COMPETITION-DRIVEN REPOSITIONING

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We study competition as an impetus for firms to reposition—to abandon their current positioning strategy and adopt a new one. We predict that as a strong firm moves closer, competition erodes the profitability of situated firms and prompts them to reposition. We expect this effect to be pronounced the greater difference in competitive strength. However, we expect that countervailing forces exist such that the viability of alternative positions and the opportunity cost of abandoning a current position mitigate this effect. Evidence from a natural experiment in China’s satellite television industry supports our hypotheses. This research adds to the existing literature on repositioning, which emphasizes the phenomenon as opportunity-driven, and to the competitive interaction literature, which typically does not distinguish between noncounterattack strategies. Copyright © 2013 John Wiley & Sons, Ltd.

INTRODUCTION

How a firm determines its position relative to competitors is a central question in strategy research (e.g., Porter, 1980; Rumelt, Schendel, and Teece, 1994). Prior research emphasizes the benefits and costs associated with a firm staying close to or keeping a distance from competitors, where distance may be in geographic space or product space (Baum and Haveman, 1997; Chung and Kalnins, 2001; Deephouse, 1999; McCann and Vroom, 2010; Seamans and Zhu, 2013; Semadeni, 2006; Shaver and Flyer, 2000). A firm’s optimal location with respect to competitors is never static, because of competitors’ movements and external market environment changes. For example, in the laser printer industry, incumbent firms in a product segment tended to exit the segment after the market leader Hewlett-Packard entered (de Figueiredo and Silverman, 2007). The literature on such competition-driven repositioning is nascent (e.g., Dobrev and Kim, 2006; de Figueiredo and Silverman, 2007; Gimeno, Chen, and Bae, 2006). We add to this literature by investigating how firms reposition when a dominant firm changes its strategic positioning. In particular, we examine unanswered questions of which firms are more likely to reposition and what environmental conditions are conducive to repositioning.

Our central argument is that a firm repositions when the expected benefit at the destination location is greater than the benefit at the current location. Hence, movements by a competitor that reduce the attractiveness of the firm’s current location motivate repositioning. Moreover, we predict that the impetus to reposition is enhanced when the competitor is relatively stronger. Nevertheless, we expect that there are impediments to repositioning. We predict that repositioning is less likely to occur when customers are concentrated, because a firm has fewer economically viable destination options in that case. We also predict that a firm can face high opportunity costs by abandoning its current location, if it has made large location-specific investments.

Keywords: competitive strategy; repositioning; dominant firm; natural experiment; China

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We test our arguments with a natural experiment in the Chinese national television broadcasting industry. Here, 31 satellite channels compete in the presence of a dominant channel—CCTV—before and after a government policy change that led CCTV to reposition in product space. We focus on firms interacting with a dominant firm, because this context parallels other studies on competition-driven repositioning (e.g., de Figueiredo and Silverman, 2007; George and Waldfogel, 2006) and because early research has failed to detect competition-driven repositioning when firms have comparable abilities (e.g., Greve, 1995). Our results show that moves by the dominant firm that increase competitive pressures on small firms (i.e., when the dominant firm repositions closer to the small firm) cause small firms to reposition their product portfolios in order to differentiate themselves from the large firm. Also consistent with our hypotheses, we find that strong small firms were more steadfast in their product positioning than weak ones and that, in markets where customer preferences are concentrated, firms were more steadfast in their product positioning. We also find support for our prediction that firms with steadier product histories are less likely to reposition, compared to those that tended to switch products, which is consistent with the idea that these firms wish to recoup specific investments that accumulated at a location.

Our study contributes to the literature in four main areas. First, we focus on competition as the motive for repositioning, whereas most of the existing strategy literature focuses on opportunity as the motive. We argue that a distinct theoretical treatment of competition-driven repositioning is needed in order to account for the differences between the mechanisms involved, such as the roles of organizational inertia and vicarious learning. Second, we extend the limited work that has examined competition-driven repositioning (Dobrev and Kim, 2006; de Figueiredo and Silverman, 2007; Gimeno et al., 2006) by hypothesizing incentives and constraints for firms making repositioning decisions. In doing so, we contribute to the extensive theoretical research on positioning in economics and sociology (e.g., Hannan and Freeman, 1977; Hotelling, 1929) by highlighting the dynamic nature of optimal positioning strategy that necessitates firms to undertake repositioning and the specific decision considerations involved, such as abandonment of current positions. Third, we extend existing work in the arena of competitive-interaction (e.g., Chen and MacMillan, 1992; Chen and Miller, 1994; Chen, Su, and Tsai, 2007), which examines counterattack responses to competitive moves. Repositioning is a form of noncounterattack, which typically has not been differentiated from other actions like nonresponse. Therefore, we unpack what has been considered a nonresponse and extend this literature. Fourth, by testing our theory with a natural experiment, we are able to mitigate endogeneity issues, such as unobserved common causes that lead competing firms to reposition with respect to each other. This advances the current literature with clearer identification of the repositioning mechanisms.

**THEORY AND HYPOTHESES**

**Spatial competition and repositioning**

A firm’s positioning with respect to its competitors is an important area of strategy research (e.g., Porter, 1980; Rumelt et al., 1994). Much of the literature analyzing competitive positioning involves spatial competition models, grounded in the economics literature (Hotelling, 1929). In these models, customers have individual preferences about an attribute of a product, and they will buy from the firm that offers the product that best matches their preferences, taking price into consideration. Customers will choose to purchase a product that they prefer less if the price differential for a less-preferred choice is large enough. Understanding this, firms choose their position in the product space with the objective of maximizing profits.

Although insightful, these spatial competition models tend to present a static view of the relationship between positioning and the external environment. However, forces from the external environment can change and firms might reconsider their positioning for two reasons. First, competitors might change their positioning, leading to competition-driven repositioning. Second, the distribution of customer preferences might change because of the introduction of new technologies or new product innovations, leading to opportunity-driven repositioning.

The existing strategy literature tends to focus on opportunity-driven repositioning. This research suggests that firms pursue new opportunities by changing their locations in product space.
Competition-Driven Repositioning

(Asaba and Lieberman, 2011; Greve, 1995, 1998; Semadeni and Anderson, 2010). For example, many radio stations in the U.S. repositioned their music formats between the mid-1980s and the early-1990s because new music genres, such as Soft Adult Contemporary and New Age, had become popular among listeners (Greve, 1998).

The theory on competition-driven repositioning, though less developed, is gaining attention from several streams of strategy literature. For example, recent empirical work based on population ecology—which proposes that a high population density environment diminishes the life chances of firms (Hannan and Carroll, 1992; Podolny, Stuart, and Hannan, 1996)—finds firms are more likely to reposition to another product segment when there is an increase in the number of competitors overlapping their product niches (Dobrev, 2007; Dobrev and Kim, 2006).

In addition, the literature on competitive dynamics also addresses how firms respond to actions by their rivals. Building on the awareness—motivation—capability and the expectancy—valence framework, the theory paper by Chen (1996) and several empirical studies (e.g. Chen and Miller, 1994; Chen et al., 2007) explicate the conditions when a firm is more likely to retaliate against an attack by its rival. Although this literature focuses on actions and reactions (i.e., attacks and counterattacks) between rivals, recent work considers repositioning as a form of non-counterattack response to heightened competition. For example, Gimeno et al. (2006) show that firms are more likely to reduce market overlap with their rivals when experiencing intense rivalry.

Finally, recent empirical studies rooted in industrial organization investigate how movements of powerful firms in product or geographic space influence other firms’ positioning strategies. The study by de Figueiredo and Silverman (2007) of the laser printer industry shows that the dominant firm, Hewlett-Packard, chose to enter segments that it found most favorable and its entry increased the likelihood that existing firms in the segment would exit. Similarly, George and Waldfogel (2006) found that local newspapers reduced the amount of national news coverage and increased local content, subsequent to market entry by the New York Times.

Despite the growing literature on competition-driven repositioning, important questions, such as which firms are more likely to reposition and what environmental conditions are more conducive to repositioning, remain to be answered. In the laser printer industry, for example, de Figueiredo and Silverman (2007) show that while incumbents are more likely to exit a product segment after the industry-dominant firm Hewlett-Packard enters, not all incumbents choose to exit. This finding suggests that repositioning in response to competition is a strategic choice by the firm rather than a universal response. Therefore, a theory on competition-driven repositioning should identify conditions under which incumbents are more or less likely to reposition.

Repositioning as a response to position shift by a dominant firm

In this study we focus our arguments on a position shift by a dominant firm, rather than on firms in general. Dominant firms have production cost advantages (Gaskins, 1971) or quality advantages (Riordan, 1998) and should be better able to choose their preferred positions, compared to nondominant firms. To see this, consider a context where firms are comparable and no dominant firm exists. In this scenario, situated firms may be able to deter firms from repositioning closer to them. Before a firm situates at a potential location, it must ascertain that the expected revenue derived from the customers around the location can cover its costs. With a bounded customer population, there is a cap on the number of firms that a location can support. Once the limit is reached, potential entrants to a location that have similar abilities to those of the incumbents will choose not to situate in the location. Therefore, we do not expect to observe competition-driven repositioning in an industry composed of comparable firms. When there is movement to a new position, it suggests that the market can bear additional entrants and that existing firms would have no reason to relocate.

In contrast, we expect a different outcome if a dominant firm repositions. Should a dominant firm choose to situate at a new location, incumbents at that location may be forced to exit the location. This is because the dominant firm is able to steal customers from the incumbents by lowering the price or raising the quality of the product. In other words, the riddle “Where does the gorilla sleep? Anywhere he wants to” describes the situation well (Carlton and Perloff, 1994: 157).
A new opportunity may arise from changing customer demands (de Figueiredo and Silverman, 2007), technological breakthroughs (George and Waldfogel, 2006), or, as in the case of our study, from relaxation of government regulations. When a dominant firm recognizes a new opportunity, it can leverage its competitive advantage and reposition to a more desirable location. Doing so allows the dominant firm to exploit the new opportunity and reinforce its market leadership (e.g., Ferrier, Smith, and Grimm, 1999).

We expect that such movements by the dominant firm induce competition-based repositioning by the nondominant incumbents. Our prediction is based on the spatial competition literature, which posits that a firm’s ability to apply price or quality pressures on a competitor diminishes as the distance between them increases (Hotelling, 1929). For example, when a small firm offers a product that caters to customers who have a preference that is substantially different from the dominant firm’s offering, these customers will be less inclined to buy from the dominant firm, despite price and quality differentials. Should the dominant firm offer a product that is similar to that of the small firm (i.e., the dominant firm positions closer to the small incumbent in product space), the small firm can mitigate customer loss by repositioning away from the dominant firm in product space. In other words, the small firm can differentiate its offering to mitigate the competitive move from the dominant firm.

Reacting to a threat by a dominant firm is consistent with competitive dynamics research (e.g., Chen and Miller, 1994; Chen, Smith, and Grimm, 1992; Hambrick, Cho, and Chen, 1996) in that we expect a response by the incumbent. Previous research examines such responses as counterattacking, matching actions, and reacting in speedy, repeated, noteworthy or substantive ways. We, however, offer a different prediction because we expect it unlikely that an incumbent can launch a successful counterattack against the dominant firm. For this reason, we predict that incumbents will believe that retaliation is futile and will reposition to differentiate from the dominant firm.\(^1\)

This strategy, which is a form of noncounterattack, mitigates the expected loss of not responding to the dominant firm’s move.

For these reasons, we expect that when a dominant firm shifts its position to a new location, the competitive pressure will rise around that location, which in turn increases the likelihood that nearby firms will differentiate their products by repositioning away:

**Hypothesis 1:** Following a dominant firm approaching their product space, incumbents reposition to differentiate from the dominant firm.

**Heterogeneity among incumbents and the extent of repositioning**

The nondominant incumbents likely differ in cost structure and ability to produce quality and we expect this to affect the degree of repositioning upon the arrival of the dominant firm. The dominant firm can more easily drive away a weaker incumbent than a stronger one. When the dominant firm leverages its cost advantage to lower prices at the new location, the incumbent with highest cost is least able to compete against the dominant firm. Similarly, with better-quality products, the dominant firm can most easily steal customers away from the incumbent that is weakest in producing quality. Therefore, the greater the product cost or quality disparity between an incumbent and the dominant firm, the greater the distance apart is required in order for the incumbent to lessen the competitive intensity (Tyagi, 2000; Vogel, 2008). Accordingly, we expect a weaker incumbent to reposition itself further, compared to a stronger one, in order to generate the necessary distance buffer with respect to the dominant firm:

**Hypothesis 2:** Following a dominant firm approaching their product space, weaker incumbents will reposition to differentiate to a greater extent than stronger incumbents.

**Relocation destination and customer preference concentration**

A key difference between opportunity-driven and competition-driven repositioning lies in the destination location. For opportunity-driven repositioning, the firm observes others adopting a specific

\(^1\)This is consistent with a growing body of literature that highlights how managers’ perceptions of competitors and competition shape competitive actions (e.g., Chen et al., 2007; Kilduff, Elfenbein, and Staw, 2010).
destination location and considers whether or not to follow. In the case of competition-driven repositioning, however, the destination is not identified beforehand. Instead, the firm needs to search for viable locations in the product space. The firm’s latitude to reposition is constrained when fewer viable alternative locations are available (Greve, 1995).

Consideration based on the “availability of alternative locations” issue alone is insufficient, however. Bear in mind that the main driver for repositioning, for both opportunity-driven and competition-driven reasons, is that the firm is better off at the destination location than it is at the current location. For the firm to reposition, therefore, it must find the potential benefit at a destination greater than the benefit at the current location. The benefits associated with staying versus repositioning will also depend on the concentration of customer preferences.

The concentration of customer preferences influences a firm’s benefit calculation in a number of ways. First, a concentrated distribution implies fewer viable locations. When customers are concentrated around a small number of locations in a product space, a firm is less likely to find the product space outside of these locations profitable, which limits destination options. Second, more competitors are likely to have established themselves at these customer-rich locations (Loertscher and Muehlheusser, 2011). Without enjoying a cost advantage as the dominant firm does, the firm will find competing with already situated competitors difficult. Conversely, when customers are evenly distributed, a firm will have a wide range of location destinations to choose from (Anderson, Goeree, and Ramer, 1997).

Besides diminishing the availability and attractiveness of destination locations, a concentrated customer distribution also implies a higher level of attractiveness of a firm’s current location. Given that the dominant firm picks customer-rich locations in which to situate, the firm facing a competition-driven reposition decision currently might be situated at a location with a high customer preference concentration. The abundance of potential customers at the current location increases the attractiveness of the option to stay. Conversely, when the customer preferences are dispersed, the firm’s current location is less attractive, because there are fewer customers to give up, should the firm leave.

Taken together, these factors coherently decrease the firm’s incentive to reposition. We express this as Hypothesis 3:

Hypothesis 3: Following a dominant firm approaching their product space, incumbents will reposition to differentiate to a lesser extent when customer preferences are more concentrated in product space.

Impedance to repositioning

A firm’s incentive to reposition may be lower when the opportunity cost associated with leaving the current location is high. In general, a firm makes investments that it expects will generate future income. If the investments are specific to a location, however, their potential to generate future income will vastly diminish when the firm leaves the location. A common example of such a location-specific investment is product advertisements that aim to raise customer awareness of the firm’s product. If the firm changes its product attributes or portfolio, past advertisement investments no longer can generate future revenue. An example related to the television industry is that channels cultivate audience loyalty by committing to air a particular program at a certain time slot. Time slot shifts can frustrate television audiences and can lead to future revenue loss (Serjeant, 2010). Because returns on such location-specific investments are often cumulative in nature (Dierickx and Cool, 1989), a longer history of commitment by the firm to a product in a market implies a greater opportunity cost. Conversely, if the firm has made recent alterations to its products in a market, the cumulative level of location-specific investment will be lower, and the opportunity cost associated with repositioning will be less. Therefore, we predict the following, Hypothesis 4:

Hypothesis 4: Following a dominant firm approaching their product space, incumbents will reposition to differentiate to a lesser extent when they have demonstrated greater product–location commitments.

By focusing at the firm-market level, Hypothesis 4 is distinct from the concept of organizational inertia which is a firm-level characteristic that constrains a firm’s ability to implement change.
Figure 1. Market shares of top 15 television channels in 2003. Source: China TV Rating Yearbook 2004

(Greve, 1996; Hannan and Freeman, 1984; Reuf, 1997). We elaborate on this distinction in the results and discussion sections.

METHODOLOGY

Research setting and data

The empirical setting of this study is the nationally broadcast Chinese television industry, which consists of the central-government-owned China Central Television (CCTV) and 31 satellite television channels, each owned by a different provincial government television station. These channels enjoy national coverage; their programs are in Mandarin Chinese, as they compete for the national television audience.

In this industry, CCTV is the clearly dominant firm, having “unmatched privileges such as access to information at the national level and huge resources in terms of capital, equipment, and talent” (Chan, 2003: 168). In 2003, at the time of our study, the 14 channels under CCTV generated a combined national television audience share of more than 60 percent; the flagship channel, CCTV1, was responsible for about half of the total CCTV audiences, and the rest were split among the other CCTV channels. In comparison, the most popular competitor, the Hunan satellite channel, yielded less than 5 percent audience share see (Figure 1).

The satellite channels have, from their inception, offered programs that are more commercially oriented than CCTV1, which traditionally served as an important apparatus in disseminating government information to the public (Shambaugh, 2007; Zhao, 2008). The satellite channels are regulated by the State Administration of Radio, Film, and Television (SARFT). SARFT reviews and approves the content of television programs. Television programs are either produced in house by the channel or are acquired from external producers. The channels have autonomy to choose and acquire any programs that have been approved by SARFT. Therefore, even though entrances to and exits from the television broadcasting industry are heavily regulated in China, the channels have freedom to reposition from broadcasting in one programming category to broadcasting in another at any time slot as they see fit.

A central government policy change that restructured the Chinese cultural enterprises and institutions allowed CCTV1 to overhaul its programming lineup.² In May 2003, under this new government policy, CCTV1 increased the amount of popular, market-oriented content that would be available to television viewers. For example, CCTV1 raised the proportion of airtime of television dramas from 10 to 29 percent and

dropped the amount of airtime dedicated to news and talk shows from 34 to 17 percent.

The CCTV1 programming overhaul provides a natural experiment setting that is conducive to our study for the following reasons. First, this setting maps very closely to our theoretical model, in that it consists of a clearly dominant firm and multiple small firms competing for the same target customers. Second, the channels earn the majority of their revenues through commercial advertisements, and revenues are directly proportional to the number of television viewers the channels have. Competition on price is not possible, because the audience does not pay subscription fees to the channels. These exogenous industry features help sharpen the focus on product positioning.

Third, the programming change by CCTV1 came with little lead time in which the satellite channels could prepare. Before the overhaul, the programming at CCTV1 had remained fairly stable for several years (Wang, 2004). Although CCTV1 announced its intention to revamp its programming in February 2003 and there were hints that CCTV1 would substantially increase the proportion of market-oriented content, the details of the new lineups were kept confidential until April 2003. Hence, the event sequence leading to the CCTV1 programming shift allowed us to observe the pre-event positioning strategy for the satellite channels. After the May 2003 programming overhaul, the other CCTV channels did not overhaul their lineups until October 2003. This provides a six-month window of stability in terms of competition from the other CCTV channels for us to evaluate the satellite channels’ repositioning.

Fourth, detailed and reliable data on programming lineups and audience ratings exist. Audience ratings data are collected by CSM Market Research, using the Peoplemeter panel technology. This proprietary dataset is considered very reliable and is widely used by television stations, advertisers, and government regulators in China (Yuan and Webster, 2006). The dataset on programming contained complete daily lineups between 8 a.m. and 12 midnight for 30 satellite channels and for CCTV1 from November 2002 to October 2003. The dataset includes title of show, channel and date of broadcast, start and end time, and the category under which the show is classified.

Spatial distance metric

The distance between two channels is captured by the similarity of the programs they broadcast. CSM Market Research classifies each program into one of 87 categories, such as domestic drama, foreign movies, and weather report. Each channel is located in a product space, where each program category is a separate dimension. The position of a channel in a 15-minute time slot in a month is represented by a programming vector with 87 elements, which list the portions of total airtime the channel devotes to each of the 87 program categories in the a time slot during the month. The distance between two channels is measured by the angle between their programming vectors, calculated using vector dot products. The angle ranges from 0 to 1.57 radians. An angle of zero radians indicates that the two channels are minimally differentiated, whereas an angle of 1.57 radians indicates the two channels are maximally differentiated. We include a detailed description of our spatial distance measurement in Appendix S1. This method of measuring product spatial distance is consistent with previous research on media industries (e.g., Chisholm, McMillan, and Norman, 2010; Sweeting, 2010).

Dependent variable

The dependent variable $reposition_{it}$ is defined as the change in product spatial distance between

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3 We focus on CCTV1 but not the other CCTV channels because (1) CCTV1 is the flagship channel of CCTV, making it the most potent player among all CCTV channels; (2) other CCTV channels specialize in certain programming categories, whereas CCTV1 and the satellite channels offer a wide set of program categories, making CCTV1 the more direct competitor to the satellite channels; and (3) CCTV1 is the first channel among all CCTV channels to change following the government policy shift, allowing a cleaner measurement of the satellite channels’ pre-policy behaviors.

4 Information about CSM Media Research and its Peoplemeter technology can be found at www.csm.com.cn.

5 This includes all provincial satellite channels except the Tibet satellite channel, on which the data is unavailable.

6 This paper adopts the portfolio approach in analyzing television programming strategy. Research in the communications literature finds that television channels determine their programming lineups by taking into consideration the programs as a portfolio rather than as individual programs (Litman, Shrikhande, and Ahn, 2000). We chose time slot units of 15 minutes because this is the standard time unit for reporting audience research in the media broadcasting industry (http://www.csm.com.cn/en/rating/f52.html).
a satellite channel \(i\) and CCTV1 in a time slot \(s\), subsequent to the CCTV1 programming shift. Our focus on each satellite channel’s relationship with CCTV1 in each time slot market as the unit of analysis parallels the dyadic-level of analysis emphasized in the competitive dynamics literature (Chen, 1996). In order to capture the satellite channel’s strategic movements rather than its short-term reactions, we computed the dependent variable based on the change in the three-month average distance. Specifically, to calculate the dependent variable, the 12-month sample period was first grouped into a sequence of four 3-month periods. Periods 1 and 2 were before the CCTV1 shift; Period 3 was immediately after the CCTV1 overhaul (including the week of transition when the CCTV1 overhaul took place); and Period 4 was the last three months of the entire sample period. Within each period, we averaged the three-month distance measures between satellite channel \(i\) and CCTV1 in time slot \(s\). The dependent variable was then calculated by subtracting the spatial distance of Period 3 from that of Period 4. A positive value for \(\text{reposition}_{is}\) indicates that satellite channel \(i\) has repositioned away from CCTV1 in time slot \(s\). A negative value for \(\text{reposition}_{is}\) implies that satellite channel \(i\) has repositioned closer to CCTV1 in time slot \(s\). With this approach, the unit of analysis is channel–time slot, resulting in a total of 1,860 observations.\(^7\)

**Independent variables**

We measure the impact of the CCTV1 overhaul by calculating the distance change between CCTV1 and satellite channel \(i\) in time slot \(s\). The method for measuring this distance change is analogous to that of \(\text{reposition}_{is}\), except that the difference in three-month average distances is taken between the periods immediately before and after the CCTV1 shift (i.e., Periods 2 and 3).

Hypothesis 1 predicts the satellite channels will reposition in the direction that differentiates themselves from CCTV1. Therefore, it is critical that we identify the direction of the distance shift by CCTV1 with respect to the satellite channels and the direction of the subsequent movements by the satellite channels with respect to CCTV1 in order to distinguish our hypotheses from other positioning strategies, such as imitation or maintaining an optimal distance (Deephouse, 1999).

To illustrate this point, suppose CCTV1 approaches a satellite channel. If we observe the satellite channel repositions away from CCTV1, then the satellite channel has revealed that it does not intend to be similar to CCTV1. This would aid us ruling out the imitation strategy but would not allow us to distinguish differentiation from optimal distance strategies. Conversely, if CCTV1 recedes from the satellite channel, and the satellite channel subsequently repositions closer to CCTV1, then the satellite channel reveals that it intends to be similar to CCTV1. This would allow us to rule out the differentiation strategy but would not allow us to distinguish imitation from optimal distance strategies. Our empirical context permits us to observe the satellite channels’ repositioning under various scenarios of CCTV1 approaching and receding. If the pattern of repositioning consistently shows that the satellite channels reposition away from CCTV1 when CCTV1 approaches but do not reposition closer to CCTV1 when CCTV1 recedes, then we can conclude that the satellite channels are indeed differentiating from CCTV1.\(^8\)

To capture the directionality of CCTV1 movements, we created two variables, \(\text{approach}_{is}\) (CCTV1 moved closer to the satellite channel), and \(\text{recede}_{is}\) (CCTV1 moved away from the satellite channel). When CCTV1 moves closer to a satellite channel, the distance shift is negative (i.e., the closer CCTV1 moves to a channel, the more negative is the distance shift). For this reason we define the variable \(\text{approach}_{is}\) as \(-1*(\text{the distance shift})\) when CCTV1 moves closer to a satellite channel; zero otherwise. The values of \(\text{approach}_{is}\) range from 0 to 1.57 radians, with larger values indicating that CCTV1 moved closer to a satellite channel. Similarly, the variable \(\text{recede}_{is}\) (ranging from 0 to 1.57 radians) takes the value the distance shift when CCTV1 moves away from a satellite channel, and zero otherwise. Larger values of \(\text{recede}_{is}\) indicate that CCTV1 moved further away from a satellite channel. According to Hypothesis 1, a satellite channel will differentiate from CCTV1; therefore, we expect a positive relationship between \(\text{approach}_{is}\) and \(\text{reposition}_{is}\), and

\(^7\)We excluded the two time slots between 7:00 to 7:30 p.m. during which the satellite channels are mandated to simulcast the national evening news. Therefore, we observed 30 satellite channels in 62 time slots.

\(^8\)We provide a graphical illustration of our empirical approach in Appendix S2 of the online supplement.
a nonnegative relationship between \( \text{recede}_{is} \) and \( \text{reposition}_{is} \).

We illustrate the relationships between the independent variables, \( \text{approach}_{is} \) and \( \text{recede}_{is} \), with our dependent variable, \( \text{reposition}_{is} \), with two examples from our data. Figure 2(a, b) plot the distance between CCTV1 and two satellite channels at the 10:00–10:15 a.m. time slot. The vertical axis represents the spatial distances in radians. The horizontal axis represents the month. The vertical dotted line marks the CCTV1 overhaul that took place in May 2003.

Figure 2(a) illustrates a scenario of CCTV1 approaching a satellite channel. The horizontal dash lines mark the three-month average distances between CCTV1 and Chongqing channel. We observe a decrease in the three-month average distance between the two channels from Period 2 to Period 3—this is the magnitude of the independent variable \( \text{approach} \). From Period 3 to Period 4, we observe a distance change between the two channels—this is the dependent variable \( \text{reposition} \). In this case, the value of \( \text{reposition} \) is positive, because the three-month average distance in Period 4 is greater than that in Period 3. In other words, Chongqing moves away from CCTV1 subsequent to CCTV1’s approach.

Figure 2(b) illustrates the scenario of CCTV1 receding from a satellite channel. The horizontal dash lines mark the three-month average distances between CCTV1 and Hainan satellite channel. We observe an increase in the three-month average distance between the two channels from Period 2 to Period 3—this is the magnitude of the independent variable \( \text{recede} \). From Period 3 to Period 4, we observe a distance change between the two channels—this is the dependent variable \( \text{reposition} \). In this case, the value of \( \text{reposition} \)
is negative, albeit the magnitude is very small, because the three-month average distance in Period 4 is very similar to that in Period 3. In other words, Hainan channel moves very little after CCTV1 receded.

To test Hypothesis 2, we measure the competitive strength of the satellite channels at the firm-market level and at the firm level. Prior research suggests that firms’ competitive strength may reside in specific product markets and at the broader firm level (Henderson and Cockburn, 1994). At the firm-market level, we define competitive strength of each satellite channel by their audience rating shares, \( r_{is} \), in each time slot in Period 2. A greater value for \( r_{is} \) indicates that the satellite channel possesses greater competitive strength in the time slot. At the firm level, we measure the competitive strength by each satellite channel’s capability in offering particular types of programming content. To do this, we measure the distribution of the channel’s audience across programming categories. We define content capability, of a satellite channel as the proportion of its audience generated from its top four program categories across all time slots in Period 2. A satellite channel with strong capability in offering particular types of programming categories would generate a large portion of its audience from these categories. This is because the satellite channel would offer more shows from these categories, and if the shows are of better quality they would, in turn, attract a larger audience. A greater value for content capability indicates that the satellite channel possesses greater competitive strength. Hypothesis 2 argues that, compared to weaker channels, stronger channels would be less sensitive to CCTV1 approaches. Thus, competitive strength of a satellite channel moderates the extent of the channel’s repositioning activities subsequent to an approach by CCTV1. We test the predicted moderating effect by interacting \( approach_{is} \) and \( recede_{is} \), with our measures of competitive strength, \( r_{is} \) and content capability.

To test Hypothesis 3, we measure customer preference distribution by a variable indicating prime-time time slots. During the evening prime time, viewers in a family tend to watch television together as a group rather than each watching their personal favorite shows on separate television sets. Research on television viewing groups, especially in the context of family viewing, finds that individuals accommodate and gratify particular needs of other family members in their programming choice. For example, adults wishing to view with children prefer a program that is suitable for the group, but that is otherwise less appealing to them (Lull, 1980; Webster and Wakshlag, 1983). Therefore, during the evening prime-time, customer preferences are concentrated in the common denominator programming categories—programs that all members of a group will likely watch together, even though they may not be any individual’s most preferred choice (Beebe, 1977)—leaving little demand for shows of other categories. Therefore, the evening prime-time audience demographics offers exogenous variation to the degree of customer preference concentration across time slot markets. In the Chinese television market, prime time takes place from 7:00 p.m. to 10:00 p.m. (Wang, 2004); therefore the variable \( prime_{is} \) is the value one during these time periods and zero otherwise. We test Hypothesis 3 by interacting our measure of customer concentration, \( prime_{is} \), with \( approach_{is} \) and \( recede_{is} \). Hypothesis 3 predicts that customer concentration will moderate the extent of repositioning by the satellite channels subsequent to an approach by CCTV1.

To test Hypothesis 4, we construct programming volatility to measure the level of programming changes made by satellite channel \( i \) in time slot \( s \). A large value of programming volatility indicates that the channel has shown a low level of commitment to a product space in the time slot market. We calculated this by first averaging the extent of channel \( i \)’s own programming change between consecutive months in Period 2. We then divided this by CCTV1’s programming change in time slot \( s \) to control for seasonal or current events at the time slot level. We test Hypothesis 4 by interacting programming volatility with \( approach_{is} \) and \( recede_{is} \). Hypothesis 4 predicts that satellite channels with higher volatility, hence smaller opportunity cost if they leave their product positions, will show greater magnitude of repositioning subsequent to an approach by CCTV1.

**Control variables**

We included the following controls in our model specifications. First, an important consideration when conducting a natural experiment is the existence of pre-existing trends that could confound the experimental results (Meyer, 1995). For this
reason, we controlled for the Spatial distance trends, which we calculate by subtracting the average spatial distance between satellite channel $i$ and CCTV1 in time slot $s$ in Period 1 from the average spatial distance in Period 2 (Figure 2a, b). Similarly, we also include Ratings trends as another pre-existing trend control variable.

Second, because a television channel is more likely to alter its programming lineup if it has experienced a recent change in audience ratings (Owen and Wildman, 1992), we included a measure of channel–time slot ratings change—ratings change—which we calculated by subtracting the ratings in Period 2 from those in Period 3.

Finally, because the data include multiple observations of firms’ repositioning activities across multiple time slot markets, we included channel and time slot dummy variables. Descriptive statistics and correlations for all variables are presented in Table 1.

**Empirical specification**

The basic model we employ is an ordinary least squares (OLS) model with channel and time slot fixed effects. The errors are likely not independent for a satellite channel across time slots, because programming decisions made by a channel in one time slot influence decisions made by the same channel in another time slot. For this reason, we cluster the errors by channel in the estimation.

**RESULTS**

Table 2 shows the results of the regression models. Model I is the base model that tests Hypothesis 1; Models II(a) and II(b) test Hypothesis 2 by including the two competitive strength measures; Model III includes customer concentration to test Hypothesis 3; Model IV includes programming volatility to test Hypothesis 4; Models V(a) and V(b) are the full models, based on the two competitive strength measures.

Consistent with Hypothesis 1, we find positive and significant coefficient estimates for approach$_{is}$ and statistically insignificant estimates for recede$_{is}$ across all models. These results indicate that when CCTV1 approaches a satellite channel, the latter repositions itself away from CCTV1. When CCTV1 recedes from a satellite channel, however, the latter does not reposition itself closer to...
CCTV1. Taken together, these results imply that the satellite channels reposition to differentiate themselves from an approach by CCTV1.

We also find support for Hypothesis 2 in Models II(a) and II(b). We measured the competitive strength of the satellite channels at the firm-market level with \( r_{i}\) in Model II(a) and at the firm level with \( c_{i}\) in Model II(b). In both models we find negative and significant interactions between competitive strength and \( a_{i}\). This suggests that the effect of CCTV1’s approach is mitigated for stronger satellite channels. The coefficient on the interaction between the competitive strength measure and \( r_{i}\) is statistically insignificant, which offers no evidence that the competitive strength of the satellite channels have a moderating effect on their repositioning when CCTV1 recedes.  

The results in Model III are consistent with Hypothesis 3. We find a negative and significant

<table>
<thead>
<tr>
<th></th>
<th>Model I</th>
<th>Model II(a)</th>
<th>Model II(b)</th>
<th>Model III</th>
<th>Model IV</th>
<th>Model V(a)</th>
<th>Model V(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCTV1 approach</td>
<td>0.137**</td>
<td>0.172**</td>
<td>0.483**</td>
<td>0.174**</td>
<td>0.087+</td>
<td>0.170*</td>
<td>0.444**</td>
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<tr>
<td></td>
<td>(0.044)</td>
<td>(0.045)</td>
<td>(0.149)</td>
<td>(0.056)</td>
<td>(0.051)</td>
<td>(0.066)</td>
<td>(0.153)</td>
</tr>
<tr>
<td>CCTV1 recede</td>
<td>0.056</td>
<td>0.076</td>
<td>0.574</td>
<td>0.054</td>
<td>0.035</td>
<td>0.047</td>
<td>0.564</td>
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<tr>
<td></td>
<td>(0.057)</td>
<td>(0.066)</td>
<td>(0.489)</td>
<td>(0.053)</td>
<td>(0.056)</td>
<td>(0.062)</td>
<td>(0.481)</td>
</tr>
<tr>
<td>CCTV1 approach × competitive strength</td>
<td>−0.045*</td>
<td>−0.463*</td>
<td>−0.046*</td>
<td>−0.417*</td>
<td>(0.019)</td>
<td>(0.199)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>CCTV1 recede × competitive strength</td>
<td>−0.029</td>
<td>−0.704</td>
<td>−0.014</td>
<td>−0.716</td>
<td>(0.065)</td>
<td>(0.677)</td>
<td>(0.066)</td>
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<tr>
<td>CCTV1 approach × customer concentration</td>
<td>−0.176*</td>
<td>−0.176*</td>
<td>−0.169*</td>
<td>(0.079)</td>
<td>(0.078)</td>
<td>(0.078)</td>
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<tr>
<td>CCTV1 recede × customer concentration</td>
<td>−0.048</td>
<td>−0.058</td>
<td>−0.067</td>
<td>(0.156)</td>
<td>(0.155)</td>
<td>(0.149)</td>
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<tr>
<td>CCTV1 approach × programming volatility</td>
<td>0.067*</td>
<td>0.055*</td>
<td>0.054*</td>
<td>(0.027)</td>
<td>(0.026)</td>
<td>(0.026)</td>
<td></td>
</tr>
<tr>
<td>CCTV1 recede × programming volatility</td>
<td>0.017</td>
<td>0.017</td>
<td>0.017</td>
<td>(0.023)</td>
<td>(0.024)</td>
<td>(0.022)</td>
<td></td>
</tr>
<tr>
<td>Competitive strength</td>
<td>0.029+</td>
<td>0.044**</td>
<td>Absorbed</td>
<td>0.025</td>
<td>0.032+</td>
<td>0.043** Absorbed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.014)</td>
<td>(0.014)</td>
<td>(0.017)</td>
<td>(0.016)</td>
<td>(0.014)</td>
<td></td>
</tr>
<tr>
<td>Programming volatility</td>
<td>−0.001</td>
<td>−0.001</td>
<td>−0.001</td>
<td>−0.001</td>
<td>−0.002+</td>
<td>−0.002</td>
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<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Ratings change (increase)</td>
<td>0.013</td>
<td>0.006</td>
<td>0.028+</td>
<td>0.015</td>
<td>0.011</td>
<td>0.005</td>
<td></td>
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<tr>
<td></td>
<td>(0.017)</td>
<td>(0.016)</td>
<td>(0.014)</td>
<td>(0.018)</td>
<td>(0.015)</td>
<td>(0.014)</td>
<td></td>
</tr>
<tr>
<td>Ratings change (decrease)</td>
<td>0.004</td>
<td>0.033</td>
<td>−0.006</td>
<td>0.003</td>
<td>0.012</td>
<td>0.037</td>
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<tr>
<td></td>
<td>(0.046)</td>
<td>(0.040)</td>
<td>(0.034)</td>
<td>(0.047)</td>
<td>(0.044)</td>
<td>(0.040)</td>
<td></td>
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<tr>
<td>Ratings trend (increasing)</td>
<td>−0.028</td>
<td>−0.025</td>
<td>0.003</td>
<td>−0.023</td>
<td>−0.025</td>
<td>−0.018</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.024)</td>
<td>(0.028)</td>
<td>(0.031)</td>
<td>(0.030)</td>
<td>(0.024)</td>
<td></td>
</tr>
<tr>
<td>Ratings trend (decreasing)</td>
<td>−0.014</td>
<td>−0.015</td>
<td>−0.030</td>
<td>−0.014</td>
<td>−0.011</td>
<td>−0.012</td>
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<tr>
<td></td>
<td>(0.027)</td>
<td>(0.028)</td>
<td>(0.024)</td>
<td>(0.027)</td>
<td>(0.027)</td>
<td>(0.027)</td>
<td></td>
</tr>
<tr>
<td>Spatial distance trend (increasing)</td>
<td>−0.021</td>
<td>−0.028</td>
<td>−0.033</td>
<td>−0.001</td>
<td>−0.021</td>
<td>−0.008</td>
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<tr>
<td></td>
<td>(0.038)</td>
<td>(0.038)</td>
<td>(0.037)</td>
<td>(0.035)</td>
<td>(0.038)</td>
<td>(0.035)</td>
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<tr>
<td>Spatial distance trend (decreasing)</td>
<td>−0.207*</td>
<td>−0.203*</td>
<td>−0.200*</td>
<td>−0.217*</td>
<td>−0.197*</td>
<td>−0.202*</td>
<td>−0.199**</td>
</tr>
<tr>
<td></td>
<td>(0.083)</td>
<td>(0.083)</td>
<td>(0.079)</td>
<td>(0.081)</td>
<td>(0.077)</td>
<td>(0.074)</td>
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<tr>
<td>Constant</td>
<td>−0.023</td>
<td>−0.025</td>
<td>0.021</td>
<td>−0.018</td>
<td>−0.023</td>
<td>−0.020</td>
<td></td>
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<tr>
<td></td>
<td>(0.022)</td>
<td>(0.019)</td>
<td>(0.016)</td>
<td>(0.022)</td>
<td>(0.021)</td>
<td>(0.019)</td>
<td></td>
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<tr>
<td>Observations</td>
<td>1.860</td>
<td>1.860</td>
<td>1.860</td>
<td>1.860</td>
<td>1.860</td>
<td>1.860</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.320</td>
<td>0.323</td>
<td>0.322</td>
<td>0.326</td>
<td>0.327</td>
<td>0.336</td>
<td></td>
</tr>
</tbody>
</table>

The dependent variable is reposition. All models include channel and time slot fixed effects. Figures in parentheses are robust standard errors, clustered by channels.

Significance levels: \(+p < 0.10; *p < 0.05; **p < 0.01.\)
interaction between the customer concentration measure, based on primetimeis and approachis. This is consistent with satellite channels repositioning less when audience preferences are concentrated. We find the interaction between the customer concentration measure and recedeis to be statistically insignificant in Model III, which suggests that customer preference concentration does not play a significant role in the repositioning decisions when CCTV1 recedes.

We find support for Hypothesis 4 in Model IV. The positive and significant interaction of approachis and programming volatilityis implies that when CCTV1 approaches a satellite channel, the channel repositions more if it has had higher programming volatility in the recent past. The effect on programming volatility is only significant when CCTV1 approaches the channel but not when CCTV1 recedes, as indicated by the statistically insignificant interaction term between recedeis and programming volatilityis.

The results in Models V(a) and V(b) show support for all four hypotheses when we test them together. Moreover, the effect sizes are meaningful. Interpreting the effect size in terms of broadcast air time requires some care, because of the nonlinear conversion between angular distance of programming portfolio vectors and minutes of air time. We first focus at Model V(a), where we measure competitive strength at the firm-market level with ratingsis. To assess the magnitudes of the repositioning activities, we consider a scenario where CCTV1 increases its program category overlap with a satellite channel by one additional minute.10 In this scenario, an average satellite channel will reposition away from CCTV1 to reduce the program category overlap by 11.4 seconds. A strong satellite channel, which has a ratings share that is one standard deviation above average, will reposition away by 9.0 seconds. If the scenario takes place during nonprime time, an average satellite channel will reposition to reduce the overlap by 13.1 seconds. In comparison, the average satellite channel will reposition by only 2.5 seconds if the scenario takes place during prime time. Finally, a satellite channel with programming volatility one standard deviation above average will reposition by 22.2 seconds, which is almost twice the average magnitude. We turn to Model V(b) where we measure competitive strength at the firm level with content capabilityi. Note that the sizes of the coefficients approachis, recedeis, and the interactions with the competitive strength variable in Model V(b) are quite different from that reported in Model V(a), while the coefficient sizes for other independent variables are similar. These differences are due to the different definitions of competitive strength. To gauge the effect size in Model V(b), we again refer to the scenario where CCTV1 increases its program category overlap with a satellite channel by one additional minute. Here an average channel will reposition away from CCTV1 to reduce the program category overlap by 11.1 seconds. A strong satellite channel that is at one standard deviation above average in content capability will reposition away by only 9.3 seconds. These effect sizes are comparable to those in Model V(a).

As shown in Table 2, most of our pre-trend controls are not significant, except for the coefficient estimate on Spatial distance trend (decreasing), which is negative and statistically significant. This suggests that a satellite channel that was becoming increasingly similar to the pre-overhaul CCTV1 prior became increasingly dissimilar to the post-overhaul CCTV1.11

**Robustness checks**

We explored several alternative specifications to test the robustness of our results. The empirical estimates from all robustness checks are presented in Appendix S3. We began with examining whether the satellite channels’ repositioning decisions are based on their competitive strength relative to CCTV1 rather than their audience ratings share. To do so, we constructed a measure ratings relative to CCTV1is by taking the ratio of a satellite channel’s ratings share to CCTV1’s ratings share in the corresponding time slot. A high value for this measure indicates that the satellite channel possesses greater competitive strength relative to CCTV1 in the time slot. Apart from the slight reduction in significance in the interaction

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10 The average increase in program category overlap by the CCTV1 programming shift is slightly over 2 minutes in a 15-minute time slot.

11 We assess the extent of the impact of pre-existing trends on our variables of interest by running alternative models with the pre-existing trend controls included separately. We do not find the pre-existing trend variables to change the magnitudes or significance of our key variables of interest substantially.
term approach_{is} and programming volatility_{is} (significant at the 10% level), the overall results from using this alternative measurement are consistent with the main results.

We also employed a more fine-grained measurement of content capability than in our main analysis. Instead of focusing on the top four program categories, we calculated the proportion of each channel’s audience generated across all 87 program categories to obtain an alternative content capability_{ic} vector for each channel i on every program category c. We took the dot product of the content capability_{ic} vector and the programming vector of channel i in time slot s to obtain a measurement of content capability_{is}. This alternative measurement of content capability captured the competitive strength of channel i at the level of time slot s. Except for slight reductions in significance for Hypotheses 3 and 4, which are significant at the 10% level, the results from this alternative measure are consistent with our main findings.

We further examined whether the results are robust to measurement granularity of customer preference concentration. Instead of primetime_{s}, we measure customer concentration in each time slot by a programming Herfindahl index (HHI) value, which we calculate base on the air time of various program categories offered by all the satellite channels prior to the CCTV1 programming overhaul. According to spatial competition theory, product diversity decreases with the concentration of consumer preferences (Anderson et al., 1997; Loertscher and Muehlheusser, 2011). We expect to observe that the satellite channels would offer less diverse program categories—hence, a greater programming HHI_{s} value—in time slots with high customer preference concentration. The results support Hypotheses 1–3. The interaction term approach_{is} and programming volatility_{is} is positive, as we predicted in Hypothesis 4, but is not statistically significant.

To address the possibility that satellite channels adjust their programming strategy in anticipation of the CCTV1 movements, we examined data from a longer time span prior to CCTV1’s programming shift. A disadvantage with this approach is that satellite channels typically make detailed programming lineup decisions based on recent information, so what happened several months prior to CCTV1’s programming shift may be less relevant. We recalculated the independent variables related to competitive strength, customer concentration, and programming volatility with average data from six months prior to the CCTV1 programming shift, instead of 3 three months prior. The results are consistent with the four hypotheses, although the statistical significance of the interaction terms associated with Hypothesis 2 and Hypothesis 3 is only at the 10 percent level. The drop in statistical significance is not surprising, if the satellite channels relied primarily on recent information to make repositioning decisions.

To assess the possibility that the standard errors may be correlated across channels instead of across time slots, we clustered the standard errors by time slots. We found that the standard errors for most coefficient estimates were smaller than the corresponding ones in the main model. With the coefficient signs and sizes unaffected by the alternate clustering scheme, we found stronger statistical support for all four hypotheses.

We examined whether television programming practices such as lead-in, hammocking, and telemetering across contiguous time slots (Owen and Wildman, 1992) could compromise the independent and identically distributed error structure in the regression models. In order to assess the extent of this potential issue, we repeated our analysis using only observations from every other (i.e., alternate) time slot. We found the results to be consistent with all four hypotheses.

Finally, we addressed the concern that long television shows spanning time slots could reduce the degree of independence between observations from contiguous time slots. We checked the extent of this potential issue by using 60-minute time slots instead of the industry standard 15-minute time slots. The results support Hypotheses 1, 2, and 3. However, the interaction term of approach_{is} and programming volatility_{is} was not statistically significant. Thus Hypothesis 4 was not supported under the 60-minute time slot interval definition.

Organizational inertia

Because prior research shows that organizational inertia plays a significant role in influencing repositioning (Greve, 1996), we explore if our results might spuriously capture this effect. According to theories of organizational inertia, we would expect a satellite channel to demonstrate similar degrees of repositioning reluctance in different markets, because inertia would be associated with organizational level characteristics such as firm
age and size, which do not vary across markets (Hannan and Freeman, 1984; Reuf, 1997). In contrast, our results in Hypothesis 4 show that the same satellite channels exhibited different degrees of repositioning reluctance in different time slot markets.

To further assess whether the results were consistent with firm-market level characteristics or organizational-level characteristics, we examined whether a satellite channel’s repositioning was associated with programming volatility at the channel level. We focused on this measure rather than on age, ownership, or organizational structure for two reasons. First, prior research has established a negative relationship between inertia and the likelihood of product change at the organizational level (Greve, 1996). Second, the channels in our empirical context share similar age and ownership structures. The satellite channels were launched at the time when the satellite technology became available. Moreover, each satellite channel is a part of a provincial television station, which is owned and operated by its respective provincial government. These similarities among the satellite channels help sharpen our use of the overall programming volatility as a measurement of inertia. We could be more confident about our opportunity cost argument if the empirical results continued to support Hypothesis 4 after accounting for organizational inertia.

We measured organizational\_inertia\_i by the inverse of average programming volatility of each satellite channel across all time slots. We take the inverse of the average volatility because of the negative relationship between product changes and inertia and because this formulation mitigates the collinearity concerns between\_ organizational\_inertia\_i and\_ programming\_volatility\_is.\textsuperscript{12} We incorporated the interaction terms\_ organizational\_inertia\_i and\_ programming\_volatility\_is into CCTV1\_ approach\_is and\_ recede\_is in the regression model. Because\_ organizational\_inertia\_i does not change across time slot markets, the main effect is absorbed by the satellite channel fixed effect, but the interaction effect still could be identified.

Table 3 presents the organizational inertia results. We begin by including the organizational\_inertia\_i interaction terms in Model I. We add the\_ programming\_volatility\_is interaction terms at the time slot level in Model II. Finally we analyze the full model in Model III. In all three models, the interaction between CCTV1\_ approach\_is and\_ organizational\_inertia\_i is not statistically significant. This implies that the extent of competition-driven repositioning by a satellite channel is not significantly influenced by the difference in organizational inertia between the channels, when measured by overall programming volatility. More importantly, the positive, statistically significant coefficients of the interaction between\_ approach\_is and\_ programming\_volatility\_is provide robust support to Hypothesis 4.

**DISCUSSION AND CONCLUSION**

We study competition as an impetus for firms to reposition—to abandon their current positioning strategy and adopt a new one—in a setting where small firms compete in the presence of a dominant firm. We show that when the dominant firm increases competitive pressure on a small firm, the small firm differentiates by repositioning their product portfolios away from the dominant firm. However, stronger small firms are more steadfast in their product positions than the weaker ones. In addition, we show that the extent of repositioning by the small firms is constrained when the availability of viable alternative positions is scarce, such as in markets where customer preferences are concentrated. We also show that firms with more stable product histories are less likely to reposition, compared to those that tended to switch products, which is consistent with the opportunity cost argument that these firms are reluctant to forego future benefits from the specific investments that they have accumulated at a location.

On a broad level, our findings contribute to the positioning strategy—a central area in strategy research (Porter, 1980; Rumelt et al., 1994)—by highlighting the dynamic nature of optimal positioning strategy that necessitates firms to reposition, as well as the specific decision considerations involved, such as abandonment of current positions. On a finer level, this study contributes to several streams of strategy research that have converged on developing the theory on repositioning. In the following paragraphs, we discuss the relevance of our findings to the

\textsuperscript{12} The results are qualitatively unchanged if we directly use average programming volatility instead of taking the inverse value.
research on organizational theory, competitive dynamics, and dominant firm.

Prior research on repositioning in the organizational theory literature tends to emphasize repositioning as driven by new business opportunities. This research suggests that firms learn vicariously from competitors about environmental changes and then pursue new opportunities by changing their locations in product space (e.g., Greve, 1995, 1998). Our central proposition—that a firm repositions when the expected benefit at the destination location is greater than the benefit at the current location—can be applied to both opportunity-driven and competition-driven repositioning. Opportunity-driven repositioning occurs when a new profit opportunity arises in an alternative product location that diminishes the attractiveness of the current location by comparison. In the competition-driven case, firms reposition because of an absolute decrease in the attractiveness of their current location. Thus, from the incentive perspective, we can consider competition-driven and opportunity-driven repositioning as two sides of the same coin.

Nevertheless, important distinctions in the mechanisms of these two types of repositioning lead to different research emphases. We highlight two distinctions. First, because the identification of destination locations provides the impetus for opportunity-driven repositioning, the related literature accentuates destination discovery by focusing on mechanisms such as vicarious learning (Asaba and Lieberman, 2011; Greve, 1995; Semadeni and Anderson, 2010). In contrast, we demonstrate that the availability of economically viable destination locations constrains competition-driven repositioning.

The second distinction relates to the direction of payoff changes. The objective of opportunity-driven repositioning is to enhance future payoffs, whereas the objective of competition-based repositioning is to mitigate immediate losses. Prospect theory (Kahneman and Tversky, 1979) and loss-aversion theory (Tversky and Kahneman, 1981) would predict that firms will resist repositioning because doing so can lead to immediate losses. In contrast, opportunity-driven repositioning is motivated by the expectation of future gains. Thus, competition-driven repositioning can be driven by firms that are loss averse whereas opportunity-driven repositioning is driven by firms that are not loss averse.

Table 3. Organizational inertia and repositioning

<table>
<thead>
<tr>
<th></th>
<th>Model I</th>
<th>Model II</th>
<th>Model III</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCTV1 approach</td>
<td>0.153*</td>
<td>0.080</td>
<td>0.169*</td>
</tr>
<tr>
<td></td>
<td>(0.059)</td>
<td>(0.064)</td>
<td>(0.079)</td>
</tr>
<tr>
<td>CCTV1 recede</td>
<td>0.087</td>
<td>0.065</td>
<td>0.068</td>
</tr>
<tr>
<td></td>
<td>(0.124)</td>
<td>(0.123)</td>
<td>(0.121)</td>
</tr>
<tr>
<td>CCTV1 approach × competitive strength</td>
<td>−0.046*</td>
<td></td>
<td>(0.019)</td>
</tr>
<tr>
<td>CCTV1 recede × competitive strength</td>
<td>−0.011</td>
<td></td>
<td>(0.071)</td>
</tr>
<tr>
<td>CCTV1 approach × customer concentration</td>
<td>−0.176*</td>
<td></td>
<td>(0.078)</td>
</tr>
<tr>
<td>CCTV1 recede × customer concentration</td>
<td>−0.058</td>
<td></td>
<td>(0.155)</td>
</tr>
<tr>
<td>CCTV1 approach × programming volatility</td>
<td>−0.021</td>
<td>0.067*</td>
<td>0.055*</td>
</tr>
<tr>
<td></td>
<td>(0.062)</td>
<td>(0.026)</td>
<td>(0.026)</td>
</tr>
<tr>
<td>CCTV1 recede × programming volatility</td>
<td>0.017</td>
<td>0.017</td>
<td>(0.024)</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td>(0.023)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>CCTV1 approach × organizational inertia</td>
<td>−0.041</td>
<td>−0.038</td>
<td>−0.029</td>
</tr>
<tr>
<td></td>
<td>(0.139)</td>
<td>(0.140)</td>
<td>(0.157)</td>
</tr>
<tr>
<td>CCTV1 recede × organizational inertia</td>
<td>−0.021</td>
<td>−0.008</td>
<td>−0.000</td>
</tr>
<tr>
<td></td>
<td>(0.062)</td>
<td>(0.063)</td>
<td>(0.060)</td>
</tr>
<tr>
<td>Competitive strength</td>
<td>0.028*</td>
<td>0.033*</td>
<td>0.043**</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.016)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>Programming volatility</td>
<td>−0.000</td>
<td>−0.002</td>
<td>−0.002</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Observations</td>
<td>1,860</td>
<td>1,860</td>
<td>1,860</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.320</td>
<td>0.327</td>
<td>0.336</td>
</tr>
</tbody>
</table>

The dependent variable is reposition. All models include spatial trends controls, ratings controls, and channel and time slot fixed effects. Figures in parentheses are robust standard errors clustered by channels. Significance levels: +significant at p < 0.10; *significant at p < 0.05; **significant at p < 0.01.
1991) in the behavioral economics literature argue that decision makers have a stronger tendency to avoid immediate losses than they have to acquire future gains. Thus, we expect that firms have a propensity to take swifter actions in competition-driven repositioning situations than in opportunity-driven repositioning situations. It is not surprising, then, that the research in opportunity-based repositioning finds organizational inertia (Greve, 1996); whereas we do not find inertia to play a prominent role.

Our results also contribute to the competitive dynamics literature, which generally focuses on examining rivalry in the form of attack and counterattack (e.g. Chen, 1996). Recent research on competitive dynamics has begun exploring repositioning as a response to competition (Gimeno et al., 2006). Because repositioning to differentiate from rivals is a form of noncounterattack response that does not raise competitive intensity, this strategy represents an extension of this work. Recognizing that this noncounterattack strategy is multifaceted (e.g., extent of repositioning) and that firms differ in their degree of execution advances the literature. Moreover, our findings relate to the awareness—motivation—capability and the expectancy—valence frameworks in the competitive dynamics research (Chen and Miller, 1994; Chen et al., 2007). For example, we find that weaker incumbents are more swayed by the dominant firm movements, which is in line with their argument that less capable firms have lower expectations about their chances of withstanding a dominant firm’s attack. Additional work that explores (1) other forms of noncounterattack response, such as raising prices (McCann and Vroom, 2010) or reducing capacities, and (2) when firms choose between such strategies will likely provide fruitful advances to the literature.

Our findings contribute to the dominant firm theory. While prior research in this area has focused on dominant firms securing their incumbency status by limiting entry (Borenstein, 1991; Carlton and Perloff, 1994; Gaskins, 1971; Yamawaki, 1985), recent studies show that dominant firms can also be formidable entrants to new industry segments and drive industry evolution by prompting small incumbents to reposition (de Figueiredo and Silverman, 2007; George and Waldfogel, 2006). By jointly examining the characteristics of small incumbents and the market environment, we examine a set of previously unexplored questions:

Which incumbent firms, and when, are more or less likely to reposition? (de Figueiredo and Silverman, 2007: 647) Still, many questions await answers before we fully develop a theory connecting dominant firm and industry evolution. For example, would it be possible that a collection of small firms acting together can deter entry by a dominant firm? Although this scenario is unlikely to happen in our empirical context, research in many industry settings has found small firms to be aggressive and speedy (Chen and Hambrick, 1995) and could potentially dethrone the market leaders (Ferrier et al., 1999). Further exploration of this issue can improve our understanding of dominant firms driving industry evolutions.

In addition to these theoretical contributions, our empirical approach advances the extant literature in two ways. First, the natural experiment enables us to mitigate the alternative interpretation that the movements we document are due to a common underlying cause, thereby providing us with clearer insight into the nature of causality. Second, by separating the direction of the dominant firm movements into approach or recede from the incumbents, we are able to identify more clearly the differentiation strategy central to our arguments from alternative positioning strategies, such as imitation and maintaining optimal separation (Deephouse, 1999).

Limitations and future research
There are a number of limitations in this study, as well as areas for future research. The present study does not examine the consequences of repositioning, so we cannot conclude that these activities maximize performance. For instance, when multiple firms reposition to the same destination, it is unlikely that all will be equally successful. Examining the performance of repositioning presents opportunities for future research.

Another limitation is that we do not explore the firms’ destination selection and the interactions among them. In competition-driven repositioning, as discussed, firms may not have a clearly identified destination at the time they leave their current locations. The reality of multiple competitors and the high dimensionality of product characteristics render a firm’s optimal destination problem unlikely to be solvable in advance (Tirole, 1988). Instead, a firm may rely on trial and error or
may observe others when charting its repositioning course (Lieberman and Asaba, 2006). Furthermore, it is possible that the small firms themselves interacting with each other causes even further repositioning. Additional research into the repositioning paths, as well as the interactions among the small firms, might have important managerial implications (Wang, 2013).

The findings presented in this paper are confined to a single industry and, therefore, the results should be generalized cautiously. A particular feature of our industry context is that prices are exogenously determined. Although this feature helps sharpen the focus on product repositioning, it may not represent the spectrum of such activities in industries in which firms can compete by lowering their prices. Nevertheless, when firms have pricing discretion, they are often reluctant to implement price reductions, or may have little room for them, especially in competitive markets (Basker and Noel, 2009). Future research can investigate competition-driven repositioning in settings where price decisions are endogenous.

Finally, the firms in this study are state-owned enterprises (SOEs) in China. This may raise concerns about the generalizability of the reported findings to commercial firms operating in market economies. We note three facts about this industry that help alleviate this concern. First, the satellite channels, unlike many Chinese SOEs in traditional industry sectors, have adopted a market orientation from their inception. The satellite channels generate significant portions of the revenues from commercial advertisements, rather than from government financial supports (Zhao and Guo, 2005). Second, each satellite channel is separately owned and operated by a provincial government. The relative performance evaluation policy of the Chinese central government promotes interprovincial competition among SOEs (Maskin, Qian, and Xu, 2000). Third, although the regulatory barrier to entry in the Chinese media industry is high, the barrier to changing programming categories for the existing television channels is not high. Thus, satellite channels have substantial autonomy in strategizing their product portfolios. Together, these factors mitigate the generalizability concern regarding our China setting and broaden the applicability of our findings to other industrial contexts. In fact, we hope this study provides a guide for how to apply reliable business data from China in future empirical research that has implications beyond the Chinese context.

To conclude, we see the limitations of this work and the opportunities they open for future research to be an indication of the theoretical and empirical contributions of this paper.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix S1. Illustrations of constructing programming portfolio vectors and measuring distance between television channels.

Appendix S2. Illustration of the empirical approach.

Appendix S3. Robustness tests.