BIG FISH OR BIG POND?

SELLER'S DILEMMA IN INTERMEDIARY SELECTION

Henning Piezunka
INSEAD
Henning.piezunka@insead.edu

Riitta Katila
Department of Management Science and Engineering
Stanford University
rkatila@stanford.edu

Kathleen M. Eisenhardt
Department of Management Science and Engineering
Stanford University
kme@stanford.edu

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ABSTRACT

In many market settings, sellers collaborate with intermediaries to commercialize their products and reach buyers. Yet these sellers often face a tension between cooperation with an intermediary vs. competition with peer sellers that we term the "*big fish v. big pond*" dilemma. That is, sellers prefer an intermediary with great *market access* (big pond), but they also prefer having high *relative standing* in the intermediary's portfolio (big fish). Extending resource dependence theory, we study the moderators that shape the seller's choice by examining how 359 game developers chose among 169 publishers in the global video game industry over 10 years. We find that the seller's choice tips to being a "big fish" when the seller needs the resources provided by the intermediary and peer competition is high. In contrast, the seller's choice tips to being in a "big pond" when the seller needs few resources and competition with peer sellers is low. We contribute to resource dependence theory by emphasizing the role of peer competition in tie formation and to the seller-intermediary literature by unpacking the moderators of the "big fish, big pond" dilemma. Overall, we offer insights into a ubiquitous social dilemma – "big fish v. big pond" - that occurs across a wide variety of social situations, ranging from job applicants choosing an employer to students selecting a college.

Keywords: intermediaries, collaboration, competition

Seller-intermediary collaborations are common, and occur in many market settings (Powell, 1986; White and White, 1993; Bielby and Bielby, 1999). In these collaborations, sellers focus on product development while intermediaries focus on refinement and marketing of the product. Thus, intermediaries help sellers to commercialize their products and reach buyers. Book authors craft original drafts of books, which publishers edit and market (Powell, 1986). Independent motion picture studios create new films, which movie distributors help to commercialize and distribute (Vandaie and Zaheer, 2014). Given the important role of intermediaries in commercialization, a seller's choice of an intermediary partner is critical.

When firms such as sellers choose partners, they face a fundamental tension. Building on exchange theory (Emerson, 1962), resource dependence theory argues that cooperative forces push firms toward forming relationships to access needed resources that they can gain from partners (Pfeffer and Salancik, 1978; Zaheer, McEvily, and Perrone, 1998). For example, new firms are pushed to form ties with established firms that can provide financial and operating resources (Katila, Rosenberger, and Eisenhardt, 2008). Established firms are, in turn, pushed to form ties with new firms that possess desired resources such as novel technologies (Eisenhardt and Schoonhoven, 1996). Conversely, firms are pulled away from forming relationships by potential competition (Katila et al., 2008). Competitive concerns may pull firms away from particular potential partners because they risk resource misappropriation by those partners (Diestre and Rajagopalan, 2012; Colombo and Shafi, 2016). So, the tension between *cooperation* that satisfies resource needs and *competition* that threatens resource loss is at the core of which relationships form.

Like all tie formations, the *seller*'s choice of an *intermediary* is also driven by the core tension between cooperation and competition. Cooperative forces shaped by resource

interdependence push potential partners to form ties. Given that sellers focus on early development of products, they seek intermediaries who can provide the resources necessary to commercialize their products and help them to reach buyers (i.e., end-customers) (Zhu and Zhang, 2010; Ozmel and Guler, 2015). In turn, intermediaries seek sellers with promising content that attracts buyers and leads to sales (Giorgi and Weber, 2015; Lee, Hiatt, and Lounsbury, 2017; Rhodes, Watanabe, and Zhou, 2017).[1] Conversely, competitive forces can pull potential partners apart. For example, sellers may avoid ties with intermediaries when there is risk that these intermediaries will misappropriate the sellers' resources or enter the market as rivals (Zhu and Liu, 2016). Overall, prior research finds that the seller's choice of an intermediary is fundamentally shaped by both cooperation and competition over resources with the intermediary-partner. However, this work and resource dependence theory broadly neglects a second source of competition: peer sellers.

Sellers who seek relationships with intermediaries may face substantial competition from other sellers for access to the intermediaries' resources. Thus, when *peer sellers* who compete for the intermediary's resources such as product help exist – and when these resources have limited scalability – the focal seller may not always receive the resources that it seeks.[2] So while prior research on tie formation examines competition from potential partners, the seller's choice of an intermediary is intriguing because the relevant competition is often with the intermediary's other partners (i.e., peer sellers), not the intermediary itself.

The tension between cooperation with an intermediary vs. competition with other sellers

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[1] We thank an anonymous reviewer for pushing us to clarify the roles of seller, intermediary, and buyer. While the intermediary may possibly buy the seller's resources, we use the term 'buyer' to identify the end customer only.
[2] We exclude pure platforms (i.e. only improves transaction efficiency but adds no value to the product and does not collaborate with the seller) from our definition of intermediary.

is what we term the "*big fish v. big pond*" dilemma. That is, sellers face the dilemma of whether to choose an intermediary-partner that will provide desired resources ahead of peers (seller is a "big fish") vs. one that will provide a big audience (seller is in a "big pond"). While sellers prefer an intermediary where the seller has both high relative standing ("big fish") and significant access to buyers ("big pond"), they often must choose between them. The reason is that the intermediaries that provide access to many buyers (big pond) are also likely to attract more and better peer sellers. This, in turn, makes high relative standing in the "queue of sellers" seeking the intermediary's resources (big fish) harder to achieve. So, while sellers prefer both high relative standing (Ozmel and Guler, 2015) and significant market access(Pollock, 2004; Venkatraman and Lee, 2004; Zhu and Zhang, 2010), it is often difficult to achieve both simultaneously. The question arises as to how sellers *weigh* these two qualities when choosing an intermediary-partner. That is, when do sellers prefer significant market access even though that access may sacrifice high relative standing, and so reduce access to intermediary resources?

Our focus is the *moderators* that shape the seller's choice of an intermediary given the "big fish, big pond" dilemma.[3] Specifically, we ask: "*How do sellers resolve the "big fish, big pond" dilemma when choosing intermediaries?*" We address this question by extending resource dependence theory. We develop and test a framework that argues that the cooperative push of a seller's *resource needs* and the competitive pull of potential *resource loss* due to peer sellers are key moderators that shape the seller's choice. The seller's choice tips towards being a "big fish" when the seller especially needs the intermediary's resources (e.g., later-stage development, financing, marketing) and competition with peers in the intermediary's portfolio is high (i.e.

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[3] We thank our reviewer for advising that we explicitly focus on moderators.

many, overlapping peer sellers). By contrast, the seller's choice tips towards the "big pond" when the seller is experienced with few resource needs and competes with few others in the intermediary's portfolio (i.e. few, non-overlapping peer sellers).

Our setting is the global video game industry. Here, game developers (i.e., sellers) conceptualize, design, and code a video game. Publishers (i.e., intermediaries) help developers to refine and market the game to buyers (Zhu and Zhang, 2010). We argue that cooperative resource dependencies drive partner choice: game developers are the source of innovative game concepts and initial development while publishers have the resources to refine the game and provide critical access to buyers. Similarly, we argue that competition for resources with peer developers also drives partner choice: publishers (particularly those attracting more and better game developers) will discriminate among the developers in their portfolios in terms of their resource allocation. We examine these cooperative and competitive forces in the "big fish, big pond" dilemma using a longitudinal analysis of 359 game developers and 169 game publishers over a 10-year period in Asia, Europe and North America. A major strength is our complete global population of firms that commercialized PlayStation 2 games during this time. A second strength is our private-firm data which are notoriously difficult to obtain. We supplement these data with in-depth interviews with more than 30 industry participants.

We make several core contributions. First, we contribute to *resource dependence theory* by introducing and unpacking the "big fish, big pond" dilemma. Prior work on tie formation focuses on competition with potential partners (e.g., Casciaro and Piskorski, 2005; Katila et al., 2008; Diestre and Rajagopalan, 2012). By contrast, we focus on the competition with peers that influences the "big fish, big pond" dilemma. We also contribute by highlighting relative standing as one side of the core tension in this dilemma. Broadly, we spotlight the neglected role of a

potential partner's alliance portfolio in tie formation and the necessity of mutual agreement.

Second, we contribute to the research on *seller-intermediary relationships* by examining the seller's choice of intermediary. Prior research studies when sellers choose intermediaries vs. go it alone (Rider, 2009; Armanios et al., 2017), and how sellers benefit from intermediaries with superior resources and great market access during the relationship (Pollock, 2004; Ozcan and Eisenhardt, 2009). We extend and integrate these strands by introducing the "big fish, big pond" dilemma that centers on a) the seller's choice of a specific intermediary (not go it alone) b) at tie formation (not during ties). We also contribute the cooperative and competitive moderators that shape how sellers resolve this dilemma. Finally, we contribute by introducing *product intermediaries,* and distinguishing its distinctive features from certification and institutional intermediaries (Rider, 2009; Dutt et al., 2016; Armanios et al., 2017; Lee et al., 2017).

Overall, we offer insights into a ubiquitous social dilemma – "big fish v. big pond" - that occurs across a wide variety of social situations, ranging from job applicants choosing an employer to students selecting a university and poker players picking a table.

THEORETICAL BACKGROUND

Intermediaries are organizations that bring together—i.e. mediate—sellers and buyers of a product by participating actively in a product's commercialization process (e.g., later stages of development, production, marketing, and distribution).[4] Intermediaries thus bridge the gap between a rough prototype and a finished product that buyers want to buy. Intermediaries exist in a variety of market settings such as book publishers (Powell, 1986), movie distributors (Vandaie

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[4] We focus on product intermediaries – i.e., those intermediaries that have mediating relationships with sellers, and provide product-related resources. Other intermediaries (e.g., certification (Rider, 2009) and institutional (e.g., Dutt et al., 2016)) also connect actors. But they provide different resources with varied dynamics, often not tailored to seller, and so are outside our immediate scope. (See Discussion).

and Zaheer, 2014), art dealers (White and White, 1993; Khaire and Wadhwani, 2010), talent agencies (Bielby and Bielby, 1999), investment bankers (Baum et al., 2005) and realtors (Levitt and Syverson, 2008).

Seller-Intermediary Relationships

Research on seller-intermediary relationships relies on multiple theoretical perspectives and offers useful background for our study. One research stream examines the resources that intermediaries contribute and gain from these relationships, often taking the intermediary's perspective. Intermediaries, as we have defined them, enter into relationships with sellers to add value to the sellers' products (Bielby and Bielby, 1999). They typically provide resources such as technical and artistic support, marketing know-how, and privileged information about customers (Ozcan and Eisenhardt, 2009). In other words, they provide critical resources to co-develop the product, not just facilitate a transaction. They exchange their own resources for access to particular sellers' product ideas that they anticipate will resonate with buyers (Ozcan and Eisenhardt, 2009; Giorgi and Weber, 2015) and enhance their own reputations (Rider, 2009). Consistent with their role, the success of intermediaries depends on their ability to co-develop products with sellers that match buyer preferences.

A smaller research stream takes the seller's perspective. Some studies confirm that sellers enter relationships with intermediaries to gain product resources and market access to buyers (Powell, 1986; Bielby and Bielby, 1999; Piezunka, 2015). Other studies indicate when these relationships are advantageous to sellers (Stuart et al., 1999; Jain and Kini, 2000). For example, White and White (1993) show how the success of artists critically depends on art dealers who effectively reach customers. Similarly, in the video game industry, Zhu and Zhang (2010) show the sales-increasing effects of prominent video-game publishers. Further studies show that sellers

with intermediary relationships (especially with prominent partners) perform better, gain more

introductions to potential buyers, and have bigger audiences (Shrum, 1991; Bielby and Bielby,

1999). Moreover, particularly in the art and entertainment industries, the needed resources and

relevant buyers (i.e., audience) are often tied to a specific *genre* (i.e. product category like

action). Thus, intermediary expertise in a particular genre is often especially relevant to a seller's

success (Kim and Jensen, 2014). Yet, since intermediaries usually represent multiple sellers, they

may not have sufficient resources for all sellers in their portfolio. This leads intermediaries to

discriminate among sellers by focusing their scarce resources on those sellers with higher

relative standing in their portfolios (Ozcan and Eisenhardt, 2009; Ozmel and Guler, 2015).

Overall, the literature on seller-intermediary relationships indicates that sellers and

intermediaries are pushed into ties by mutual resource dependence, and often gain from those

ties (White and White, 1993; Rider, 2009; Zhu and Zhang, 2010; Giorgi and Weber, 2015).

Further, sellers seek resources for product refinement and market access to buyers (Bielby and

Bielby, 1999; Piezunka, 2015). Finally, sellers are more likely to receive needed resources when

they have high relative standing (Ozmel and Guler, 2015).

While insightful, this literature neglects that sellers often face the "*big fish, big pond*"

dilemma that complicates their choice of intermediary. That is, sellers seek relationships with

intermediaries that have significant market access (seller is in a "big pond"). But since such

intermediaries are also likely to attract more and better peer sellers, choosing the most attractive

intermediary can also expose the seller to substantial competition with peers. So, sellers may

prefer to forego intermediaries with great market access to ensure that they have sufficient

relative standing among their peers to gain needed resources (seller is a "big fish"). How sellers

resolve the tension between choosing an intermediary that offers significant market access (big

pond) vs. an intermediary where the sellers have high relative standing (big fish) has yet to be explored. This is the gap we address.

HYPOTHESES

We build on resource dependence theory to develop our hypotheses. Specifically, we propose that a seller's resolution of the "big fish, big pond" dilemma at tie formation is contingent on the seller's need for resources that push the seller toward *cooperation* with particular intermediaries, and, on the peer sellers in the prospective intermediary's portfolio that create *competition* for resources and pull sellers away from specific intermediaries. Thus, we extend resource dependence theory by introducing *peer competition* and by proposing the *key moderators* that shape seller preferences in the "big fish, big pond" dilemma that occurs at tie formation. We argue that a seller's preference for relative standing (big fish) vs. market access (big pond) in its choice of intermediary is shaped by a seller's need for product and genre-specific resources (H1, H2) and by peer sellers in the prospective intermediary's portfolio, especially those with overlapping resource needs (H3, H4). See Figure 1.

Seller's Access to Resources

Product experience. Sellers form relationships with intermediaries that can provide access to product resources that the seller needs but does not have (Pfeffer and Nowak, 1976; Pfeffer and Salancik, 1978). We propose that, when the seller has *little experience* in product development, it prefers to be a big fish, that is, to put *relatively more weight on relative standing*. An inexperienced seller will seek intermediaries that will devote development resources (including attention) to it, and help build a product and supporting organization. Our interviews confirm that inexperienced sellers are particularly likely to prioritize relative standing, and reach out to intermediaries for significant resource help, with often high expectations of what a

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particular intermediary will do for them. For example, an inexperienced game developer emphasized the significance of his publisher's help: *"The president of [our intermediary] comes to our studio and every studio multiple times. It's not just a teleconference and it's not just a phone call. They actually have a physical presence. ...A lot of eyes, and a lot of feedback around everything we make."*

At the same time, these inexperienced sellers put less weight on market access because it is often too early for them to expand their customer base. Even when inexperienced sellers have great market access via intermediaries, they often cannot fully use it. Our interviews support this reasoning. For example, an inexperienced developer stated, *"The worst thing that could happen to us right now would be a lot of press. We're not ready for it."* Because early exposure to numerous buyers may jeopardize the seller's reputation and dilute its focus on products, inexperienced sellers are likely to prioritize high relative standing over market access.

In contrast, sellers with *more experience* in product development prefer a big pond, that is, they put *relatively more weight on market access*. As they gain experience, sellers shift from internal to external aims—such as attracting buyers—and so to market access. Prior research supports this argument. For example, Maurer and Ebers (2006) illustrate how the need for market access increasingly drives tie formation by biotech companies as they add experience. Similarly, a video game expert said, *"[If you're an experienced developer], you are already amazing at game design. You are looking for someone to help you be successful at the highest level. First and foremost, then, you stack potential publisher candidates by simple marketing muscle.*"

At the same time, experienced sellers value relative standing less because they require fewer resources from their intermediary. They have already built successful products, and established their product development processes. An experienced developer (who earlier relied

on intermediary resources) confirmed, *"What the intermediaries can do for me is getting less and less clear. [For my next product] I'll be certain to have in the contract that they can have no influence over the title. They can make suggestions but I have final say. I'll also specify I have complete say over the cover."* That is, resource help for product development became less meaningful (and sometimes unwelcome) as developers gained experience. For example, an experienced developer described a strong preference for a *"hands-off approach"* because the intermediary's involvement in product design was a *"net negative."*

In addition to seller preferences, intermediary preferences are also germane because tie formation is bilateral.[5] Intermediaries have a general preference for experienced sellers that already have relevant resources such as product development processes. These sellers enable intermediaries to conserve their own resources and exploit their market reach.

But for intermediaries with small audiences (i.e. those with limited market access), they have less market reach to exploit. Instead, an important part of their value proposition to sellers is often the resources that the intermediary can offer the seller.[6] These intermediaries are often willing and able to collaborate with inexperienced sellers because they have available the resources needed to help them. For example, the at-the-time obscure publisher of the first Harry Potter book invested much time in developing the manuscript (e.g., publisher's CEO read a book draft to his daughter). Lingo and O'Mahony (2010) similarly describe how music agents select emerging artists when they can devote significant time to help the artist on basics like forming a band. Intermediaries (especially those with limited market access) also may see cultivating new talent as way to innovate and expand their reach. For example, a publisher described:

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[5] We thank a reviewer for drawing our attention to the necessity of mutual agreement between sellers and intermediaries.
[6] We appreciate this argument, pointed out by one of our anonymous reviewers.

"Publishers have to innovate, they have to be looking for the next great thing that people are going to fall in love with," and continued *"innovative and cool and different"* ideas often come from novice developers who have *"passion for the game"*. Similarly, another publisher with limited market access said he preferred a *"rock star team over an experienced team."* So while intermediaries may generally prefer experienced over inexperienced sellers, their willingness to collaborate with an inexperienced seller increases if they can devote the necessary resources to improve a novice seller. In turn, these actions may help the intermediary innovate and expand their reach. Finally, intermediaries with less market access may simply have less choice (i.e., experienced sellers prefer market access), and so be forced to add inexperienced sellers.

In contrast, intermediaries with great market access are likely to prefer adding experienced sellers – both to reach their many buyers more reliably with better products and better sustain their own reputations. These intermediaries also prefer to add experienced sellers because these sellers have already developed proven products and so need fewer resources from the intermediary. Thus, the intermediaries can accommodate more sellers with about same resources, and so offer more products to their large audiences. Thus, intermediaries with great market access prefer to add experienced sellers in order to conserve their own resources and exploit their market reach. In sum, these joint preferences suggest a shift from relative standing to market access as seller experience increases.

Hypothesis 1 (H1): *The more product experience the sellers have, the more they weigh market access over relative standing when choosing an intermediary.*

Genre capabilities. Our second resource argument focuses on the seller's need to acquire capabilities in the genres in which it develops products, that is, again, the seller's resolution of the "big fish, big pond" dilemma depends on its needs for specific intermediary resources. In art

and entertainment industries like feature films and video games, the seller's needs are especially tied to whether the seller wishes to exploit its existing capabilities by developing products in genres in which it already has many offerings or to explore new genres[7] (Hsu, 2006). Our interviews support this reasoning. As an expert told us, "*Game developers talk a lot about balancing existing IP versus new IP. You want to improve your existing IP and stay current …At the other end is let's create a new type of game so that we attract a whole new audience.*"

We propose that when the seller develops in a new genre, it seeks intermediary resources that enhance its game development for this new genre. So it prefers to be a big fish, that is, puts *relatively more weight on relative standing*. Examples of genre-specific resources include relevant focus group testing and relevant expertise in the unique technical and artistic "gameplay characteristics" that differ across genres. Thus, sellers starting in a new genre emphasize relative standing. As a developer described, *"Especially when you're innovating something [for a new genre], there's always some snag and always some complication that you did not foresee. [It is important that] a publisher is going to support you and work with you through these tough times."* At the same time, sellers who attempt a new genre put less weight on market access because such access is less valuable, at least in the short-run. Our interviews corroborate this logic, indicating that a seller's early products in a new genre are often rough and unlikely to lead to major commercial success.

In contrast, when the seller is developing a game for which it already has genre-specific capabilities from developing repeated products in the focal genre, it often prefers a big pond, that is, puts *relatively more weight on market access*. These sellers wish to exploit their genre-

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[7] We wish to thank an anonymous reviewer for suggesting the focus on genres as a relevant capability.

specific capabilities which increases the value (to them) of an intermediary's market access to a big audience. These sellers may also prefer market access because gaining exposure to more buyers may re-ignite the sales of the seller's previous products in the genre. For example, a prominent art dealer, such as Larry Gagosian, can increase demand for current work while simultaneously triggering renewed interest in the artist's past work (Crow, 2011). At the same time, a seller with multiple products in the same focal genre places less weight on relative standing because its initial efforts to develop in this genre lie behind it, and so the seller needs fewer resources from the intermediary. Also, a seller that can exploit its own capabilities in the focal genre is less concerned with access to intermediary resources. Rather, they already have many or all of the capabilities that they need to commercialize the product.

Again, since tie formation is bilateral, intermediary's preferences are germane. A key point is that resources are often not easily fungible across genres (Kim and Jensen, 2014). Our interviews corroborate this. As a publisher described, *"Say I want to make a football game, and a poker game. I need to have someone who really understands the football game category, and I need to do the same in the poker game category. … They are different teams, different people, and different resources."* Consistent with our prior arguments, intermediaries have a general preference for sellers who already have relevant resources like genre-specific capabilities. These capabilities enable intermediaries to conserve their own resources and exploit their market reach.

At the same time, intermediaries may consider a seller who lacks well-developed genre capabilities, especially when the seller is strong (i.e., high relative standing). Here, they may be willing to help such a seller to enter a new genre despite its greater need for patience, flexibility and resources. For example, we interviewed a publisher who worked with a successful developer of racing games on the developer's first "first-person shooter" game for several reasons. The

publisher had high regard for this developer and the relevant resources to help the developer to succeed in its new genre. Also, intermediaries (especially those wishing to innovate or grow) may devote resources to help strong sellers in a new genre because these high-quality sellers are especially likely to have novel ideas from other genres. Intermediaries may also prefer to add strong sellers to keep them from forming relationships with rival intermediaries. In sum, these joint preferences suggest that as a seller moves from exploration of new genres to exploitation of old ones, the weight shifts from relative standing to market access.

Hypothesis 2 (H2): *The more genre capabilities the sellers have, the more heavily they weigh market access over relative standing when choosing an intermediary.*

Peer Competition for Resources

Hypotheses 1 and 2 address how sellers' product and genre resource needs shape their preference for relative standing (big fish) vs. market access (big pond) and push them toward particular intermediaries. Hypotheses 3 and 4 focus on how sellers' competition with their peer sellers may pull them away from particular intermediaries. Specifically, we extend resource dependence theory to its implications for peer competition (Pfeffer and Salancik, 1978). We argue that peer competitors increase uncertainty about whether the intermediary's resources will actually be available to the focal seller once the tie is formed. Thus, we propose that the seller's resolution of the "big fish, big pond" dilemma depends on the potential competition with peer sellers in the prospective intermediary's portfolio. Specifically, the intensity of peer competition from many rivals (H3), and the overlap in resource needs with them (H4) influence how a seller weighs relative standing vs. market access when choosing an intermediary.

Number of peer sellers. When a seller considers a prospective intermediary whose *portfolio of sellers is large* (i.e., many peer sellers), a seller prefers to be a big fish, that is, puts

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relatively more weight on relative standing. Sellers recognize that not every seller will gain sufficient access to the intermediary's resources, especially when there are many sellers. As one developer noted, "*Intermediaries have got a lot of irons in the fire*". Intermediaries also tend to allocate their resources to sellers with high relative standing, while the rest may be overlooked (Ozmel and Guler, 2015). Moreover, sellers recognize this preference for relative standing, and the increased uncertainty of gaining needed resources when there are many peer sellers. For example, an informant described, *"[Imagine] you're a book writer. If you go with the big publisher, [the risk is that] they take your book out and they put it in back of the other 50 books they're promoting this quarter, and you're the one they barely talk about"*. Since sellers anticipate this behavior, they choose intermediaries accordingly – i.e., sellers prefer high relative standing when they choose an intermediary. This helps to ensure the intermediary's resource help in refining their product. At the same time, sellers place less value on market access because access is less uncertain with many peer sellers.

In contrast, when *there are few peer sellers in the prospective intermediary's portfolio* and so access to intermediary's resources is more certain, the seller is likely to prefer the intermediary that can reach more buyers, that is, the seller puts *relatively more weight on market access*. When there are few sellers, the seller faces less uncertainty about gaining the intermediary's help to refine its product. In this situation, market access (i.e., size of buyer audience) becomes the more relevant factor. In addition, with less peer competition, more of the intermediary's market reach is likely to be available to the focal seller. Further, any potential peer competition over buyers is often more easily mitigated when there are few peer sellers (e.g. staggering product releases is easier). At the same time, relative standing is less relevant at tie formation because all sellers are likely to receive enough resources from the intermediary. A

developer described the advantage of a few peer sellers, *"You have so much more control"*.

Again, intermediary preferences are also germane. Intermediaries that already have many sellers are likely to prefer adding strong sellers (i.e., high relative standing among many peers) because these high-quality sellers are less likely to need substantial resources from the intermediary. This is important to intermediaries, especially when their resources are already stretched across many sellers - i.e. by adding strong sellers, intermediaries can accommodate more sellers. These intermediaries may also prefer to add strong sellers because these sellers are likely to provide superior products for the intermediary's customers, and so generate more sales. Intermediaries also find strong sellers attractive because they are likely to improve the reputation of the intermediary's entire portfolio. Finally, intermediaries may want to add strong sellers to keep these desirable sellers away from rival intermediaries.

In contrast, intermediaries with few sellers are likely to offer a value proposition that emphasizes their willingness and ability to devote more resources to each seller. So, they may be more open to collaborating with weaker sellers because they can use their resources on sellers that are especially able to benefit. In addition, by developing weak (but improving) sellers, intermediaries may create a growth path for themselves by growing along with their improving sellers. Alternatively, these intermediaries may be forced to take weaker sellers because strong sellers (i.e., high relative standing) are less drawn to getting product-development resources and prefer market access. Either way, the larger the portfolio of peer sellers, the more the intermediaries choose higher ranked sellers. In sum, the joint preferences suggest a shift from market access to relative standing as the number of peer sellers increases.

Hypothesis 3 (H3): *The larger the number of peer sellers in an intermediary's portfolio, the more heavily the seller weighs relative standing over market access when choosing an intermediary.*

Overlap with peer sellers. While sellers are pushed into ties with intermediaries to gain resources (Pfeffer and Nowak, 1976), they also face more uncertainty regarding whether they will actually gain these resources when they have more overlapping peers (i.e., peers competing in similar genres). The reason is that such peers will need similar or even the same resources from the intermediary. Further, when there is high overlap among peers, intermediaries are better able to compare peers and confidently rank them. So, intermediaries will be especially likely to act on their tendency to allocate resources to sellers with high relative standing.

When *overlap with peer sellers is high* (i.e. prospective intermediary has many sellers in the focal seller's genre), a seller prefers to be a big fish, that is, puts *relatively more weight on relative standing*.[8] Such sellers will anticipate that the intermediary will be especially able to distinguish among peer sellers, and so ration its resources such that only some sellers will gain sufficient resources. A developer described, "*If I approach a publisher and they have another title that could directly compete against mine, that is a red flag. There is an inherent conflict of interest that could cannibalize my sales.*" Another described his negative outcomes from overlapping sellers, *"We saw a lot of our titles canceled. We saw probably about half getting canceled."* So, when overlap with peer sellers is high, a seller with low relative standing anticipates that it will have negative outcomes, including missing out on the benefits of the intermediary's resources. It also faces the likelihood that the intermediary will provide its resources to overlapping sellers with higher relative standing, thus making these higher ranked peers even more formidable rivals for the same buyers. In addition, when overlap with peer sellers is high, the intermediary is likely to possess genre-specific capabilities and a central

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[8] We thank our anonymous reviewer for suggesting genre as an important factor.

position within the genre, both of which make the intermediary's resources especially valuable to sellers and particularly damaging to miss. Overall, as a developer noted, "*You have to worry about the competitive set that the publisher supports. The publisher may have great capability in your title because they also publish your major competitor. Then you have to ask yourself - Is it going to lead them to prioritize your project lower?*" At the same time, a seller puts less weight on the intermediary's market access at tie formation because such access is less relevant when it needs to be shared with many others in the same genre and when the seller cannot refine its product with the intermediary, especially when its higher-ranked rivals can. In other words, a weak product is unlikely to succeed even with a large buyer audience.

In contrast, when there is *low overlap with peer sellers* (i.e. prospective intermediary has few sellers in the focal seller's genre), the seller is likely to put *relatively more weight on market access*. In this situation, the intermediary is likely to have few relevant (i.e., genre-specific) capabilities, and so its product and marketing resources are likely to be less valuable to the focal seller. Its genre-specific resources may simply not transfer well to the focal seller's genre. It also takes more effort for the intermediary to switch to help a seller in a genre in which it has few sellers. Thus, when there are few overlapping peers, the focal seller faces more uncertainty about the value of the intermediary's resources and its ability to use them. So, relative standing becomes less important. Finally, when there are few overlapping peers, the focal seller faces more uncertainty about its own relative standing in the portfolio (Zuckerman, 1999; Hsu, 2006; Pontikes, 2012), again making relative standing less important. [9]

At the same time, the seller with few overlapping peers may see the intermediary's ability

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[9] We thank an anonymous reviewer for suggesting several of these arguments on relevance of intermediary resources.

to reach a big audience (i.e., market access) as attractive (big pond). Such a seller is more likely to a) gain the intermediary's endorsement in its genre because it has few competitors for that endorsement, and b) benefit from market access to many buyers because it has few direct rivals for them. Thus, a seller with few overlapping peers is likely to have more certainty that it will benefit from an intermediary with high market access. Finally, the intermediary's representation of sellers in other genres can be a way for sellers to gain a wider audience. For example, pro athletes who signed with the entertainment agency Roc Nation (founded by Jay-Z to represent rappers, DJs and athletes) often did so to reach a wider audience beyond sports.

Again, the intermediary's preferences are germane. When an intermediary considers adding a seller that overlaps with many of its existing sellers, it is likely to prefer a strong (i.e., high relative standing) seller. Since the intermediary has likely developed substantial genre-specific capabilities, it can exploit them most efficiently by adding a strong seller in the same genre. Also, by adding a strong seller in its current genres, the intermediary is likely to strengthen its own reputation and that of its entire portfolio. So, an intermediary favors adding sellers with high relative standing when its portfolio has many similar (i.e., overlapping sellers). As a publisher illustrated, "*We already have a lot of racing games. But this new developer is really, really good in racing games. So we will probably take it.*" At the same time, a weak seller (i.e., low relative standing) is dominated by others in its genre. Thus, the intermediary gains little or no immediate value from adding a weak seller in its focal genres.

In contrast, when an intermediary considers a seller with few overlapping sellers in its portfolio, the intermediary is often forced to choose a weak (i.e., low relative standing) seller. This is because strong sellers (i.e., high relative standing across many portfolios) typically prefer intermediaries with more relevant (i.e., genre-specific) resources. Alternatively, an intermediary

may be willing to add an initially weak (i.e., lower ranked) seller in order to diversify into a new genre. In support, our interviewees pointed to examples of publishers trying to *"diversify"* by adding initially weak developers to *"refresh the portfolio"* and doing so *"where the publisher is trying to move the company."* In addition, when an intermediary enters a new genre, it may devote more resources and engage in more experimentation with relevant sellers. These actions may improve the intermediary's capabilities in the genre, and add more value to the initially lower-ranked seller's product. Both parties also may unexpectedly find innovative synergies between their genres. Finally, the intermediary is unlikely to have its reputation damaged by product flops in a new genre. Our interviewees support this reasoning. For example, several noted opportunities for increased *"experimentation"* that could result in surprising success with initially weak (i.e., low relative standing) developers. Several claimed that adding a weak developer in a new genre was "*less risky"* for the intermediary because *"the expectations were lower."* Either way, the more experience that intermediaries have in a particular genre (i.e., overlapping sellers), the more they prefer high-ranked sellers. In sum, the joint preferences suggest a shift from market access to relative standing as the overlap with peer sellers increases.

Hypothesis 4 (H4): *The higher the overlap with peer sellers in an intermediary's portfolio, the more heavily the seller weighs relative standing over market access when choosing an intermediary.*

METHODS

Sample

To examine a seller's choice of an intermediary, we constructed a comprehensive panel dataset of the complete population of global video game firms that developed and published games for the PlayStation2 (PS2) console over a 10-year period from 2000 to 2009. These firms were based predominantly in the three countries that dominate the video game industry: U.S.

(29%), Japan (31%), and the UK (16% of the dataset). We examined 359 developers (sellers) that formed relationships with 169 publishers (intermediaries) for the release of 1,397 games on the PS2. In the video game industry, game developers conceptualize, design, and code video games. They are focused on *"the vision and the creation of the game."* Publishers support developers by suggesting improvements, financing, and marketing games to buyers (Zhu and Zhang, 2010). One industry expert noted that publishers *"fill in the gaps" … technical, artistic, and creative support… critique and quality control… brand awareness and marketing*." Given the relationship, game developers seek publishers that can help them develop games, reach buyers, and produce sales.

The video game industry is a particularly appropriate setting for several reasons. First, developers vary in terms of product and genre experience while publishers vary in terms of portfolios of sellers that they represent. This provides rich variation. Second, the setting is also appropriate because publishers add substantial value to games and strongly influence developers' success. Prior work indicates that intermediaries discriminate in their resource allocation among their partners (Ozcan and Eisenhardt, 2009), thus driving the "big fish, big pond" dilemma. This dilemma is also likely to be particularly acute in hit-driven industries such as video games.

We used several sources to gather data on sellers, intermediaries, and their collaboration. MobyGames was our primary data source for game titles, game genres, release dates and platforms, game reviews, credits, release countries, and developer and publisher identities. The crowd-sourced MobyGames database has been found to be the most exhaustive repository of the game data and to provide an accurate and comprehensive description of the global video game industry (Mollick, 2012; De Vaan, Vedres, and Stark, 2015). To ensure accuracy, MobyGames entries are moderator-verified before they are accepted into the database, and peer-reviewed

(Mollick, 2012; Zhao et al., 2015). We triangulated the MobyGames information with data from Factiva, GiantBomb, IGN, AllGame, and individual firm websites. GiantBomb, AllGame, and IGN are partially crowdsourced, but also employ editors who create game entries and game reviews. We found that all games that were listed in the other databases were also listed in the MobyGames database. Because MobyGames data are at the game-level, we supplemented its information by looking up PS2 developer and publisher profiles on GiantBomb, AllGame, IGN, and Wikipedia to include data on founding dates, ownership, and geographical location of developers and publishers. Finally, we examined each firm's website for any information that was still missing. For firms that were no longer active, we referred to the Internet archive (archive.com). This data collection strategy enabled our building a comprehensive dataset on the activities of the mostly *private* developers and publishers in the video game industry (e.g., founders, founding dates, location, bankruptcies, mergers, and acquisitions). Such data are notoriously difficult to obtain, and are a strength of our study.

We focus on one segment of the video game industry—i.e., collaborations between developers and publishers to create and sell games for the PlayStation2 (PS2) console. Since the PS2's cutting-edge technological capabilities made game development more challenging than for the PC and the previous (and later) generations of consoles (Edwards, 2006), the engineering resources (e.g., software libraries, game engines) that publishers devoted to developers were particularly relevant. As a developer described, *"PS2 was very, very difficult [to develop for]... but everyone did it because it was the best platform and you knew that when you put in the time it was going to be awesome."* PS2's market dominance ensured that it consistently attracted a high

number of firms, and a high variety of games in different genres,[10] and thus helped ensure that

we examined a broad cross-section of developers and publishers in the video game industry.

Released in 2000, PS2 became the best-selling video game console ever.

Our dataset is the complete population of firms that developed and published PS2 games

between 2000 and 2009, i.e. 359 developers and 169 publishers.[11] Together, these firms released

1,397 games for the PS2 between 2000 and 2009. We used dyad-years (i.e., whether a developer

chose a publisher in a particular year to collaborate on a game) as the unit of analysis (Gulati and

Gargiulo, 1999). Since developers could choose publishers for more than one game per year, we

recorded 779 realized dyad-years.

We supplemented the archival data with fieldwork, including more than 30 interviews

with industry experts. We spoke with the employees and founders of several video game

companies - developers and publishers - to better understand the industry, particularly regarding

intermediary selection. These interviews often took place on-site so that we also interacted with

staff beyond the focal interview. We supplemented these interviews by talking with employees

of middleware companies that provide software tools to video game developers. We also

interviewed journalists, bloggers, and VCs specializing in the video game industry. In addition,

we attended multiple game fairs where developers present games and meet publishers.

Measures

Collaboration. As the outcome variable, we examined whether a seller and an

intermediary (developer and publisher) collaborated for the release of a video game in focal year

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[10] A developer illustrated the difference to us, *"Xbox [a rival console] tends to produce first-person shooter games versus PlayStation has ...a more varied set... more adventure games, great racing games, and so on."*
[11] When a publisher was also active as a developer (50 firms), we included it only in the sample of publishers because that seller did not make an intermediary choice (i.e. always 'picked' the in-house publisher).

t. We included all games by a developer except for special editions and extension packages (because the seller does not choose a new intermediary for these types of releases). We used the year that the focal game was released as the year of collaboration. Since our interviews indicated that developers typically choose a publisher and begin working with that publisher within a year of game's release, this was an appropriate choice. Using individual games to measure the developer's choice of a publisher was also appropriate because developers choose publishers at the game-level such that each video game has both a single developer and a single publisher[12] but different games by the same developer may have different publishers. We coded the dyad-year collaboration as a dummy variable that equals 1 if a developer and a publisher worked together to release a video game in year *t* and 0 otherwise. We also coded an alternative version of the variable—a count of games released jointly in year *t*—with similar results.

Big fish vs. big pond variables: relative standing, market access. We measured a seller's **relative standing** compared to a prospective intermediary's other sellers as the share of portfolio developers inferior to the focal developer. To measure developer quality, we chose a well-accepted industry measure: score assigned to developer's games by third-party magazines (Mollick, 2012). Review scores are a strong indicator of a developer's ability to develop a high-quality game. Consistent with this choice, a game analyst told us, *"One of the things we look a lot is the review score…Bad reviews, it can really burn the reputation of the developer."* Interviews with developers and publishers also revealed that it is the "developers' responsibility" to create a "high-quality game" and ensure "technical success" which is reflected in the review

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[12] In exceptional cases (fewer than 3%), more than one independent firm fulfilled the role of either the publisher or the developer. In these cases, we randomly picked one developer or one publisher (Ahuja, 2000). The results remained stable across the iterations.

score. It is then up to the publisher to make it a "commercial success" which is reflected in sales.[13] We also chose review scores as a measure because our interviewees noted that publishers often rely on review scores when they rank developers, and when they decide the resources to devote to particular developer(s). For example, when we asked about the relevance of past reviews, an expert said. *"People are always looking in the rear view mirror to try to determine the future in terms of who is going to be the successful creator of the next wave."* To create an annual quality score for each of the 359 developers in our sample, we examined 32,024 ratings of the developers' games (including the non-PS2 games) by third-party magazines. To account for the different rating systems across magazines, we normalized the scores on a scale of 1 to 100, with higher scores representing higher quality, and took an average of all scores received by a developer in the three years prior to year *t*.[14] We used the average updating procedure (Bush and Mosteller, 1955) to give more weight to developers who more consistently developed high-quality games.[15] Specifically, we operationalized a developer's quality as

$$\frac{Average\ quality\ score\ of\ any\ game + \sum_1^n Quality\ score\ of\ games\ released\ by\ focal\ developer}{1+n}.$$ [16] To compute

relative standing, we then compared the focal developer's scores with those of the other developers on the intermediary's portfolio. To measure relative standing we counted the number of "inferior" developers and divided it by the total number of developers affiliated with the

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[13] Thank you to our anonymous reviewer for asking us to clarify the measure for relative standing. We also considered other alternative measures to review scores such as developer's past game sales. However, both developers and publishers saw sales as an imperfect indicator of a *developer's* potential because sales also depend on the publisher (Zhu and Zhang, 2010).

[14] For newly founded developers without any reviews, we assigned a quality score corresponding to the average quality achieved by other developers without prior experience in that year. We also estimated the models without assigning scores to new developers, with no qualitative changes to the results.

[15] We thank an anonymous reviewer for suggesting this measure.

[16] We also used an alternative operationalization, i.e. the average quality score of games released by the focal developer. Our results were consistent.

publisher, i.e., *relative standing* $= \frac{\textit{number of sellers believed to be inferior in the intermediary's portfolio}}{\textit{total number of sellers in the intermediary's portfolio}}$. If, for example, an

intermediary was affiliated with 5 sellers and 3 of those scored lower than the focal seller, the

seller's relative standing was 0.6. Thus, relative standing is always positive, and a higher relative

standing is better (an approach that facilitates interpretation of the results). In cases in which

there were no other sellers, we set the relative standing variable to one because the focal seller

would be the only seller to join the portfolio. We also computed an alternative measure by

comparing a given developer to other developers in a publisher's portfolio in the year prior to *t*

(to account for the possibility of a developer choosing a publisher based on the intermediary's

portfolio from the prior year), and another alternative measure that captured developer's past

sales using data from the NPD Group, a market research firm that collects sales information from

the largest U.S. video game retailers (Clements and Ohashi, 2005; Zhu and Zhang, 2010).[17]

These results (available from the authors) were consistent with our original findings.

We measured the **market access** that an intermediary provides to a seller by the number

of reviews that the games released by a particular publisher received from third-party magazines

and websites. The number of reviews of a publisher's previous games is an appropriate measure

of the publisher's ability to reach the audience for multiple reasons. First, our interviewees noted

the industry norm to evaluate a publisher's potential to sell a game by the extent to which its

games have been reviewed in the past. This is because buyers tend to buy the games that get the

most publicity, not necessarily the ones with the highest quality (Zhu and Zhang, 2010;

Matthews, 2012), thus confirming number of reviews as an appropriate measure. In fact,

attracting reviews was mentioned as one of the main responsibilities of the publisher. One

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[17] We thank our reviewer for suggesting that we elaborate on the robustness of our findings by using sales measures.

interviewee noted, *"It is the publisher's job to get games reviewed. They have the rolodex of journalists."* Second, third-party magazines are likely to review publishers whose games they have reviewed in the past (Piezunka, 2015). This makes past reviews a relevant predictor of the media coverage that a future game by a publisher will receive.

Third, developers can typically access prior reviews, and so use this information as a decision criterion as they assess the likely market access of a prospective publisher. In contrast, other information such as a publisher's sales or relationships with game shops is often unavailable, particularly for private firms common in our data. An expert said, *"When developers assess publishers, they look at the number of reviews a publisher's games have received."* We also tested alternative measures for market access such as publisher's game sales (domestic, international) and number of magazines reviewing a publisher's games, with different time lags and different (or no) logarithms, with consistent results (available from the authors).[18] While these data provide other possible measures of publisher's future potential to provide market access, our informants advised that game sales were often a "noisy indicator" of future audiences. Also, none of these measures was publicly and easily available for the mostly-private developers in our data. Our qualitative evidence thus strongly confirmed number of reviews as an appropriate measure. To operationalize the **market access** variable, we counted the average number of reviews (in hundreds) received by a publisher's games in the three years prior to the focal year *t,* and took a logarithm to reduce skew. In total, our sample included 32,024 reviews for the games that the 169 publishers had released.

Moderators. Seller's access to resources. We measured seller's **product development**

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[18] We thank an anonymous reviewer for suggesting these alternative measures.

experience (H1) by the number of games launched by a given developer in all prior years. Games developed for all video game consoles and the PC were included. Several interviewees noted that this is an appropriate measure of seller's resource needs because developers that have launched many games typically have built their own resources for product development while developers with few games still need these resources. These resources include engineering teams, software libraries, access to the fan-base, and development processes. We also tested alternative measures, such as the number of games developed in the prior three years and the age of the developer. The original results were supported (results available from the authors).

We measured seller's **genre capabilities** (H2) by the degree to which the developer had accumulated capabilities in a particular game genre (i.e. product category). Following De Vaan et al. (2015), we used 8 standard video game genres: action, adventure, education, role-playing, racing, simulation, sports, and strategy. To construct the measure, we identified those genres in which the developer had released games both in current *and* in past three year(s) across all platforms and counted their number, and then normalized the measure by dividing with the number of genres in which the developer released games in the current year. Focus in a game genre (vs not) is an appropriate measure of capabilities in a product category because each genre has its own audience and distinctive "gameplay characteristics" such as distinctive form that requires distinct types of artistic and technical resources to reach the audience. As a publisher described, each game genre is a "*completely different beast. Any time you switch genre you have to rewrite - your core engine, rendering, physics doesn't transfer between genres very well."* Another expert distinguished, *"Masters of genres that put lots of money and lots of time into making sort of a perfection of a relatively proved form" vs. "those who innovate and try to explore a new space [genre]."* We also tested an alternative measure, product sequels, because

one observer noted a similar trade-off between original products vs product sequels: *"[with sequels] you don't have to really innovate all that much to succeed ... just crank one out"*. Results (available from the authors) using product sequels, not genre, were broadly consistent.

Seller's competition over resources. We measured **number of peer sellers** (H3) by the number of developers with whom a prospective intermediary-publisher collaborated to release games for the PS2 in year *t-1*. Our interviews confirmed that developers were aware that more peers with whom a publisher collaborated to release games created competition for the intermediary's resources, making resource access more uncertain. A developer asked, *"Do they just have too many things on their plate and is my title going to get the attention it needs?"*

We measured **overlap with peer sellers** (H4) as the share of PS2 developers with genre overlap in a prospective publisher's portfolio. These were likely to be immediate competitors, making resource access less certain. To assess genre overlap, we followed our informants' advice to compare each of the portfolio developer's games in t-1 to each of the focal developer's games in t-1. For this game-to-game-comparison, we used genre categories for each developer's games (e.g., action, simulation). Our main analysis measure also considered possible relatedness across genres, per below.[19] We used 2 binary sensitivity measures: 1) coded a portfolio developer as an immediate peer seller if any of its games were in the same genres as those of the focal seller, and used the ratio of immediate peer sellers to all peer sellers as the overlap measure, and 2) created a binary variable indicating whether at least one seller in the portfolio had games in the same genre(s) as the focal seller (or not), with a consistent pattern of results.[20]

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[19] We thank our anonymous reviewer for suggesting that we use this particular main measure.
[20] We appreciate a reviewer's suggestion to show robustness with simple overall measures vs comprehensive measure that tracks genre relatedness.

To construct the main measure of overlap that accounted for relatedness across genres, we built on our experts' observation that some game genres are more related than others (i.e., categorization of some games in related genres). To capture competition between games of different but related genres, we created a normalized co-occurrence matrix using all games in the sample, and coded co-occurrence as the likelihood that a game categorized in one genre was also categorized in another genre (Stuart, 1998)[21]. If the games belonged to different genres, we used the co-occurrence value from the matrix (values ranged from 0-1 with higher values indicating higher overlap). In the case where one or both games being compared were associated with multiple genres, we summed the co-occurrence value of each genre combination across the two games and averaged. [22] To construct the measure of overlap, we took the average of all game-to-game comparisons among the games of the other and the focal developer. The values ranged from 0 (weak) to 1 (strong) competition. Finally, we counted a developer as an immediate rival to the focal developer if the game overlap exceeded a 0.3 threshold (we used 0.5, with similar results) and computed the share of rival developers as *portfolio overlap=*

$\frac{number\ of\ sellers\ above\ competitor\ threshold\ in\ portfolio}{total\ number\ of\ sellers\ in\ portfolio}$. Although the effect was strongest with the most detailed measure of overlap, sensitivity results confirmed that even a single portfolio seller (vs. none) in the same genre could begin to deter a prospective seller and shift the preference to market access (results available from the authors).[23]

Control variables

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[21] For example, 31 percent games associated either with the action or adventure genre were associated with both genres. We thus coded the overlap between an action game and an adventure game as 0.31. If two games are associated with the same genre(s), co-occurrence is one.

[22] We also computed an alternative binary measure by coding competition as 1 if the games were in exactly the same genres (e.g. action role-play), and 0 otherwise. Our results were consistent.

[23] We thank an anonymous reviewer for suggesting this alternative test.

Prior collaboration. Since prior work shows that firms tend to choose past collaborators as partners (Granovetter, 1985; Uzzi, 1996; Gulati and Gargiulo, 1999), we controlled for prior ties between a seller and an intermediary. Our measure was a binary variable that equals 1 if a developer and publisher had a prior tie on a game (including non-PS2 games) in any year prior to year t and 0 otherwise.

Competitive overlap. Prior work suggests that an intermediary's vertical integration (i.e., has its own games) might affect a potential seller's choice – i.e., intermediary's dual roles as seller and intermediary may increase the competitive tension by raising the risk that the intermediary might misappropriate the seller's resources (Katila et al., 2008; Diestre and Rajagopalan, 2012). An informant noted, *"Developers are always cognizant of 'are you [publisher] going to give my game the same love as your internal games? …And if you see something, if somebody really likes a cool feature [in our game], will you make that in your game, too? "* We computed a continuous measure of overlap between the developer and in-house publisher development in year t-1 with the approach above to compare genre overlap of games of the focal and a rival developer (0=no overlap; 1=complete overlap). We also estimated a version with value of 1 if the publisher was also a developer and 0 otherwise, with consistent results.

Quality difference. Since ties are more likely between partners of similar quality (e.g., high quality seller matches with high quality intermediary) (McPherson and Smith-Lovin, 1987), we control for quality difference.[24] We compute the quality of developers and publishers using the average review scores of their games over the prior 3 years (0 to 1) and square the difference.

Geographic distance. We control for geographic distance between a developer and a

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[24] We thank an anonymous reviewer for suggesting quality difference as a control.

publisher, since shorter distance facilitates collaboration (Sorenson and Stuart, 2001). We measured the geographic distance between a publisher's and a developer's headquarters in thousands of miles using data from the Google Maps API.

Seller geographic location. Prior work suggests that collaboration patterns differ across regions (Owen-Smith and Powell, 2004). We thus controlled for a developer's geographic location, using three dummy variables to operationalize whether a given developer was based in the U.S., Japan, or U.K. ("other region" was the omitted variable).

Intermediary experience. Prior work suggests that firms prefer to select experienced firms as partners (Hoetker, 2005). A seller described the benefits of an experienced intermediary, *"Like a machine. You're going to be put through a process that is going to take you and shape you and mold you and push you out at the other end…with a professional looking product."* In the video game industry, experienced publishers often offer added specialized resources (e.g., access to time-saving coding packages), or a widely recognized brand (e.g. EA). Our interviewees also noted that experienced publishers excelled at knowing the "right" amount of resources to invest. One said, *"They provide the right amount of time and right amount of resources."* Experienced publishers may have also learned to anticipate developers' needs and work styles, thus facilitating tie formation. We thus controlled for intermediary experience, measured by the number of games a publisher released for any console or PC in the three years prior to year *t*. In alternate tests, we used publisher age as a measure of experience with consistent results (available from the authors). We also estimated an alternative version that took into account the experience of an intermediary's other sellers.[25] We measured the development

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[25] We thank a reviewer for suggesting these controls for intermediaries.

experience of peer sellers on the intermediary's platform that ranked higher than the focal seller (and could thus be exemplars), with consistent results (available from the authors).

Intermediary size. Large intermediaries may be more likely to be selected as partners because they likely have more resources to help the seller.[26] Since large publishers have the experts in game commercialization that developers most often need, we used the average number of employees involved in commercialization of games in the three years prior to year *t* as measure of intermediary size. We coded employment relationships from role descriptions in game credits. We considered a person as an employee of the intermediary if his/her title in the credits of a published game indicated participation in commercialization of the game.[27] Since intermediary size and intermediary experience are relatively highly correlated, we ran models including the variables both separately and together, with consistent results.

Estimation Techniques

We conducted a dyad-level analysis to examine with which intermediary a developer partners. As in prior work (Gulati and Gargiulo, 1999; Beckman, Haunschild, and Phillips, 2004; Katila et al., 2008), we created a seller-by-intermediary matrix for each year. The matrix included all developers and all publishers that released at least one game for PS2 in a specific year. Each cell took the value of 1 if a given developer chose a given publisher in a year, and 0 otherwise. We also used a version of the variable (i.e., count of the games for which the developer chose the publisher in the focal year) with consistent results. Each dyad-year record then consists of a variable measuring whether a particular developer chose a particular publisher,

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[26] We are grateful to a reviewer for suggesting size of the intermediary as a control.
[27] For example, if the role description of an employee included the name of the focal intermediary (e.g. Blizzard Marketing Manager in a game where the intermediary is Blizzard Entertainment), the employee is coded as an employee of the focal intermediary that year.

along with covariates characterizing the developer, the publisher, and the dyad. In total, there were 40,163 potential ties (dyad-years).

In analyzing the moderators of seller's choice (H1-H4), we follow Lee, Hoetker, and Qualls (2015) and report *random effects logit models* using a *split sample* in which we divide the sample into subgroups based on the 4 variables that we hypothesized influence how sellers weigh market access v. relative standing. As per Hoetker (2007), we created subgroups based on the median value of the focal variables (i.e., product experience, genre capabilities, number of peer sellers, overlap with peer sellers). The results are robust to splitting the samples on mean values (available from the authors). Following common practice (Train, 1998; Hoetker, 2005; 2006; Kapoor and Furr, 2015), we drew statistical inferences about a seller's shift between market access vs. relative standing using a technique by Train (1998) that compares the ratio of the two coefficients (market access to relative standing) across each of the two subgroups. Since we calculated a ratio of coefficients and compared the ratio across subsamples, we avoid making the assumption that unobserved variation is the same across subsamples (Hoetker, 2005).

To ensure robustness, we estimated models using alternative sampling and estimation approaches. We repeated the *random effects logit* analysis on the full sample. We also conducted a *conditional logit* analysis that purges unobserved variation in seller and industry characteristics that are constant across the intermediary choices. Described in detail below, these and other robustness analyses consistently supported the original results.

RESULTS

Table 1 reports descriptive statistics and correlations. A negative correlation between market access and relative standing confirms the *"big fish, big pond"* dilemma ($r = -0.2$; $p < 0.01$ in table 1) - i.e. the seller faces a choice between an intermediary with great market access vs.

one where the seller is likely to have a high relative standing in the portfolio. Overall, the

variables show considerable variance, and the correlation matrix indicates generally low

correlations among them. An exception is the moderately high correlation of intermediary

experience (measured by number of games released) with number of peer sellers and with

intermediary size, respectively. We ran the analyses with and without each of these variables

with consistent results. We also ran alternative analyses by using age of the intermediary as the

measure of intermediary experience, again with consistent results. We also computed the

variance inflation factors (VIF). All were below the conservative threshold of 5.0 further

suggesting that multicollinearity is not a concern.

Table 2 reports the *random effects logit* analysis of the *split samples* for the four

hypothesized moderators (i.e., product experience, genre capabilities, number of peer sellers,

overlap with peer sellers) of the seller's resolution of the "big fish, big pond" dilemma. Across

all models, and consistent with our other regression analyses, we find that collaboration is more

likely with more-experienced publisher-partners, and when the developer and publisher are

geographically proximate and prior partners. Following others (Train, 1998; Hoetker, 2005;

2006; Kapoor and Furr, 2015), we indicate the relative importance of market access v. relative

standing by first computing the ratio of coefficients of market access to relative standing in each

subsample, and then comparing the size of the ratio across the two subsamples (i.e. for low and

high levels of each hypothesized variable (e.g. inexperienced v. experienced seller)), and whether

a coefficient of either variable is significant in one subsample, but not the other (Train, 1998).

In H1, we hypothesized that inexperienced sellers (i.e., less product experience) put more

weight on relative standing in their intermediary choice while experienced (i.e., more product

experience) sellers put more weight on the intermediary's ability to provide market access. To

test H1, we assessed the ratio of coefficients of market access to relative standing in models 1 vs. 2 in table 2. As expected, the ratio of market access to relative standing increases as seller product experience increases (0.44 for inexperienced vs. 1.42 for experienced sellers in models 1 vs. 2, respectively, with the coefficient for market access gaining significance in model 2). This indicates that the seller's preference shifts from relative standing to market access as the seller gains product experience, supporting H1.

In H2, we hypothesized that relative standing has a greater effect on intermediary choice for sellers who lack genre capabilities while more genre-capable sellers put more weight on intermediary's ability to provide market access. Again, we computed the ratio of coefficients of market access to relative standing in each subsample in models 3 vs 4 to assess H2. As expected, the ratio of coefficients of market access to relative standing increases as a seller's genre capabilities increase (0.62 vs. 1.27 in models 3 vs. 4 with the coefficient for market access gaining significance in model 4). This indicates that the seller's preference shifts from relative standing to market access as the genre capabilities of the seller increase, supporting H2.

In H3, we hypothesized that, when the number of peer sellers in the portfolio of a prospective intermediary is low, the seller puts more weight on market access. In contrast, when the number of peer sellers is high, the seller puts more weight on relative standing. In H4, we similarly hypothesized that when there is less genre overlap with peer sellers, the seller puts more weight on market access. When there is more genre overlap with peer sellers, the weight shifts to relative standing.

Models 5-6 and 7-8 in table 2 provide tests for H3 and H4, respectively. The comparison of the ratio of coefficients of market access to relative standing in models 5 vs. 6 for number of peer sellers and in models 7 vs. 8 for genre overlap of peer sellers (1.60 vs. 0.06 and 1.17 vs. -

1.92 respectively) shows a decrease in ratios as expected, indicating a shift in seller's preference from market access towards relative standing as competition intensifies. Together with the loss of significance in coefficients for market access in models 6 and 8, these results suggest that relative standing becomes more important relative to market access as the number of peer sellers and the genre overlap of peer sellers increase, supporting H3 and H4.

Insert Tables 1 and 2 about here

Additional Analyses

To add to the robustness of our results, we also estimated *random effects logit* models for the full (not split) sample as reported in tables 3 and 5 (Appendix). In this analysis, we examined the seller's choice with interaction terms that allow the weighting of market access vs. relative standing in seller's choice to depend on the levels of the four moderators, with results consistent with the original results.

As a further robustness check, we also estimated *conditional logit* models (tables 4 and 6, Appendix). An advantage of conditional logit relative to alternatives (e.g. logit, probit) is that estimates are robust to unobserved variation in seller and industry characteristics that are constant across the seller's choices. Conditional logit also allows us to directly examine the seller's choice because the estimated coefficients capture the attractiveness of an intermediary characteristic rather than its existence with a particular intermediary (McFadden, 1974). The conditional logit analysis effectively purges the data of the effects of the common elements shared by repeat seller-dyads (i.e. seller and industry covariates that do not vary across intermediary alternatives). The overall pattern of the original results is again strongly supported. We also confirmed the original results with alternative statistical analyses (including with a rare

events sample), [28] and with a comprehensive set of control variables. These analyses (and those noted in Methods) yield results that strongly parallel our original findings.

DISCUSSION

Our core contribution is to identify and unpack the "big fish, big pond" dilemma in seller-intermediary tie formation. This dilemma commonly arises across many market settings such as book publishing, movie production, investment banking, and real estate. We examine this dilemma in the setting of 359 developers forming ties with 169 publisher-intermediaries on 1,397 games in the global video game industry over 10 years. By extending resource dependence theory, we argue and find that cooperative and competitive *moderators* shape the seller's choice of an intermediary in the context of the "big fish, big pond" dilemma.

Broadly, we contribute to resource dependence theory by introducing peer (not partner) competition, relative standing, and the neglected role of a potential partner's portfolio in tie formation. Similarly, we add to the seller-intermediary literature by highlighting the seller's choice, critical moderators of that choice, and the distinctive features of product intermediaries that make the "big fish, big pond" dilemma so salient. Finally, we offer implications for the ubiquitous dilemma – "big fish v. big pond" – that occurs across wide range of social situations ranging from choosing an employer and picking a school to selecting the right poker table.

Contributions to resource dependence theory

We contribute to resource dependence theory (Gulati and Sytch, 2007; Wry, Cobb, and

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[28] Since realized ties were a relatively rare event (779 realized ties), we also used rare-event sampling that included all realized dyad-years and a sample (i.e. ten unrealized dyads per realized dyad) (Sorenson and Stuart, 2001; Jensen, 2003; Shipilov, Li, and Greve, 2011) and re-ran the analyses. The results (available from the authors) are consistent with the original pattern of results.

Aldrich, 2013). First, we introduce *peer competition*. Prior research focuses on the resource needs that push firms to form ties, and so emphasizes the cooperative side of ties (Pfeffer and Salancik, 1978; Eisenhardt and Schoonhoven, 1996). More recent work incorporates competition with potential partners that pushes firms away from ties and so emphasizes their competitive side (i.e., "sharks dilemma") (Katila et al., 2008; Diestre and Rajagopalan, 2012). We contribute by shifting the lens from competition with a potential partner to competition with *peers* in the potential partner's portfolio.

Our findings indicate that potential partners anticipate peer competition for resources, and consider it as they weigh their partner choice. Specifically, when peer competition is likely to be high (e.g., many sellers, overlapping genres), firms tip to <u>relative standing</u>, being a *big fish,* over market access. For example, a video game expert observed, *"[Intermediaries] have like 50 horses in the race. That's why so much depends on what other horses are in the race."* In contrast, when peer competition is low (e.g., few peer sellers, few in overlapping genres), firms tip to <u>market access</u>, being in a *big pond*, over relative standing. Finally, we find that competition effects are multi-faceted: firms are influenced by both <u>diffuse competition</u> at the portfolio-level (e.g., peer sellers), and <u>immediate competition</u> with very similar sellers seeking the same resources (e.g., peer sellers in overlapping genres).

More broadly, our findings are likely to generalize to other tie formation situations such as when roughly similar potential partners are vying for relationships with a set of potential alters. Here too, the effects of peer competition are likely to emerge. For example, when many biotech entrepreneurs seek to form ties with pharma companies, we expect that anticipation of peer competition in potential partner's portfolios will influence tie formation. We explicitly consider boundary conditions later in the paper.

Finally, our findings likely generalize to the common social situation in which a decision maker must make a choice such that the high benefits (e.g., promotion, winning) of choosing an alternative (e.g., job at a top law firm, entry into a prestigious tennis tournament) are counter-weighted by the likelihood of actually receiving those benefits due to competition with similar others. As we describe below, a key boundary condition that makes the "big fish, big pond" dilemma acute is the scalability of these benefits with increasing peers. Overall, these possible extensions offer exciting opportunities for future research, including across disciplines.[29]

Third, we contribute by introducing the *relative standing* construct to resource dependence theory. Prior work indicates that firms allocate their resources across their partners based on the relative standing of those partners in the focal firms' alliance portfolios (Ozcan and Eisenhardt, 2009; Ozmel and Guler, 2015). We extend the implications of relative standing to resource dependence theory, and the "big fish, big pond" dilemma. We find that firms anticipate their potential partners' resource allocation decisions based on relative standing, and so prefer to lower their uncertainty around actually receiving resources by forming ties with partners with whom they expect to have high relative standing (i.e., a big fish). Thus, relative standing is a key main effect that drives tie formation, and determines who is a big fish.

More subtly, relative standing draws attention to a *novel source of uncertainty* that stems from limited resources, not the misaligned interests of partners or malfeasance. That is, uncertainty can arise even with trusted partners when they get distracted by too many requests, and spread too thin by too many partners. Indeed, a key question for many developers was, as one asked, *"When resources get scarce, who gets prioritized?"* Overall, we highlight the

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[29] We appreciate our editor's encouragement to consider a broad and general framing of our study.

implications of relative standing as one side of the core tension in the "big fish, big pond" dilemma.

Finally, we contribute to resource dependence theory by underscoring the relevance of *mutual agreement* in tie formation.[30] Both our qualitative and quantitative evidence indicate that relationships emerge from integrative negotiations in which simultaneous consideration of the cooperative vs. competitive forces and the convergent preferences of both partners (e.g., sellers, intermediaries) are germane. An interviewee summarized this balance,

"I wouldn't say that developers have all the power… While there is not a huge number of good, quality, dependable, solid content developers, there's still many of them …But at the same time, there's a lot of different publishers and there's a lot of people trying to get into the space and own audiences. Publishers…don't have all the power either. It's more of a balancing act."

Seller-Intermediary Collaborations

Our findings also contribute to the rich and multi-theoretic literature on seller-intermediary relationships. First, we contribute by focusing on the *seller's choice of intermediary*. Prior work examines when a seller chooses an intermediary v. going it alone (Rider, 2009; Armanios et al., 2017), and the resources that a seller is likely to obtain during the relationship (Ozcan and Eisenhardt, 2009). We contribute by examining when a seller chooses a particular intermediary from a set of possibilities. In particular, we identify the "big fish, big pond" dilemma that influences this choice, and confirm its existence (e.g., negative correlation between relative standing and market access). We also contribute by studying the critical time-period *at tie formation.* This is when a seller has the most flexibility to avoid competition rather than during the relationship when the seller may be stuck in competition such as principal-agent

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[30] We thank our editor and reviewers for suggesting that we underscore the often forgotten need for mutual agreement.

conflicts with the intermediary (Fernandez-Mateo, 2007; Levitt and Syverson, 2008).

Second, we contribute by identifying and unpacking the "big fish, big pond" dilemma, including its *moderators*. Prior research examines relative standing and market access – i.e., the two sides of the dilemma – separately, and finds that sellers prefer both high relative standing and market access (e.g., Ozcan and Eisenhardt, 2009). We contribute by confirming the existence of the "big fish, big pond" dilemma that arises when these two sides conflict (as they often do), and indicating how sellers resolve it. We identify the key moderators: cooperative push of *resource needs* (i.e., sellers' product and genre-specific experience) and competitive pull of potential *resource loss* (i.e., number of peer sellers, overlapping sellers) that shape choice. We find that sellers balance the resources that they expect from an intermediary to help refine products (i.e., weigh relative standing more) with its ability to connect them to many buyers (i.e., weigh market access more). In other words, we crystallize which advantages of intermediaries - market access or resources - are most valuable when.

Third, we contribute by delineating *product intermediaries.* Product intermediaries are organizations that bring together – i.e., mediate – sellers and buyers of a product by actively participating in product commercialization (e.g., later stages of development, financing, production, and marketing). That is, they help a seller bridge the gap between a rough prototype and a finished product that buyers are willing to buy. Our contribution is to introduce product intermediaries as significant actors in many market settings (e.g., book publishing, realty, and fine art), and distinguish them from certification and institutional intermediaries.[31]

Certification intermediaries primarily benefit sellers by signaling seller quality or other

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[31] We describe pure types. Some intermediaries may combine pure types (e.g., providing product and certification resources) (Pahnke, Katila, and Eisenhardt, 2015).

favorable characteristics to potential buyers (Rider, 2009). Thus, certification intermediaries

provide resources such as reputation and network connections to benefit sellers. Institutional

intermediaries (e.g., economic development agencies) bridge between types of firms and broadly

types of institutions – e.g., commercial firms and government agencies. They often occur in

emerging economies where they bridge "institutional voids" such as between public and private

organizations (McDermott, Corredoira, and Kruse, 2009). Institutional intermediaries provide

resources such as infrastructure (e.g., office space), general capability building (e.g., generic

tutorials on patent law), and network connections (e.g., ties to public agencies) (Dutt et al., 2016;

Armanios et al., 2017). Our key point is that these resources are often relatively scalable.

In contrast, we introduce product intermediaries and their distinctive features. That is,

product intermediaries have: 1) close *co-development* relationships with sellers to commercialize

products, rather than distant or generic ones, 2) resource expertise (e.g., later-stage product,

production, and marketing) that is tailored (i.e., personalized) to the resource needs of specific

sellers for commercialization, and 3) expert individuals with deep knowledge who provide these

resources. Our key point is that these features imply that a product intermediary's resources often

have *limited scalability* as sellers increase. In turn, limited scalability makes the "big fish, big

pond" dilemma especially acute. So while the "big fish, big pond" dilemma is relevant to all

intermediaries, it is especially salient for product intermediaries.

Alternative Explanations, Boundary Conditions, and Future Directions

Like all research, there are potential alternative explanations. One is that variation in the

contracts between developers and publishers, or more broadly, variation in the split in value

capture (e.g., revenue sharing) between the two sides across our sample drives tie formation.[32]

For example, an intermediary with limited market access might try to attract a superstar seller by sharing more value. While plausible, this is an unlikely explanation for several reasons. First, financial agreements have little (even no) variation across seller-intermediary relationships in our setting. Instead, there is a standard revenue sharing ratio (70/30) in the contracts for PS2 games. We had learned this previously in our interviews, and confirmed it with several follow-up conversations and archival research. Thus, the seller-intermediary contract may vary across consoles (e.g., PS2 v. Xbox), but does not vary much on our single console, PS2. Second, we learned from many interviews that developers focus on choosing a publisher that can help them to achieve a blockbuster game. In fact, many used the analogy of "growing the pie" rather than getting a "bigger slice" to emphasize this point. This reasoning makes particular sense in a hit-driven industry like video games – i.e., financial success is about creating a hit, not getting a bigger share of very little. For example, a developer noted, *"the only way to strike it rich is to land a blockbuster."* Another summarized, *"Financial conditions hardly move the needle when choosing between publishers."*

Like all research, our work has boundary conditions. As mentioned earlier, one is the *scalability* of the intermediary's resources. That is, the "big fish, big pond" dilemma is more relevant when the intermediary's resources do not scale well with the number of sellers. With limited scalability, it is difficult for intermediaries to expand their resource help to accommodate many sellers. This is frequently true in settings like ours where product intermediaries provide resources in the form of personalized interactions by specialized experts. In contrast, when

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[32] We thank our reviewer for posing this possible alternative explanation, and encouraging our adding evidence.

resources are scalable, the "big fish, big pond" dilemma is less acute. In effect, all sellers can be big fish, and the choice becomes simply picking the biggest pond.

A second boundary condition is *heterogeneity* of intermediaries. Heterogeneous intermediaries are more likely to provide tie formation matches for a diverse set of sellers. For example, we assume in our hypothesis arguments that there are at least some intermediaries with limited market access that must take (or may prefer) less experienced sellers, such as boutique intermediaries preferring new sellers. Similarly, we suggest that at least some intermediaries aim for innovation, diversification, or growth. They are, thus, more willing to take risks such as with experienced sellers who are entering a new genre, or with inexperienced sellers with novel concepts. In contrast, when intermediaries are homogeneous (or few), then some sellers such as inexperienced sellers and innovative sellers (e.g., trying a new genre) will be unlikely to form ties, and so have their products under-represented. In effect, all intermediaries will have the same offerings and preferences.

Finally, we observe several opportunities for future research. One is to study effectiveness.[33] Prior research indicates that sellers benefit from intermediaries (Shrum, 1991; Bielby and Bielby, 1999), particularly prominent ones (Stuart et al., 1999) and when such benefit is particularly likely. We also have some interview evidence that sellers that follow our hypothesized behaviors are more successful. For example, a developer advised, *"If you work with a smaller publisher that has fewer titles, then you get more attention. If you're working with a large publisher…it is very difficult to make a project succeed."* But while it seems likely that forming

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[33] We wish to thank a reviewer for raising the effectiveness issue, a relevant one albeit outside the scope of this paper.

ties as we hypothesize is effective, we do not actually measure the effectiveness of tie formation. This is a useful avenue for future research.

Another opportunity is to study ties that did not form.[34] That is, we observed the potential partners "at risk" for tie formation, and the ties that actually formed. But since collaborations form when there is mutual agreement, we could not isolate the situations in which one party wanted a tie but was rejected by the other. This is a rich opportunity for insights (cf. Graebner and Eisenhardt (2004) on rejected acquisition buyers) and an intriguing extension of our work.

A third opportunity is to explore the implications of our work for the evolution of alliance portfolios and industry networks.[35] We study the mutual decisions of many individual actors to form ties. These decisions accumulate ultimately to shape the evolution of alliance portfolios and industry networks. While outside our scope, studying how the joint preferences of intermediaries and sellers both shape their strategies and limit their options, and how they drive a continual reshaping of portfolios and industry networks are very exciting future directions.

CONCLUSION

Our study is motivated by the ubiquitous situation of seller-intermediary collaborations across a wide range of settings. We identify that many sellers (e.g., authors, artists, homeowners, and video game developers) face a "big fish, big pond" dilemma, and unpack how they resolve this dilemma in their choice of intermediary. While our research primarily speaks to the seller's choice of intermediary, the developed theory and its supporting empirical evidence have the potential to inform a wide range of social situations in which actors face "big fish, big pond" dilemmas. Similar dynamics are at play when individuals choose friends, students pick colleges,

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[34] We thank our reviewers for noting the importance of mutual agreement and this future direction.
[35] We appreciate our reviewers' recognizing the potential of this research in future work.

and employees select employers. In sum, we hope that our paper will advance understanding and

encourage discussion about the "big fish, big pond" dilemma.

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Table 1. Descriptive Statistics and Correlations

	Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
1	Collaboration	0.02	0.14												
2	Market Access	0.11	0.09	0.04											
3	Relative Standing	0.85	0.32	0.02	-0.20										
4	Product Experience	12.60	26.4	0.00	0.01	-0.05									
5	Genre Capabilities	0.33	0.31	0.00	0.01	-0.02	0.15								
6	Number of Peer Sellers	2.34	3.6	0.08	0.36	-0.15	0.00	0.01							
7	Overlap with Peer Sellers	0.09	0.24	-0.02	0.01	0.01	-0.03	-0.04	-0.05						
8	Prior Collaboration	0.03	0.16	0.26	0.09	-0.05	0.07	0.02	0.16	-0.01					
9	Competitive Overlap	0.16	0.3	0.03	0.11	-0.03	0.00	0.00	0.29	-0.10	0.08				
10	Quality Difference	0.004	0.02	-0.01	0.03	-0.17	0.08	0.06	0.08	0.00	0.01	-0.02			
11	Geographic Distance	6.48	4.10	-0.07	0.01	-0.02	-0.01	0.00	0.01	0.00	-0.07	-0.03	0.01		
12	Intermediary Experience	19.61	26.6	0.09	0.29	-0.07	0.00	0.00	0.76	-0.03	0.17	0.33	0.00	0.01	
13	Intermediary Size	3.76	1.13	0.06	0.28	-0.08	0.00	0.00	0.46	-0.03	0.12	0.21	-0.02	0.01	0.59

N=40,163 dyads

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Table 2. Random Effects Logit Analysis of Seller-Intermediary Collaboration (Split Sample)

	Model 1 – Low Product Experience	Model 2 - High Product Experience	Model 3 – Low Genre Capabilities	Model 4 – High Genre Capabilities	Model 5 – Low Peer Number	Model 6 – High Peer Number	Model 7 – Low Peer Overlap	Model 8 – High Peer Overlap
Market Access	0.789	2.398***	0.974	2.097**	3.096***	0.087	2.121***	-1.640
	(0.857)	(0.817)	(0.705)	(0.927)	(0.922)	(0.817)	(0.631)	(1.417)
Relative Standing	1.776***	1.690***	1.579***	1.662***	1.940***	1.457***	1.820***	0.853**
	(0.367)	(0.211)	(0.237)	(0.273)	(0.357)	(0.200)	(0.209)	(0.355)
Product Experience			-0.002	-0.003	-0.005	-0.001	-0.002	-0.006
			(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.008)
Genre Capabilities	-0.334*	-0.050			-0.381*	-0.080	-0.327**	0.368
	(0.183)	(0.287)			(0.226)	(0.191)	(0.166)	(0.311)
Number of Peer Sellers	0.018	0.043*	0.034*	0.035			0.052***	0.005
	(0.023)	(0.022)	(0.019)	(0.024)			(0.018)	(0.028)
Overlap with Peer Sellers	-1.259***	-1.481***	-1.634***	-1.079***	-1.370***	-1.480***		
	(0.317)	(0.341)	(0.304)	(0.349)	(0.270)	(0.390)		
Dyad Characteristics								
Prior Collaboration	3.069***	2.401***	2.454***	3.339***	3.727***	2.458***	2.688***	2.986***
	(0.296)	(0.222)	(0.218)	(0.237)	(0.312)	(0.183)	(0.195)	(0.299)
Competitive Overlap	0.012	-0.167	-0.090	-0.058	-0.754**	0.188	-0.114	0.334
	(0.206)	(0.222)	(0.183)	(0.236)	(0.300)	(0.176)	(0.165)	(0.313)
Quality Difference	-0.870	-1.388	4.227	-9.422**	-4.961	-0.018	1.876	-25.184***
	(5.272)	(3.162)	(3.310)	(4.544)	(4.585)	(3.231)	(2.673)	(9.673)
Geographic Distance	-0.176***	-0.112***	-0.139***	-0.134***	-0.161***	-0.122***	-0.146***	-0.107***
	(0.020)	(0.017)	(0.015)	(0.019)	(0.019)	(0.016)	(0.014)	(0.027)
Intermediary Characteristics								
Intermediary Experience	0.016***	0.013***	0.014***	0.010**	0.023***	0.008***	0.012***	0.009*
	(0.004)	(0.004)	(0.003)	(0.004)	(0.006)	(0.003)	(0.003)	(0.005)
Intermediary Size	0.018	-0.019	-0.070	0.119	-0.090	0.131*	-0.048	0.401**
	(0.075)	(0.077)	(0.065)	(0.083)	(0.073)	(0.072)	(0.055)	(0.158)
Observations	21046	19117	22370	17793	23876	16287	32883	7280
Log likelihood	-1603.10	-1482.95	-1818.62	-1294.55	-1331.35	-1761.26	-2444.04	-662.54
Chi-squared	333.14	411.41	380.46	437.07	273.49	425.19	584.00	158.68

Standard errors are in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; two-tailed tests for all variables. Robust standard errors and random effects are used. All models include unreported seller geographic location effects.

Appendix.

Conditional logit. In the conditional logit model, each seller *i* chooses an intermediary *j* among the set of *n* available intermediaries. The assumption of the model is that the seller chooses the intermediary that offers the highest level of utility (U), that is, maximizes $U_{ij} = \beta'X_{ij} + \epsilon_{ij}$ where β is the vector of coefficients to be estimated that influence the choice and $\in$ an error term that reflects unobserved (seller and industry-level) heterogeneity in seller's decision making. The conditional logit model is given by the function $\text{Prob}(Y_i = j) = \frac{\exp(\beta'X_{ij})}{\sum_{j=1}^{n} \exp(\beta'X_{ij})}$ that is, those variables that do not vary across intermediary alternatives (e.g. seller and industry-level covariates) cancel out. Thus, they do not appear in conditional logit tables as covariates.

Conditional logit is particularly appropriate to test how attributes of available alternatives affect choices, and it has been widely used to test predictions about decision-making across multiple alternatives such as a firm's choice of a supplier (Hoetker, 2005), technology alternative (Kapoor and Furr, 2015), or geographic location (Greve, 2000). The model takes the following form (using the example of seller's product experience, H1): $p = \beta_0 + \beta_1 \times market\ access + \beta_2 \times relative\ standing + \beta_3 \times seller\ experience \times market\ access + \beta_4 \times seller\ experience \times relative\ standing + controls,$ where *p* denotes the likelihood that a given developer and a given publisher collaborate.

To test how intermediary alternatives are compared, we compare the change in weights as the interacted variable is increased by one standard deviation (tables 5-6). We first computed the ratio of coefficients (Train, 1998; Hoetker, 2007) for market access (β_1) over relative standing (β_2) for each estimated model without the interaction: that is, $\frac{\beta_1}{\beta_2}$. We then computed the coefficient ratio of market access over relative standing for each estimated model including the interaction term coefficient multiplied by one standard deviation of the interacted variable (e.g., seller experience): that is, $\frac{\beta_1 + \beta_3 * \sigma}{\beta_2 + \beta_4 * \sigma}$), akin to testing the influence of a one standard deviation (σ) increase in the interacted variable (personal communication with Glenn Hoetker, 2013). The difference between the first and the second ratio shows whether and how there is a shift in a seller's preference when the interacted variable (e.g., seller experience) increases by one standard deviation. If $\frac{\beta_1}{\beta_2} > \frac{\beta_1 + \beta_3 * \sigma}{\beta_2 + \beta_4 * \sigma}$, the seller's preference shifts towards relative standing as its experience increases. If, in contrast, $\frac{\beta_1}{\beta_2} < \frac{\beta_1 + \beta_3 * \sigma}{\beta_2 + \beta_4 * \sigma}$, the seller's preference shifts towards market access as its experience increases. To test whether the shift was significant, we conducted a Wald test. The p-values were obtained using the delta method.

Tables 3 in the Appendix reports the random effects logit models, providing further robustness for original findings in Table 2. As a further robustness check, Table 4 in the Appendix reports the conditional logit regression analysis on the likelihood of collaboration between a developer and a publisher. For both, Model 1 includes the control variables only. Again, we find that collaboration is more likely if the developer and the publisher are geographically proximate, of similar quality, and prior partners. Model 2 adds the main effects for market access and relative standing, and in Models 3 through 6, we add the interaction variables to test the hypotheses. Coefficient ratio comparisons (test detailed above) are reported in Tables 5 and 6, respectively for the random effects and conditional logit models. The significant increases in the ratio of coefficients in each of these tables confirm support for H1-H4 for both robustness analyses, consistent with the split sample results reported in table 2.

Table 3. Random Effects Logit Analysis of Seller-Intermediary Collaboration

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Market Access		1.661***	1.059	0.528	3.190***	1.954***	1.990**
		(0.603)	(0.653)	(0.771)	(0.740)	(0.615)	(0.909)
Relative Standing		1.691***	1.510***	1.617***	2.065***	1.744***	1.835***
		(0.184)	(0.215)	(0.276)	(0.258)	(0.192)	(0.372)
Seller Interactions							
Market Access x Product Experience			0.043**				0.037**
			(0.017)				(0.017)
Relative Standing x Product Experience			0.013*				0.012
			(0.008)				(0.008)
Market Access x Genre Capabilities				3.590**			3.033*
				(1.538)			(1.617)
Relative Standing x Genre Capabilities				0.260			0.341
				(0.626)			(0.641)
Intermediary Interactions							
Market Access x Number of Peer Sellers					-0.467***		-0.466***
					(0.163)		(0.163)
Relative Standing x Number of Peer Sellers					-0.073**		-0.072**
					(0.036)		(0.036)
Market Access x Overlap with Peer Sellers						-6.269***	-5.847**
						(2.312)	(2.308)
Relative Standing x Overlap with Peer Sellers						-0.928	-0.869
						(0.751)	(0.873)
Dyad Characteristics							
Prior Collaboration	2.307***	2.474***	2.470***	2.478***	2.471***	2.475***	2.472***
	(0.184)	(0.180)	(0.179)	(0.180)	(0.179)	(0.180)	(0.178)
Competitive Overlap	-0.091	-0.073	-0.069	-0.071	-0.082	-0.078	-0.079
	(0.151)	(0.150)	(0.149)	(0.150)	(0.149)	(0.150)	(0.150)
Quality Difference	-7.214**	-0.425	-0.343	-0.241	-0.988	-0.423	-0.796
	(3.622)	(2.650)	(2.694)	(2.661)	(2.693)	(2.643)	(2.740)
Geographic Distance	-0.151***	-0.149***	-0.149***	-0.149***	-0.149***	-0.149***	-0.149***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Seller Characteristics							
Product Experience	-0.002	-0.002	-0.021**	-0.002	-0.002	-0.002	-0.020**
	(0.002)	(0.002)	(0.009)	(0.002)	(0.002)	(0.002)	(0.009)
Genre Capabilities	-0.209	-0.199	-0.201	-0.897	-0.200	-0.198	-0.902
	(0.153)	(0.149)	(0.149)	(0.666)	(0.149)	(0.149)	(0.682)
Intermediary Characteristics							
Number of Peer Sellers	0.017	0.026*	0.027*	0.026*	0.155***	0.026*	0.155***
	(0.015)	(0.016)	(0.016)	(0.016)	(0.042)	(0.016)	(0.042)
Overlap with Peer Sellers	-1.339***	-1.375***	-1.372***	-1.379***	-1.388***	0.161	0.068
	(0.226)	(0.231)	(0.231)	(0.230)	(0.231)	(0.784)	(0.917)
Intermediary Experience	0.016***	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Intermediary Size	0.007	0.000	-0.000	0.001	0.005	0.001	0.005
	(0.053)	(0.054)	(0.054)	(0.054)	(0.053)	(0.054)	(0.053)
Log likelihood	-3125.02	-3083.37	-3079.45	-3081.28	-3077.82	-3081.73	-3071.13

Standard errors are in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; two-tailed tests for all variables. Models are based on a sample of 40,163 dyads, with collaboration occurring in 779 dyads. Robust standard errors are used. All models include unreported seller geographic location effects.

Table 4. Conditional Logit Analysis of Seller-Intermediary Collaboration

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Market Access		0.747 (0.475)	0.127 (0.526)	-0.270 (0.678)	2.508*** (0.637)	1.066** (0.489)	1.405* (0.827)
Relative Standing		2.154*** (0.181)	2.038*** (0.210)	2.317*** (0.283)	2.278*** (0.223)	2.217*** (0.188)	2.384*** (0.344)
Seller Interactions							
Market Access x Product Experience			0.045*** (0.016)				0.040** (0.016)
Relative Standing x Product Experience			0.009 (0.008)				0.007 (0.007)
Market Access x Genre Capabilities				3.116** (1.265)			2.589* (1.357)
Relative Standing x Genre Capabilities				-0.467 (0.669)			-0.439 (0.663)
Intermediary Interactions							
Market Access x Number of Peer Sellers					-0.523*** (0.140)		-0.521*** (0.138)
Relative Standing x Number of Peer Sellers					-0.018 (0.032)		-0.017 (0.031)
Market Access x Overlap with Peer Sellers						-7.142*** (2.111)	-6.779*** (2.163)
Relative Standing x Overlap with Peer Sellers						-1.068* (0.547)	-0.979* (0.594)
Dyad Characteristics							
Prior Collaboration	2.784*** (0.115)	2.837*** (0.118)	2.823*** (0.118)	2.839*** (0.118)	2.827*** (0.117)	2.840*** (0.118)	2.819*** (0.118)
Competitive Overlap	-0.033 (0.138)	0.021 (0.138)	0.023 (0.138)	0.021 (0.138)	0.019 (0.139)	0.019 (0.139)	0.019 (0.139)
Quality Difference	-9.938** (4.446)	-7.600** (3.319)	-7.277** (3.313)	-7.488** (3.322)	-7.852** (3.302)	-7.706** (3.315)	-7.505** (3.294)
Geographic Distance	-0.114*** (0.010)	-0.112*** (0.010)	-0.113*** (0.010)	-0.113*** (0.010)	-0.113*** (0.010)	-0.112*** (0.010)	-0.113*** (0.010)
Intermediary Characteristics							
Number of Peer Sellers	0.045*** (0.013)	0.061*** (0.013)	0.062*** (0.013)	0.061*** (0.013)	0.150*** (0.035)	0.062*** (0.013)	0.149*** (0.035)
Overlap with Peer Sellers	-1.194*** (0.197)	-1.268*** (0.203)	-1.267*** (0.203)	-1.272*** (0.202)	-1.314*** (0.208)	0.494 (0.573)	0.354 (0.625)
Intermediary Experience	0.006*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.007*** (0.002)
Intermediary Size	-0.027 (0.044)	-0.033 (0.045)	-0.036 (0.045)	-0.034 (0.045)	-0.029 (0.044)	-0.032 (0.045)	-0.032 (0.044)
Pseudo R^2	0.19	0.21	0.21	0.21	0.22	0.21	0.22
Log likelihood	-2462.62	-2400.35	-2396.33	-2397.98	-2391.81	-2397.61	-2383.79

Standard errors are in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; two-tailed tests for all variables. Models are based on a sample of 39,798 dyads, with collaboration occurring in 779 dyads. Robust standard errors are used. All models include unreported seller geographic location effects.

Table 5. Coefficient Comparison to Assess the Shift in Seller's Weighting of Market Access vs. Relative Standing (Based on Coefficients in Table 3)

Hypo-thesis	Model in Table 4	Interaction Variable	$\frac{\beta_1}{\beta_2}$	$\frac{\beta_1 + \beta_3 * \sigma}{\beta_2 + \beta_4 * \sigma}$	Preference Shift Towards …	Significance
H1	Model 3	Product Experience	0.701	1.189	Market Access	0.0868*
H2	Model 4	Genre Capabilities	0.326	0.957	Market Access	0.0293**
H3	Model 5	Number of Peer Sellers	1.545	0.836	Relative Standing	0.0236**
H4	Model 6	Overlap with Peer Seller	1.121	0.284	Relative Standing	0.0222**

$^{*} p < 0.10, ^{**} p < 0.05, ^{***} p < 0.01$. Wald test used to determine significance.
β_1 and β_2 are coefficients for market access and relative standing, respectively, in the random effects logit model in Table 3. β_3 is the coefficient estimate for the interaction between the focal interaction variable (listed in the third column) and market access. β_4 is the coefficient estimate for the interaction between the focal interaction variable (listed in the third column) and relative standing.

Table 6. Coefficient Comparison to Assess the Shift in Seller's Weighting of Market Access vs. Relative Standing (Based on Coefficients in Table 4)

Hypo-thesis	Model in Table 3	Interaction Variable	$\frac{\beta 1}{\beta_2}$	$\frac{\beta_1 + \beta_3 * \sigma}{\beta_2 + \beta_4 * \sigma}$	Preference Shift Towards …	Significance
H1	Model 3	Product Experience	0.062	0.58	Market Access	0.0055***
H2	Model 4	Genre Capabilities	-0.117	0.313	Market Access	0.0112**
H3	Model 5	Number of Peer Sellers	1.101	0.283	Relative Standing	0.0005***
H4	Model 6	Overlap with Peer Sellers	0.481	-0.342	Relative Standing	0.0021***

$^{*} p < 0.10, ^{**} p < 0.05, ^{***} p < 0.01$. Wald test used to determine significance.
β_1 and β_2 are coefficients for market access and relative standing, respectively, in the conditional logit model in Table 3. β_3 is the coefficient estimate for the interaction between the focal interaction variable (listed in the third column) and market access. β_4 is the coefficient estimate for the interaction between the focal interaction variable (listed in the third column) and relative standing.

Figure 1. Overview of the Hypotheses

Access to Resources

| H1: Product Experience |
| H2: Genre Capabilities |

+

+

Competition for Resources

| H3: Number of Peer sellers |
| H4: Overlap with Peer Sellers |

+

+

Market access   Relative standing