depict the size of each firm's market share in terms of sales volumes, such that Firm i is the dominant player in market A while Firm j is dominant in market B.

Fig. 1. A simplified depiction of multimarket competition with asymmetric and reciprocal market positions

Suppose, in this setup, that Firm j lowers its price in Market A. If Firm i responds by cutting its price in that market, leading to an escalation in competition in Market A, it risks losing a large amount of revenue due to the large stake it has in that market. If, however, Firm i responds by cutting its price in Market B it does not risk losing as much revenue because it has a smaller market share there. Furthermore, cutting the price in Market B will particularly hurt its rival, Firm j, because Firm j obtains most of its revenues there. Therefore, it is optimal for Firm i to respond to Firm j's price cut in Market A by cutting its price in Market B. As a result, competitive behavior 'spills over' from Market A into Market B, resulting in higher competition in both markets to the detriment of both firms.¹ In anticipation of this sequence of actions, multimarket firms are likely to refrain from acting competitively (e.g., they avoid undercutting their rivals) in markets where they meet other multimarket competitors. This leads to an overall reduction in the intensity of competition and an increase in average profitability. This outcome of multimarket competition is a form of tacit collusion, known as 'mutual forbearance.'

It is worth stressing that the mutual forbearance hypothesis predicts a decrease in the intensity of competition, which leads to an increase in profitability. In a loss-making industry, this might mean that mutual forbearance leads to lower losses, not necessarily to positive profits. High multimarket contact alone, therefore, does not make a structurally challenging industry profitable. Otherwise, industry-wide losses would be incorrectly interpreted as an absence of mutual forbearance.

¹ Suppose that Firm i (instead of Firm j) initiates the competitive action in Market A and lowers its price there. Firm j could respond by cutting its price in Market A, in Market B, or both. However, it has no incentive to cut its price in Market B because that would be more costly, since Market B is where Firm j obtains more of its revenues, and it would not elicit intended competitive reaction from Firm i, because the effect on Firm i would be small. Therefore, Firm j's response will be confined to Market A. As a result, although in this scenario Firm i and Firm j compete with each other in multiple markets, there will be no competitive spillovers across those markets.

Assumptions

Research on multimarket competition, and in particular the mutual forbearance hypothesis, rests on a set of assumptions. First, *firms are assumed to sell competing products and/or services in oligopolistic markets*. If firms do not sell competing products, they will not be affected by each other's competitive actions and will not be direct rivals in the same market. Moreover, it is important that the markets in which they compete are oligopolistic. In oligopolistic markets firms can affect and are affected by each other's competitive choices (such as price, quantity, or quality). By contrast, in a perfectly competitive market (i.e., a market in which a large number of firms with equal market shares sell identical products), mutual forbearance will not take effect because no firm will be able to affect the market's equilibrium price and thus affect the profit maximizing choices of other firms. This is why, in some early works, multimarket competition was aptly referred to as 'linked oligopoly.'

Second, *firms are also assumed to be able to observe each other's competitive actions*. This is because, for mutual forbearance to take place, firms should be able to detect and punish (i.e., cause financial damage to) rivals that take aggressive competitive actions. This ability to respond to a rival's action depends on being aware that the action took place. Although some actions (such as market entry or exit) are easily observable to rivals, other actions (such as pricing) may not be. The observability of competitive actions is affected by a number of factors, including the lumpiness of orders, number of buyers, and volatility of demand. Multimarket overlaps can also help detection because the more firms interact with each other across markets, the more information they will have about each other and, due to increased familiarity, the better they will be able to interpret the available information.

Third, *firms' positions and interests differ across the markets in which they compete*. Multimarket operations give rise to multimarket competition when cross-market retaliation is more effective (i.e., as we discussed above, it is less costly to the focal firm and more damaging to the rival) than within-market retaliation, or when collusive outcomes in some markets can be achieved only by the pooling of competitive actions across the markets.² Therefore, for multimarket competition to take place, firms should have an incentive to transfer enforcement power from one market to another.

Fourth, *firms must be able to coordinate their strategic actions over markets*. If firms could not coordinate competitive decisions across multiple markets, but rather made decisions based only on within-market dynamics, they would be unable to recognize the potential for competitive spillovers across markets. Consequently, they would fail to optimize multimarket objectives, which could result in suboptimal performance. For example, by pursuing an attractive opportunity to increase its share in a given market a firm might be profit-maximizing at the market level, but the net benefit to the firm may actually be negative if this action also causes competitive escalation in other markets in which it operates. For mutual forbearance to take place, firms must possess the ability to act in a coordinated fashion over multiple markets.

Unit of Analysis

In studies of multimarket competition, the link between multimarket contact and outcomes (typically competitive intensity or performance) can be analyzed at one of three possible levels: (1) the firm-dyad level, which conceptualizes the variables of interest as properties of the relationship between two firms; (2) the firm-in-market level, which conceptualizes the variables of interest as properties of each individual firm within a market; and (3) the market level, which conceptualizes the variables of interest as aggregates for a market (Gimeno & Jeong, 2001). For example, the intensity of competition can be conceptualized at the firm-dyad level (e.g., entry and exit of dyads of firms into each other's markets, as in Baum & Korn, 1999), the firm-in-market level (e.g., number of competitive actions taken by a firm

² Cross-market retaliation becomes more effective than within-market retaliation when differences in market positions, costs of production, or technology give rise to "spheres of influence." Firms' incentives to collude in some markets may increase when variation in factors such as growth rates, response lags, or demand fluctuations across markets may cause firms to give more weight to future outcomes in other markets (e.g., potential future losses in high-growth markets may outweigh short-term gains from increasing competition in slow-growth markets). See Bernheim and Whinston (1990).

in a market, as in Yu et al., 2009), or the market level (e.g., industry price-cost margin, as in Strickland, 1985).

In deciding the unit of analysis of a study, the general rule of thumb is to pick a unit of analysis that allows a reliable estimation of the dependent variable while capturing the causal effect theorized. Although any of the three levels of analysis described above can be used, they imply different theoretical mechanisms. Defining multimarket competition at the market level implies mechanisms that vary across, but not within, markets, whereas defining it at the firm-in-market level implies that the effects of multimarket competition can propagate differently across firms within a market. Thus, the research question dictates the unit of analysis. This choice then affects the conceptualization and measurement of explanatory factors.

In parallel, the granularity of available data determines the unit of observation. Therefore it would be improper in an empirical study to theorize at the firm-dyad or the firm-in-market level if the data is only available at the industry level. This implies, for example, that it is appropriate to test the hypothesis that ‘industries dominated by multimarket firms tend to be less competitive’ at the industry level but not that ‘firms tend to be less competitively aggressive when they compete with multimarket rivals.’

Key Constructs

Studies of multimarket competition build on three key constructs: the market, multimarket contact, and the intensity of competition.

Market. Multimarket competition is predicated on the existence of multiple distinct markets. Therefore, it is important to study markets that have a defined product or service and clear boundaries, so that participating firms can be identified. Past operationalizations of markets in multimarket competition research include city-pair airline routes, geographic areas (e.g., cities, counties, or countries), and products or industries as defined by standard classifications.

Multimarket contact. Multimarket contact (or multimarket overlap) captures the extent to which firms meet the same competitors in multiple markets. In its simplest form, multimarket contact is the number of markets in which a focal firm i meets its competitor j . This conceptualization is at the dyadic level because it approaches multimarket contact as a property of the relationship between two firms. However, it can also be aggregated to the firm-in-market and the market levels. Multimarket contact, at the firm-in-market level, is the average number of markets in which focal firm i meets its competitors from a particular market (i.e., the average of the dyadic multimarket contacts with rivals in a market). Market-level multimarket contact is the average of firm-in-market multimarket contact for all firms in the market. These baseline measures of multimarket contact can be improved by scaling them or incorporating weights.³ Gimeno and Jeong (2001) provide a comprehensive description and evaluation of measures of multimarket contact.

Outcome: intensity of competition. Studies of multimarket competition are typically interested in explaining the effect of multimarket contact on the intensity of competition (although there are studies that explore other outcomes, in particular firm performance or industry profitability). Intensity of competition refers to the extent of competitive actions, such as price cuts, new product introductions, advertising campaigns, and service improvements, that firms in a market engage in. Three approaches have been used in the empirical literature on multimarket competition to measure the intensity of competition: entry or exit, pricing, and, more recently, the number and type of competitive actions (or reactions). Alternative operationalizations of the intensity of competition include measures such as expenditure on marketing or R&D, but use of these measures is often constrained by data availability.

³ Scaling the number of contacts by the total number of markets in which the firm is present allows the measure to capture the relative salience of multimarket contacts to the focal firm. In addition, introducing weights allows for contact in certain markets to matter more than in others. Typically, market sales or share are used to weight contact. That is, contact in markets that account for a large share of the focal firm’s revenues would be given more emphasis.

DESIGNING EMPIRICAL RESEARCH ON MULTIMARKET COMPETITION

In this section, while keeping in mind the theoretical foundations laid out above, we turn to a more practical question: how to design and implement an empirical research project on multimarket competition. To illustrate this process, we use as the basis of discussion an early paper by Evans and Kessides (1994), along with the work of Baum and Korn (1999), Gimeno (1999), Greve (2008), Sengul and Gimeno (2013), and Yu, Subramaniam, and Cannella (2009).

The Research Question

What constitutes a legitimate research question in a research stream depends on the timing of the study and the state of the literature, which continuously evolves as new studies address one gap or another. Nevertheless, we can identify three broad approaches to crafting an empirical research question on multimarket competition.

The first approach is to test the main theoretical model of multimarket competition. Early empirical studies on multimarket competition focused on testing the effect of multimarket contact on performance. After successive studies had explored the link, the attention shifted to testing and verifying the underlying causal mechanism. In principle, the model can be tested by focusing on different slices of the causal chain linking multimarket contact to performance. It is possible to explore, for example, whether multimarket contact increases the degree of mutual awareness among competitors, or, as in Evans and Kessides (1994), whether multimarket contact weakens price competition.

The second approach is to assess the validity and boundary conditions of the assumptions that underlie the theory and which were outlined in the previous section. For example, building on the assumption that firms' positions and interests differ across the markets in which they compete, Gimeno (1999) explored whether airlines use their presence in markets that are important to their rivals to reduce the intensity of competition with those airlines in their own important markets. Another example of this approach is Sengul and Gimeno (2013), who explored the boundary conditions of the assumption that firms can coordinate their strategic decisions over markets by studying how firms manage multimarket competition when full centralization of decisions is not feasible, as is the case with multi-industry firms.

The third approach to conducting research projects involves extending the theory beyond its traditional boundaries. This can be done by bringing in alternative theoretical lenses (e.g., decision-making theory), by exploring the antecedents of multimarket contact (e.g., intentionality), by reconsidering how key constructs are conceptualized (e.g., focusing on R&D or service quality as the outcome variable), or by introducing unexplored but consequential contingencies. Yu et al. (2009), for example, studied multimarket competition across national borders and explored how factors that would be present and visible only in a cross-border setting (such as home-host cultural distance and host-country regulatory restrictions on activities of foreign firms) would affect firms' motivation and ability to mutually forbear.

Setting

Once the research question has been set, the crucial next step is to find a 'suitable' setting, a setting in which it is possible to test the research question posed. For an empirical study of multimarket competition, this implies two conditions. First, the assumptions of the theory (e.g., oligopolistic markets, competing products) should hold in the setting. Or, if the aim is to test the validity and boundary conditions of any of the assumptions, there should be enough variation related to that dimension while other assumptions hold. Second, the relevant data should be available at the market level for each firm across multiple markets. Given the heterogeneity across these markets, ideally the observations will be over multiple periods of time in order to be able to tease out the causal effects.

Although these are well-defined conditions, they are also demanding. Finding a suitable setting has long been a challenge in empirical multimarket competition research. Due to its

exceptional fit and availability of high-quality data, the airline industry has emerged as the most commonly studied setting in this literature (including Evans and Kessides, 1994). The industry is characterized by a limited number of oligopolistic firms, which are powerful enough to affect market prices, and these firms meet each other in multiple markets. They sell nearly identical products (i.e., flying from A to B), and the supply (flights, seats) and price of these products are largely observable to rivals. Importantly, there are good records of these choices, activities, and characteristics – even the price – in a number of sources. The best known of these sources is the U.S. Department of Transportation’s Origin and Destination Data Bank, which contains data on a ten percent random sample of all tickets sold in the U.S. The data on domestic flights are publicly available, along with rich supplementary data (on service quality, traffic, etc.). What also adds to the allure of the airline industry is anecdotal evidence indicating the practice of mutual forbearance in it. As Evans and Kessides (1994: 341) noted, industry experts had long claimed that airlines lived by the ‘golden rule’, according to which “they refrained from initiating aggressive pricing actions in a given route for fear of what their competitors might do in other jointly contested routes.” In Table 1 below, we provide a list of the most commonly studied settings in the multimarket competition literature, along with corresponding data sources.

Table 1. Commonly studied settings and corresponding data sources in multimarket competition research

Setting	Selected Data Sources	Representative Studies
Airlines	Official Airline Guide (North American Edition); US Department of Transportation: Origin and Destination Survey (DB1A), Service Segment Database, Form 41 Reports	Evans & Kessides (1994); Gimeno & Woo (1996); Baum & Korn (1999)
Automobile manufacturing	Automotive News; Mergent; Ward’s Automotive Yearbook; Ward’s AutoWorld	Yu & Cannella (2007); Yu et al. (2009)
Banking	Directory of Members of the Federal Home Loan Bank of San Francisco; Federal Deposit Insurance Corporation’s Summary of Deposits; Office of Thrift Supervision’s Branch Office Survey	Heggstad & Rhoades (1978); Haveman & Nonnemaker (2000)
Cement	Portland Cement Association’s Plant Information Summary; U.S. Department of Interior Minerals Yearbook	Jans & Rosenbaum (1997)
Telecommunications	Cellular Business; Cellular Market Data Book; Cellular Price and Marketing Letter, Information Enterprises	Parker & Roller (1997)
Diversified firms	Enquete Annuelle d’Entreprise; Federal Trade Commission’s Line of Business Program; Fortune’s Plant and Product Directory and Surveys	Scott (1982); Feinberg (1984); Sengul & Gimeno (2013)

Operationalization

The unit of analysis depends on the research question because that defines what is to be analyzed. Evans and Kessides (1994), for example, aimed to explore the effect of multimarket contact on the intensity of price competition, so their study required a unit of analysis at which price competition between firms could be reliably assessed. This could be done by looking at either the market (equilibrium) price or the price charged by individual firms in each market. The former, which would be at the market level, is a reliable unit of analysis when firms sell homogenous products and is less demanding in terms of data needed. The latter, which would be at the firm-in-market level, allows for a more granular analysis and precise prediction when it is possible to control for (observable and unobservable) firm characteristics, even with differentiated products. Thus, the unit of analysis in Evans and Kessides (1994) was the airline-route (i.e., firm-in-market).

As we discussed earlier, every research project on multimarket competition is predicated on three key constructs. The *market* boundaries affect how multimarket contact and market-level controls are measured and hence have to be defined explicitly and carefully. In the

airline industry, markets are conveniently defined as routes between pairs of cities (e.g., between Boston and Philadelphia). This is an appealing measurement of markets because of its clear (geographic) bounds, ease of identification of firms competing in the market, and comparability (substitution) of the products offered by them. The level at which *multimarket contact* is measured depends on the mechanism at which it is hypothesized to influence the outcomes. Evans and Kessides (1994), for example, assumed that multimarket contact affects pricing by changing how the market clears (i.e., how the equilibrium price is set) and measured it at the market level: for each route they calculated the average contact between airlines in that route across all routes. At the same time, it is advisable to choose a measurement that matches the unit of analysis. Subsequent studies of price competition in the airline industry have done so by measuring multimarket contact at the firm-in-market level. Finally, the *outcome* of interest (typically competitive intensity or performance) depends on the research question and the unit of analysis adopted. Evans and Kessides' (1994) dependent variable, for example, was the average price set by an airline on a city-pair route per year because they studied price competition, and their unit of analysis was the airline-route.

Estimation

Evans and Kessides' (1994) study was partly motivated by their improvement over earlier studies in their model specification, which included controls for market share and concentration, as well as firm and market fixed effects. More specifically, using the log of average flight prices as the dependent variable, which helped interpret coefficients as a percentage change (in response to marginal changes in the explanatory variables), they estimated the following model:

$$\ln(\text{price}_{ijt}) = \text{multimarket contact}_{jt} \gamma + X_{ijt} \delta + \mu_i + \varphi_j + \rho_t + \epsilon_{ijt}$$

where i is the airline, j is the route, t is the time period (year), and X_{ijt} is the set of control variables (such as percentage of direct flights, airport and route market shares). The other terms capture airline (μ_i), route (φ_j), and year (ρ_t) fixed effects. Their results showed that multimarket contact had a positive, statistically significant, and qualitatively important effect on price.

The estimation strategy, as in any regression analysis, depends on the nature of the data and the dependent variable analyzed. Categorical and limited dependent variables, for example, are fairly common in the study of multimarket competition. Consider Baum and Korn (1999), who studied the number of entries into and exits from rivals markets (as a measure of competitive intensity), or Greve (2008), who studied firms' sales growth rate in excess of that of the market (as a measure of deviation from the collusive equilibrium). The former study calls for Poisson or negative binomial regression (as the dependent variables are integers truncated at zero) or the latter study for Tobit (as the dependent variable is a ratio truncated at zero). It is also necessary to take into account other methodological complications that may arise, such as heteroskedasticity, multicollinearity, or autocorrelation.

Beyond these general concerns, there are three issues that any empirical examination of multimarket contact should address. First, the effect of multimarket competition on outcomes in a given market should be evaluated in addition to the effect of the structure of that market. Multimarket competition and mutual forbearance are second-order effects that influence outcomes in a given market through their effects on other markets with common rivals. Although this effect has been shown to be salient in certain settings, market structure has a direct and significant effect that should not be ignored. Research designs that do not incorporate market structure variables, such as market concentration, are underspecified and have been shown to produce misleading results on the effects of multimarket contact.

Second, firm scope should be incorporated into the research design. Several studies have documented that multimarket contact is highly correlated with firm scope (e.g., Gimeno, 1999; Gimeno & Jeong, 2001). Therefore, it is necessary to account for possible economies of scope, either by adjusting the measure of multimarket contact for scope or by including a control variable in the model specification.

Third, studies of multimarket competition should be able to account for unobserved heterogeneity in the data through the inclusion of fixed effects, the use of first difference

models, or other model specifications. Although unobserved heterogeneity is a common issue, it is particularly pronounced in multimarket competition studies because of the structure of the data, which capture multiple firms in multiple markets, generally over multiple periods of time. Consequently, results of empirical analyses tend to be sensitive to accounting for this structure. It's for this reason that Evans and Kessides (1994) included firm, market, and year fixed effects in their model specification. When feasible, in studies at the firm-in-market level it is advisable to include firm-in-market fixed effects (see, for example, Gimeno, 1999). Even though the increase in number of fixed effects is taxing in terms of degrees of freedom, it allows for a more conservative estimate that controls better for unobserved heterogeneity at the level at which dependent and independent variables are measured.⁴

IMPLICATIONS FOR ORGANIZATION DESIGN

As multimarket competition entails coordinating competitive actions across markets, a central question of interest is how that coordination takes place. Traditionally, the multimarket competition literature, like most theories of competition in strategy and economics, overlooked this question by treating firms as unitary actors and assuming that all of their strategic decisions were coordinated by a central decision maker. Although this assumption might be valid in some settings (e.g., airlines, banks), in most other settings, such as diversified firms, it is necessary to acknowledge that organizational units in each market should have some degree of autonomy and flexibility to adapt to their local environments. As a result, when designing the relationship between headquarters and subsidiaries, firms must strike a balance between the need to delegate decisions to subsidiaries and the need for coordination of competitive strategies across markets. This tension highlights the importance of organization design in managing multimarket competition.

Evidence of the importance of this tension can be found in Sengul and Gimeno's (2013) study of multi-industry firms and their subsidiaries in France. They found that these firms delegate business-level decisions to subsidiaries while constraining resource commitments by limiting the decision rights and the available resources of subsidiaries. Further, when the organization design was such that subsidiaries' resource allocation was more constrained (i.e., subsidiaries had less discretion and fewer financial resources), the dampening effect of multimarket contact on competitive aggressiveness was stronger.

More broadly, multimarket competition has three main implications for the study of organization design. First, organization design parameters should be assessed at the firm-in-market level when intrafirm negative spillovers, such as those from multimarket competition, are significant. Although it is true that firm and market characteristics affect choices about organization design, each particular unit within a firm and market will have a unique identity, which also affects the design. For example, Universal Music Group's autonomy from its corporate headquarters will be affected not only by its parent firm (Vivendi) and its industry (music publishing), but also by characteristics specific to Universal Music, including its exposure to multimarket rivals.

Second, organization design should embrace the multidimensionality of both design parameters and firm activities. Sengul and Gimeno (2013), for example, showed that headquarters of multi-industry firms imposed varying degrees of control over the decisions of their subsidiaries: some decisions were delegated, some were centralized, and others were negotiated (i.e., the headquarters had punctual control over them). In parallel, Anand, Mesquita, and Vassolo (2009) showed that the effect of multimarket contact differed across exploration and exploitation activities: unlike exploitation, multimarket contact did not lead to mutual forbearance in exploratory activities due to the uncertainty involved in those activities and, as a result, entry and exit were more intense in the presence of multimarket contact. Consequently, it is important to avoid broad-brush assessments of firm activities and one-to-one mappings between them and organization design. Rather, research should discern between different kinds of decisions.

4 For example, ten airlines operating in ten city-pair routes over a period of five years implies that a total of 22 fixed effects should be included ($10 \times 10 + 5$, minus benchmark airline, route, and year) in the regressions in the former approach and 103 fixed effects ($10 \times 10 + 5$, minus benchmark airline-route and year) in the latter.

Finally, it is necessary to take multimarket competition into account when studying organization design in settings where multimarket competition's effect would be pronounced, such as in diversified companies and multinational firms. Studies have only begun examining these effects, thus far demonstrating the importance of multimarket contact in the allocation of decision rights (Sengul & Gimeno, 2013) and managerial characteristics (Stephan et al., 2003). The theoretical and empirical exploration of the link between multimarket contact and other dimensions of organization design, such as organizational structure, compensation, and implicit incentives, however, remains an open area for future research.

FUTURE RESEARCH DIRECTIONS

There is now compelling evidence, thanks to longitudinal research designs that control for sources of unobserved heterogeneity, that multimarket contact tends to lower competition, whether measured as prices, quality, action-response dynamics, or market share stability, and to increase profitability. Existing research has also shown that the relationship between multimarket contact and firm behavior and performance is moderated by a number of contingencies at the firm level (e.g., financial strength, CEO tenure, strategic similarity with competitors) and the market level (e.g., market concentration, government regulations, market growth rate). Yu and Cannella (2013) provide an extensive discussion and a comprehensive review of this literature.

Beyond specific predictions, such as the mutual forbearance hypothesis, a broader contribution of multimarket competition research has been to highlight that firms' operations in different markets might be linked because of competitive reasons.⁵ The study of multimarket competition, therefore, complements established explanations of the connections between firms' operations in different markets. Among others, prior research has elucidated the role of economies of scale and scope (in production, procurement, advertisement, etc.), coordination costs, and internal capital markets.

FUTURE RESEARCH DIRECTIONS

Several questions remain for future research to address. One area for new research is whether multimarket competition differs qualitatively when it occurs in markets that are horizontally or vertically associated. More broadly, extant research has not considered in detail the relationship between the different markets firms operate in. Further, there is need for more work on multimarket competition across industries or product categories. Unlike the majority of research on multimarket competition that defines markets geographically (such as city-pair airline routes), each industry or product category is idiosyncratic and therefore requires some level of autonomy and delegation (Sengul & Gimeno, 2013). Further research in such settings will shed new light on how multimarket competition affects firm behavior.

Another promising area for research is the cognitive mechanisms of learning and signaling across markets. Similarly, issues related to status or non-market sources of power (e.g., ties to the government) have been largely absent from studies of multimarket competition. Examining these factors may provide insight into which firms are more effective in deterring aggressive actions by competitors.

⁵ Competition across markets can be linked not only by opportunities for collusion but also by cost- and demand-based conditions. If the markets in which a firm operates exhibit joint (dis)economies, its choices in one market can affect rivals' strategic choices in other markets (see Bulow, Geanakoplos, and Klemperer, 1985).

Table 2. Different methodological approaches to the study of multimarket competition

Methodological Approach	Representative Studies
Computational modeling	Chang & Harrington (2003; 2004)
Econometric analyses	
Cross-sectional studies	Heggestad & Rhoades (1978); Strickland (1985)
Categorical or limited dependent variables	Baum & Korn (1999); Greve (2008)
Error components (panel data)	Evans & Kessides (1994); Gimeno & Woo (1999)
Event history	Haveman & Nonnemaker (2000); Yu & Cannella (2007)
Experimental designs	Phillips & Mason (1992); Clark & Montgomery (1998)
Game theory	Bernheim & Whinston (1990); Spagnolo (1999)
Network studies	Shipilov (2009); Lomi & Pallotti (2012)
Qualitative analyses	Genesove & Mullin (2001); Ghemawat & Thomas (2008)

Alternative methodological approaches have the potential of contributing to our understanding of the microfoundations of multimarket competitive behavior and its ramifications for firms. Although various approaches have been used in the multimarket competition literature (see Table 2 for an overview), to date some approaches, such as computational models and experiments, have been used only sparingly. For example, Chang and Harrington (2003) used computational models to examine how organizational structure affects learning by the organization and in turn multimarket competition, while Clark and Montgomery (1998) used experiments to study signaling dynamics in multimarket competition. Further, qualitative evidence of multimarket competition has thus far been confined to only a handful of studies that either used case studies to substantiate quantitative analyses (e.g., Ghemawat & Thomas, 2008) or are primarily focused on tangential phenomena such as the formation of cartels (e.g., Genesove & Mullin, 2001). However, qualitative approaches to multimarket competition, whether through the analysis of historical archival data or ethnographic participant observation, hold promise in elucidating the processes through which firms take competitive actions in a multimarket context.

Acknowledgements: We thank Javier Gimeno, Phanish Puranam, and Tieying Yu for helpful comments and suggestions.

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