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CROSS-CHANNEL STRATEGY IN PLATFORM COMPETITION

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Abstract

Cooperation between competing platforms is commonly observed. While the impact of such co-opetition on platform competition has been studied, the contractual terms governing such cooperation are typically taken as given, leaving the formation of such cooperation largely unexplored. This paper analyzes a cross-channel strategy in which consumers can access one platform's content through its rival's superior distribution channel, and examines whether the strategy emerges through bargaining over the associated revenue-sharing rate. We show that the cross-channel plan is introduced only when the content-providing platform receives about half or more of the revenue generated by the plan. We further show that the welfare effects depend on how the contractual terms are determined. Under a revenue-sharing arrangement determined through Nash bargaining, introducing the cross-channel plan increases industry profit, consumer surplus, and total surplus. By contrast, under an arrangement that combines revenue sharing with a lump-sum transfer, industry profit increases, but consumer surplus and total surplus may decrease.

1 Introduction

Streaming services have become a primary source of entertainment with platforms such as Amazon Prime Video, Hulu, and Netflix competing intensely for subscribers.[1] To attract and retain users, platforms employ various competitive strategies including the creation of exclusive contents and free trials. Existing studies, such as Armstrong (1999) and D'Annunzio (2017), emphasize that exclusivity of contents is an important source of platform differentiation and competitive advantage. Conventional wisdom therefore suggests that platforms should preserve exclusivity rather than abandon it by distributing their contents through rival platforms. An increasingly common strategy in streaming service markets, however, appears to challenge this

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[1] https://www.nielsen.com/news-center/2025/nielsens-the-gauge-broadcast-and-streaming-power-historic-month/

conventional view. That is, competing platforms often jointly offer subscription plans that allow consumers to access contents created by one platform on another platform under a revenue-sharing agreement. A prominent example is Amazon Prime Video Channels, in which Amazon distributes contents from rival platforms such as DAZN, HBO Max, Paramount+, and STARZ. In this arrangement, Amazon acts as an intermediary that provides consumers with the convenience of accessing rival platforms' contents through Amazon's viewing environment including its recommendation system and cross-device accessibility. In return, Amazon receives a share of the revenue generated by such plans. Despite their increasing prevalence, the reason behind the emergence of such arrangements is far from obvious. On the one hand, offering contents through a rival platform with a superior distribution channel can serve to expand demand and increase revenue. On the other hand, the content-providing platform must lose part of the revenue from its own distribution channel. Whether such a partnership emerges as the consequence of rational decision-making therefore depends critically on how the revenue generated by the plan is allocated between the participating platforms. This raises a fundamental question: under what contractual conditions will competing platforms agree to introduce such a plan? Although a growing literature studies cooperation between competing platforms, existing analyses typically take cooperative arrangements as exogenously given and focus on their market consequences. In practice, however, the formation of a partnership is a strategic decision that requires agreement between competing platforms. We therefore examine the endogenous emergence of a cross-channel co-opetition strategy. Specifically, we investigate whether a cross-channel subscription plan can be the equilibrium outcome of bargaining between platforms over the revenue-sharing contract and analyze how the introduction of the plan affects market outcomes and welfare.

To address these questions, we develop a stylized model of co-opetition between two platforms. Each platform has its exclusive content that can be distributed on its own distribution channel. The platforms negotiate over the possible introduction of a cross-channel plan that allows consumers to access one platform's content through its rival platform's superior distribution channel. The revenue generated by the cross-channel plan is shared between the two platforms according to a revenue-sharing rate determined through negotiation. In stage 1, the platforms bargain over the revenue-sharing rate associated with introducing the cross-channel plan. In stage 2, given the bargaining outcome, the platforms strategically set prices, and consumers choose whether to single-home, multi-home, or neither.

Our analysis yields three main results. First, we characterize the bargaining conditions under which the cross-channel plan is introduced in equilibrium. We show that the content-providing platform must receive about half or more of the revenue generated by the cross-channel plan for the partnership to be introduced. The reason is that the content-providing platform bears the opportunity cost of cooperation: it loses demand for its original plan and must share the revenue generated by the cross-channel plan with

its rival. By contrast, the platform providing the superior distribution channel benefits from both the additional revenue share and the softening of price competition. Consequently, the cross-channel plan can be introduced only when a sufficiently large share of its revenue is allocated to the content-providing platform. Second, we show that both the original plan and the cross-channel plan are never active at the same time. When the revenue-sharing rate is low, the content-providing platform receives a large part of the revenue generated by the cross-channel plan and therefore finds it optimal to provide its content only through the rival's distribution channel in order to exploit the advantage of the rival's superior distribution channel. Conversely, when the revenue-sharing rate is high, the content-providing platform retains very little of the revenue generated by the cross-channel plan, and instead chooses prices such that no consumer subscribes to the cross-channel plan. Third, we show that the contractual terms of co-opetition have important welfare consequences. Under a contractual arrangement with revenue sharing determined through bargaining, the conflicting interests of the two platforms constrain the agreement to an intermediate range of revenue-sharing rates. As a result, introducing the cross-channel plan increases industry profit, consumer surplus, and total surplus. By contrast, under an contractual arrangement with a lump-sum transfer as well as revenue sharing, industry profit increases, but consumer surplus and total surplus may decrease. Introducing the cross-channel plan simultaneously softens price competition and expands demand by allowing consumers to access one platform's content through the other platform's superior distribution channel. If a lump-sum transfer is added to the contractual term, platforms can implement the revenue-sharing rate to maximize industry profit and induce a more cooperative outcome, which may reduce consumer surplus and total surplus. Hence, the welfare effects of co-opetition strategy depend not only on whether platform cooperate, but also on how the terms of cooperation are determined.

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 presents the model. Section 4 analyzes price competition in stage 2, and Section 5 studies bargaining in stage 1 over the cross-channel plan. Section 6 examines welfare implications. Section 7 verifies robustness. Section 8 concludes our paper.

2 Related literature

Our paper is related to two strands of the literature. First, it contributes to the literature on platform competition. Following the seminal contributions of Armstrong (2006), Caillaud and Jullien (2001, 2003), and Rochet and Tirole (2003), a large literature has examined the role of content provision in platform competition. One important strand of this literature focuses on exclusive content. Armstrong (1999), Harbord and Ottaviani (2001), Stennek (2014), and Drouard (2022) analyze the incentives of independent content

providers to supply premium content exclusively to a platform. Weeds (2016) and D'Annunzio (2017) examine content provision under vertical relationships and reach contrasting conclusions regarding the optimality of exclusive distribution: Weeds (2016) favors non-exclusive distribution, whereas D'Annunzio (2017) shows that exclusive distribution is optimal. Unlike our study, however, these papers restrict consumers to single-home on a platform. More recently, a growing literature has incorporated consumers' multi-homing behavior, including Ishihara and Oki (2025), Jiang et al. (2019), and Wu and Chiu (2023). Under consumer multi-homing, exclusive content becomes an important source of platform differentiation. Jiang et al. (2019) and Ishihara and Oki (2025) show that it is optimal to distribute premium content exclusively to a single platform. Wu and Chiu (2023) finds that a platform that can create content itself provides access to the content exclusively through its own platform. These studies highlight the importance of exclusivity as a competitive strategy. In contrast, our paper examines when competing platforms have an incentive to abandon exclusive distribution and introduce cross-channel content distribution under a revenue-sharing agreement.

A second strand of the literature studies cooperative strategies between competing platforms, commonly referred to as co-opetition.[2] Hagiu et al. (2020) and Sun and Liu (2021) analyze rival hosting, whereby a platform invites a rival firm and allows it to sell its products or services on the platform. Guo et al. (2024, 2025) analyze membership bundles, whereby multi-homing consumers can access both services at a lower price than if they subscribe to each service separately. Weeds (2016) and Wu and Chiu (2023) analyze content licensing, whereby a platform with premium contents licenses the content to a rival platform. Zhang et al. (2026) analyzes a content access openness, whereby platforms allow consumers to access their contents through rivals at a discounted price. Table 1 summarizes the similarities and differences between our study and the extant studies mentioned above. Most studies, like ours, allow consumers to multi-home. However, the mechanisms through which the revenues generated by co-opetition are allocated differ across studies. In contrast to our model, these mechanisms are either exogenously specified or determined by one platform through a take-it-or-leave-it offer to the other. Closely related to our study is Guo et al. (2025), who assumes that the revenue-sharing rate is determined through bargaining between the platforms. However, unlike our model, the membership bundle price is jointly determined by the two platforms to maximize their aggregate profit. In our model, by contrast, each platform strategically sets its own prices after the revenue-sharing rate is determined through bargaining. This distinction allows us to study how strategic pricing decisions interact with bargaining over the revenue-sharing rate and shape the formation of cooperation. Zhang et al. (2026) analyzes a form of co-opetition similar to ours in which each platform allows consumers access to its content through a rival platform. While Zhang et al. (2026) focuses on the distribution channel structure emerging from platform competition, our paper focuses on whether competing platforms agree to introduce a

[2]Some studies refer to such relationships as frenemies. See, for example, Adner et al. (2020) and Li et al. (2019).

cross-channel distribution arrangement through bargaining. Specifically, we study when competing platforms agree to abandon its exclusive distribution and establish a cross-channel distribution arrangement under a revenue-sharing agreement.

In summary, our paper contributes to the literature on co-opetition by endogenizing the formation of cross-channel distribution and the revenue-sharing rate governing it. This allows us to characterize when competing platforms agree to introduce the cooperative distribution, how such cooperation changes the equilibrium distribution of the content, and how the contractual terms of the co-opetition strategy affect welfare.

	Co-opetition	Multi-homing	Revenue allocation	Bargaining
Sun and Liu (2021)	Rival hosting	No	Endogenous	TIOLI offer
Hagiu et al. (2020)	Rival hosting	Yes	–	–
Guo et al. (2024)	Membership bundle	Yes	Exogenous	–
Guo et al. (2025)	Membership bundle	Yes	Endogenous	NB
Weeds (2016)	Licensing	No	Endogenous	TIOLI offer
Wu and Chiu (2023)	Licensing	Yes	Exogenous	–
Zhang et al. (2026)	Content access openness	Yes	–	–
This paper	Cross-channel plan	Yes	Endogenous	NB

Table 1: Comparisons between our paper and related ones
TIOLI offer: Take-it-or-leave-it offer; NB: Nash bargaining.

3 Model

There are two platforms A and B providing differentiated contents A and B, respectively, on their own distribution channels to a unit mass of consumers. The two platforms may also agree to provide content B on the distribution channel of platform A. In this case, consumers can access content B either through the distribution channel of B or that of A. Consumers gain access to the content provided in either form by subscribing to (*subscription*) *plans*. Specifically, subscription plan A gives access to content A provided on the distribution channel of platform A, subscription plan B gives access to content B provided on the distribution channel of platform B, and subscription plan AB gives access to content B provided on the distribution channel of platform A. Plan AB is also referred to as the *cross-channel* plan since content B crosses the distribution channels. Consumers may subscribe to more than one plan, and their utility of each combination of subscription plans is determined by their preferences over the distribution channels as well as their preferences over the contents. First, for $k \in \{A, B, AB\}$, denote by U_k a consumer's utility of plan k

when it is subscribed in isolation (single-homing). Likewise, for $k,\ \ell \in \{A, B, AB\}$, denote by $U_{(k,\ell)}$ his utility of plans k and ℓ subscribed in combination (multi-homing). The outside option of each consumer is denoted N whose utility is normalized to zero. We specify U_k and $U_{(k,\ell)}$ as follows:

$$
\begin{aligned}
U_A &= \varepsilon_A + \lambda - p_A, \\
U_B &= \varepsilon_B - p_B, \\
U_{AB} &= \varepsilon_B + \lambda - p_{AB}, \\
U_{(A,B)} &= \varepsilon_A + \varepsilon_B + \lambda - \delta - p_A - p_B, \\
U_{(A,AB)} &= \varepsilon_A + \varepsilon_B + 2\lambda - \delta - p_A - p_{AB},
\end{aligned}
$$

where ε_i is the valuation for content $i \in \{A, B\}$, independently distributed according to the uniform distribution on $[0, 1]$, and p_k is the price of plan k. $\lambda > 0$ denotes the additional utility that consumers derive from each subscription provided through platform A's distribution channel. Note that the utility from platform B's distribution channel is normalized to zero. This captures that platform A's distribution channel provides consumers with a superior viewing experience, for example through better recommendation systems or higher image quality. $\delta > 0$ is a disutility consumers incur when they multi-homing.

The platforms first choose whether to offer subscription plan AB. When plan AB is offered, they negotiate over the proportion of revenue generated by this plan as described in more detail below. Let $\gamma \in [0, 1]$ denote the share of platform A of the revenue from plan AB. When the negotiation succeeds, plan AB is offered for subscription along with plans A and B, and the revenue sharing is implemented. Otherwise, only plans A and B are offered for subscription. For $k \in \{A, B, AB\}$, if we denote by D_k the quantity demanded of plan k, the platforms' profit is written as:

$$
\begin{aligned}
\pi_A &= p_A D_A + \gamma p_{AB} D_{AB}, \\
\pi_B &= p_B D_B + (1 - \gamma) p_{AB} D_{AB},
\end{aligned}
$$

The timing of the game is as follows: In stage 1, the two platforms bargain over the revenue-sharing rate γ associated with the cross-channel plan. If the bargaining succeeds, the cross-channel plan is introduced with the agreed revenue-sharing rate; otherwise, the cross-channel plan is not introduced, and only the plans A and B remain available. In stage 2, given the revenue-sharing rate γ determined by the bargaining in stage 1, platforms simultaneously set prices, and consumers then make subscription decisions. We solve the game by backward induction. For each bargaining outcome and revenue-sharing rate γ, we consider the Nash

equilibrium in stage 2. Anticipating the equilibrium in stage 2, the platforms determine the revenue-sharing rate γ in stage 1 according to the Nash bargaining solution, where the disagreement payoff corresponds to the equilibrium outcome without the cross-channel plan. To focus on an interior equilibrium where both multi-homing and non-full coverage arise, we impose the following parameter restrictions:

$$\delta < \bar{\delta} = 0.47 \quad \text{and} \quad \lambda < \bar{\lambda} = \frac{2 - 2\delta + \delta^2}{2}.$$

4 Stage 2

4.1 Benchmark without the cross-channel plan

We first analyze the case without the cross-channel plan AB. This case corresponds to the subgame that follows disagreement in the bargaining between platforms A and B. In this case, consumers have access only to plans A and B and choose among the following options: single-homing on plan A, single-homing on plan B, multi-homing on plans A and B, or no subscription, which is denoted by N. Let q_k denote the probability that a consumer chooses a subscription option $k \in \{A, B, (A, B), N\}$. When consumers choose the option that maximizes utility, the probability that option k is chosen is given by

$$q_k = Pr\left(U_k \geq \max_{\ell \neq k} U_\ell\right).$$

Comparing consumers' utilities yields the demand regions illustrated in Figure 1. Intuitively, consumers with a high valuation for only one content choose single-homing, which corresponds to the bottom-right and top-left regions, consumers with high valuations for both contents choose multi-homing, which corresponds to the top-right region, and consumers with low valuations for both contents do not subscribe, which corresponds to the bottom-left region.

Since consumers may subscribe to multiple plans, demand for plan $i \in \{A, B\}$ is given by $D_i = q_i + q_{(A,B)}$. Computing the demands by integrating over the corresponding regions under the uniform distribution yields the following profit functions:

$$\pi_A = p_A \left\{ -p_A + \delta p_B + \frac{2 - 2\delta + \delta^2}{2} + \lambda \right\} \quad \text{and} \quad \pi_B = p_B \left\{ -p_B + \delta p_A + \frac{2 - 2\delta + \delta^2}{2} - \delta\lambda \right\}.$$

Solving the profit-maximization problem of each platform, we obtain the following lemma.

Lemma 1. When the cross-channel plan AB is not introduced, the equilibrium prices and profits are given

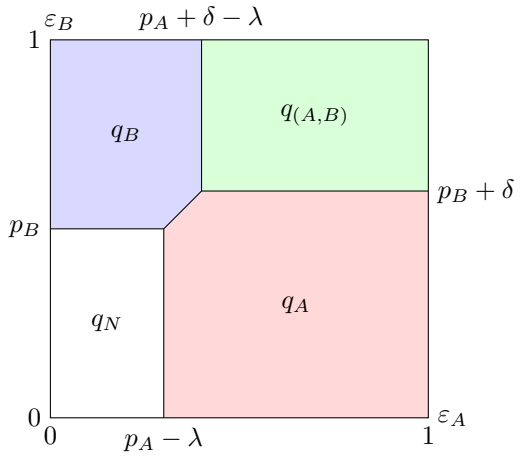


Figure 1: Demand regions in the case without the cross-channel plan

by

$$p_A^{Wo} = \frac{2-2\delta+\delta^2}{2(2-\delta)} + \frac{2-\delta^2}{4-\delta^2}\lambda, \qquad p_B^{Wo} = \frac{2-2\delta+\delta^2}{2(2-\delta)} - \frac{\delta}{4-\delta^2}\lambda,$$
$$\pi_A^{Wo} = \left\{\frac{2-2\delta+\delta^2}{2(2-\delta)} + \frac{2-\delta^2}{4-\delta^2}\lambda\right\}^2, \qquad \pi_B^{Wo} = \left\{\frac{2-2\delta+\delta^2}{2(2-\delta)} - \frac{\delta}{4-\delta^2}\lambda\right\}^2.$$

The equilibrium results provide several insights. First, the price of plan A is higher than that of plan B, $p_A^{Wo} > p_B^{Wo}$, and platform A earns a higher profit, $\pi_A^{Wo} > \pi_B^{Wo}$. This reflects the advantage of platform A's distribution channel. As this advantage becomes stronger, consumers find plan A relatively more attractive, allowing platform A to charge a higher price for plan A. In contrast, platform B responds by lowering the price of plan B to retain demand. Consequently, the price difference between the two plans expands. Second, the prices of both plans decrease with δ. A higher δ makes multi-homing less attractive to consumers and changes the composition of demand across single-homing and multi-homing consumers, resulting in lower equilibrium prices for both plans.

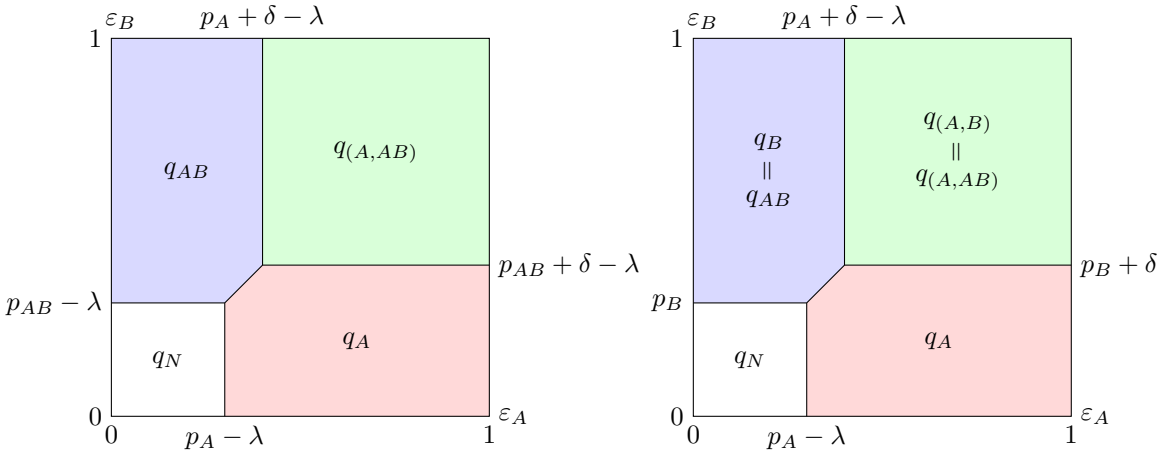
4.2 With the cross-channel plan

We now analyze the subgame in which the cross-channel plan AB is introduced for a given revenue-sharing rate γ.[3] Consumers' subscription options now include single-homing on plan AB and multi-homing on plans A and AB. As mentioned in the model, although plans B and AB provide access to the same content, they differ in terms of the distribution channels through which consumers access the content. Comparing

[3]We can consider the other cross-channel plan, BA, which gives consumers access to platform A's content through platform B's distribution channel. However, since the plan is never introduced, we omit it from the analysis. Plan BA is less attractive than plan A because it requires consumers to use platform B's distribution channel. Hence, introducing the cross-channel plan BA would only shift some demand from plan A to the less attractive plan and reduce platform A's profits.

the utilities from subscribing to plans B and AB, we obtain $U_B - U_{AB} = (p_{AB} - p_B) - \lambda$. Thus, consumers' choices between plans B and AB depends on whether the price premium of plan AB exceeds the advantage of platform A's distribution channel. We assume that demand is split evenly between plans B and AB when consumers are indifferent between the two plans. This yields three possible cases: (i) no consumer subscribes to plan B if $p_{AB} - p_B < \lambda$; (ii) consumers are indifferent between plans B and AB if $p_{AB} - p_B = \lambda$; and (iii) no consumer subscribes to plan AB if $p_{AB} - p_B > \lambda$. Case (iii) replicates the result derived in Lemma 1 because demand for the cross-channel plan AB is zero.[4] We hence focus on the first two cases, in which the cross-channel plan is active.

Given $p_{AB} - p_B \leq \lambda$, comparing consumers' utilities yields the demand regions illustrated in Figure 2. Qualitatively, consumer choices are similar to those in the case without the cross-channel plan, but the subscribed plans are different. In Panel (i), the advantage of platform A's distribution channel exceeds the price premium of plan AB, and consumers prefer accessing platform B's content through platform A. Thus, consumers subscribe to plan AB instead of plan B. In Panel (ii), the advantage is exactly offset by the lower price of plan B, leaving consumers indifferent between subscribing to plans B and AB.



(i) $p_{AB} - p_B < \lambda$ (ii) $p_{AB} - p_B = \lambda$

Figure 2: Demand regions in the case with the cross-channel plan

Integrating over the corresponding demand regions under the uniform distribution, we can obtain the

[4]Strictly speaking, case (iii) differs from the case without the cross-channel plan. This is because the cross-channel plan exists but receives zero demand.

demand for each plan and profit of each platform:

$$
\begin{aligned}
D_A &= -p_A + \delta p_{AB} + \frac{2-2\delta+\delta^2}{2} + (1-\delta)\lambda, \\
D_B &= \begin{cases} 0 & \text{if } \ p_{AB} - p_B < \lambda, \\ \frac{1}{2}\left\{-p_B + \delta p_A + \frac{2-2\delta+\delta^2}{2} - \delta\lambda\right\} & \text{if } \ p_{AB} - p_B = \lambda, \end{cases} \\
D_{AB} &= \begin{cases} -p_{AB} + \delta p_A + \frac{2-2\delta+\delta^2}{2} + (1-\delta)\lambda & \text{if } \ p_{AB} - p_B < \lambda, \\ \frac{1}{2}\left\{-p_{AB} + \delta p_A + \frac{2-2\delta+\delta^2}{2} + (1-\delta)\lambda\right\} & \text{if } \ p_{AB} - p_B = \lambda, \end{cases} \\
\pi_A &= p_A D_A + \gamma p_{AB} D_{AB} \quad \text{and} \quad \pi_B = p_B D_B + (1-\gamma) p_{AB} D_{AB}.
\end{aligned}
$$

For price setting, we assume that platform B determines the price of the cross-channel plan AB. This assumption reflects that platform B owns the underlying content and therefore controls how its content is distributed across the two plans by jointly choosing p_B and p_{AB}. There are three possible pricing strategies that need to be considered separately. First, platform B may choose prices such that $p_{AB} - p_B < \lambda$, which results in no subscription for plan B, which is referred to as the full crossing strategy. Second, platform B may choose prices such that $p_{AB} - p_B = \lambda$, providing content B through both platforms, which is referred to as the partial crossing strategy. Third, platform B may choose prices such that $p_{AB} - p_B > \lambda$, which results in no subscription for plan AB, which is referred to as the no crossing strategy, corresponding to the benchmark model without the cross-channel plan. However, considering the best response of platform B, we obtain the following lemma.

Lemma 2. The partial crossing strategy is never optimal for platform B.

The intuition behind Lemma 2 is as follows: The cross-channel plan AB has both positive and negative aspects for platform B. The positive aspect is that plan AB allows consumers to access platform B's content through platform A's superior distribution channel, potentially increasing platform B's profit. The negative aspect is that platform B must share the revenue generated by plan AB with platform A based on the revenue-sharing rate determined by the bargaining in stage 1. Suppose that, given a price p_A of plan A, the partial crossing strategy is optimal for platform B. When the revenue-sharing rate is high, platform B receives almost no revenue generated by plan AB. In this case, platform B has an incentive to raise the price p_{AB} of plan AB and deviate to the no crossing strategy, providing consumers through its own distribution channel without sharing revenue with platform A. Conversely, when the revenue-sharing rate is low, most of the revenue generated by plan AB remains with platform B. In that case, platform B has an incentive to raise the price p_B of plan B and deviate to the full crossing strategy. This is because

this deviation doubles demand for plan AB, allowing platform B to extract the advantage λ of platform A's distribution channel from these consumers.

Since the partial crossing strategy is never optimal for platform B, as shown in Lemma 2, platform B chooses either the full crossing strategy or the no crossing strategy in equilibrium. Under the no crossing strategy, no consumer subscribes to plan AB, and the outcome coincides with that of the benchmark model without the cross-channel plan as derived in Lemma 1. When platform B chooses the full crossing strategy, the prices for each plan and profits of each platform are given by

$$
\begin{aligned}
p_A^{FC} &= \frac{(2-2\delta+\delta^2)\{(2+\delta)+\delta\gamma\}}{2\{(4-\delta^2)-\delta^2\gamma\}} + \frac{(1-\delta)\{(2+\delta)+\delta\gamma\}}{(4-\delta^2)-\delta^2\gamma}\lambda, \\
p_B^{FC} &> p_{AB}^{FC} - \lambda, \qquad p_{AB}^{FC} = \frac{(2-2\delta+\delta^2)(2+\delta)}{2\{(4-\delta^2)-\delta^2\gamma\}} + \frac{2-\delta-\delta^2}{(4-\delta^2)-\delta^2\gamma}\lambda, \\
\pi_A^{FC} &= \frac{\{(2+\delta)^2+(4+4\delta-\delta^2-\delta^3)\gamma-(1+\delta)\delta^2\gamma^2\}\{(2-2\delta+\delta^2)+2(1-\delta)\lambda\}^2}{4\{(4-\delta^2)-\delta^2\gamma\}^2}, \\
\pi_B^{FC} &= \frac{(1-\gamma)(2+\delta)^2\{(2-2\delta+\delta^2)+2(1-\delta)\lambda\}^2}{4\{(4-\delta^2)-\delta^2\gamma\}^2}.
\end{aligned}
$$

For a given revenue-sharing rate γ, platform B chooses between the two strategies to maximize its profit. By comparing platform B's profits under each strategy, we can summarize the equilibrium as in the following proposition.

Proposition 1. When the cross-channel plan is introduced, there exists a revenue-sharing rate $\bar{\gamma}$ which makes $\pi_B^{FC} = \pi_B^{Wo}$, and the equilibrium prices and profits are given by

$$
p_A^W = \begin{cases} p_A^{FC} & \text{if } \gamma \le \bar{\gamma}, \\ p_A^{Wo} & \text{if } \gamma > \bar{\gamma}, \end{cases}
\quad
p_B^W = \begin{cases} p_B^{FC} & \text{if } \gamma \le \bar{\gamma}, \\ p_B^{Wo} & \text{if } \gamma > \bar{\gamma}, \end{cases}
\quad
p_{AB}^W = \begin{cases} p_{AB}^{FC} & \text{if } \gamma \le \bar{\gamma}, \\ p_B^{Wo} + \lambda + \alpha & \text{if } \gamma > \bar{\gamma}, \end{cases}
$$

$$
\pi_A^W = \begin{cases} \pi_A^{FC} & \text{if } \gamma \le \bar{\gamma}, \\ \pi_A^{Wo} & \text{if } \gamma > \bar{\gamma}, \end{cases}
\quad
\pi_B^W = \begin{cases} \pi_B^{FC} & \text{if } \gamma \le \bar{\gamma}, \\ \pi_B^{Wo} & \text{if } \gamma > \bar{\gamma}, \end{cases}
\quad \text{where } \alpha > 0.
$$

When the revenue-sharing rate is sufficiently low, the full crossing strategy arises in equilibrium. Conversely, when the revenue-sharing rate is sufficiently high, the no crossing strategy arises in equilibrium, under which no consumer subscribes to the cross-channel plan AB even though the plan is introduced. Figure 3 illustrates the optimal strategy in the equilibrium described in Proposition 1. Under the full crossing strategy, platform B faces a trade-off associated with the introduction of the cross-channel plan AB. Unlike plan B, plan AB allows consumers to access platform B's content through platform A's superior distribution channel, potentially increasing demand. At the same time, plan AB softens price competition between the

platforms. A lower revenue-sharing rate γ limits the competition-softening effect while allowing platform B to retain a large share of the revenue generated by plan AB. Consequently, platform B can benefit from providing its content through platform A's superior distribution channel without losing much of revenue generated by plan AB. By contrast, a higher revenue-sharing rate γ gives platform A a larger share of revenue generated by plan AB and strengthens the competition-softening effect. However, it also reduces the share of revenue from plan AB retained by platform B. In the extreme case of $\gamma = 1$, platform B receives no revenue from plan AB and hence earns zero profit under the full crossing strategy. Consequently, the no crossing strategy arises in equilibrium despite the introduction of the cross-channel plan. Furthermore, when the advantage of platform A's distribution channel λ is large, the full crossing strategy tends to be optimal. This is because, for platform B, the benefit of providing its content through platform A's superior distribution channel outweighs the loss resulting from the revenue sharing.

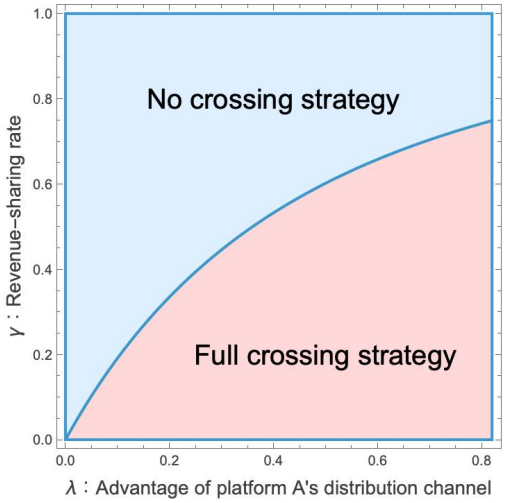


Figure 3: Optimal strategy in the equilibrium

4.3 Comparison with and without the cross-channel plan

We now compare the platforms' profits with and without the cross-channel plan and characterize the conditions under which introducing the plan benefits both platforms. As shown in Proposition 1, the introduction of the cross-channel plan does not reduce platform B's profit. We therefore focus on how the introduction of the cross-channel plan affects platform A's profit. When the revenue-sharing rate exceeds the threshold $\bar{\gamma}$, the no crossing strategy arises in equilibrium, and platform A's profit remains unchanged even if the cross-channel plan is introduced. When the revenue-sharing rate is below the threshold $\bar{\gamma}$, however, the full crossing strategy arises in equilibrium, and the introduction of the cross-channel plan can affect platform A's profit. We obtain the following Proposition.

Proposition 2. Comparing platform A's profit with and without the cross-channel plan, there exists a threshold $\underline{\gamma}$ such that $\pi_A^W(\underline{\gamma}) = \pi_A^{Wo}$, and the following relationship holds:

(i) $\pi_A^W(\gamma) < \pi_A^{Wo}$ if $\gamma \in (0, \underline{\gamma})$,

(ii) $\pi_A^W(\gamma) \geq \pi_A^{Wo}$ if $\gamma \in [\underline{\gamma}, \bar{\gamma})$,

(iii) $\pi_A^W(\gamma) = \pi_A^{Wo}$ if $\gamma \in [\bar{\gamma}, 1)$.

Proposition 2 shows that platform A benefits from introducing the cross-channel plan when the full crossing strategy arises in equilibrium and the revenue-sharing rate is sufficiently high. By introducing the cross-channel plan, platform A receives a share of the revenue generated by the cross-channel plan AB while allowing platform B's content to be distributed through its superior distribution channel. Platform A also benefits from the resulting softening of price competition between platforms. Therefore, unlike platform B, platform A is willing to agree to introduce the cross-channel plan only when the revenue-sharing rate is sufficiently high.

Figure 4 summarizes Propositions 1 and 2 and illustrates the effects of introducing the cross-channel plan on the platforms' profits. At revenue-sharing rate γ in region (iii), even though the cross-channel plan is introduced, the no crossing strategy arises in equilibrium and the profits of both platforms remain unchanged. On the other hand, at revenue-sharing rate γ in regions (i) and (ii), the full crossing strategy arises in equilibrium when the cross-channel plan is introduced, and the profits of both platforms are affected by introducing the cross-channel plan. At revenue-sharing rate γ in region (i), platform B's profit increases, but platform A's profit decreases. Both platforms benefit from introducing the cross-channel plan only at an intermediate revenue-sharing rate, which corresponds to region (ii).

5 Stage 1: Bargaining

We now analyze the bargaining in stage 1 over the revenue-sharing rate associated with the cross-channel plan. When bargaining succeeds, the cross-channel plan AB is introduced, and each platform i obtains the equilibrium profit π_i^W derived in Proposition 1. When bargaining fails, the cross-channel plan AB is not introduced, and each platform instead obtains the disagreement payoff π_i^{Wo} derived in Lemma 1. The Nash bargaining solution is therefore given by

$$\gamma^{Nash} = \arg\max_{\gamma} \left(\pi_A^W(\gamma) - \pi_A^{Wo}\right)\left(\pi_B^W(\gamma) - \pi_B^{Wo}\right),$$
$$\text{subject to} \quad \pi_i^W(\gamma) - \pi_i^{Wo} \geq 0 \quad \text{for each } i \in \{A, B\}.$$

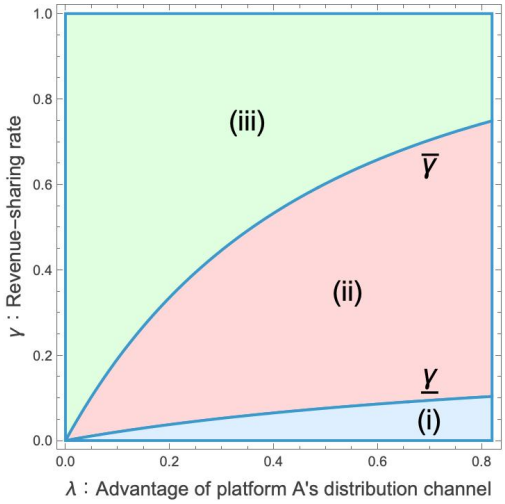


Figure 4: Comparison of profits with and without the cross-channel plan

In region (iii), the no crossing strategy arises in equilibrium and the profits of both platforms remain unchanged. In region (i), the introduction of the cross-channel plan increases platform B's profit, but decreases platform A's profit. In region (ii), the profits of both platforms increase by introducing the cross-channel plan.

The constraints imply that bargaining fails if the introduction of the cross-channel plan makes either platform worse off relative to the disagreement payoff. In other words, bargaining succeeds only if both platforms benefit from the introduction of the cross-channel plan. As explained in subsection 4.3, the introduction of the cross-channel plan benefits both platforms only for revenue-sharing rate within the mutually beneficial range.

We can summarize the bargaining problem in the following proposition.

Proposition 3. The Nash bargaining solution $\gamma^{Nash} \in [\underline{\gamma}, \bar{\gamma}]$ has the following characteristics:

(i) $\gamma^{Nash} < 0.504$ for all admissible values of δ and λ.

(ii) γ^{Nash} is increasing in λ.

The first result implies that platform B, the content-providing platform, retains about half or more of the revenue generated by the cross-channel plan AB. Platform A benefits from introducing the cross-channel plan because it receives a share of the revenue generated by plan AB and benefits from softened price competition. By contrast, although platform B benefits from the advantage of platform A's distribution channel, it must relinquish part of the revenue generated by the cross-channel plan. Consequently, platform B has a stronger incentive to secure a larger share of revenue, resulting in $\gamma^{Nash} < 0.504$. The second result follows from the role of the advantage of platform A's distribution channel in the bargaining process. A larger advantage of platform A's distribution channel increases the value of accessing platform B's content through platform A, thereby strengthening platform A's bargaining position and allowing it to secure a larger share of the revenue.

6 Welfare analysis

We examine the welfare implications of introducing the cross-channel plan and show that they depend on how the contractual terms are determined. We first characterize the welfare effects of introducing the cross-channel plan in the contractual term with the revenue-sharing rate γ^{Nash} determined through Nash bargaining. Because the conflicting interests of the two platforms constrain the agreement to an intermediate range of revenue-sharing rates, we obtain the following proposition.

Proposition 4. The introduction of the cross-channel plan with the revenue-sharing rate γ^{Nash} determined through Nash bargaining increases industry profit, consumer surplus, and total surplus.

However, in streaming service markets, the contract term that combines revenue sharing with a lump-sum transfer is often observed.[5] If, once the cross-channel plan is implemented, industry profit increases, an appropriate lump-sum transfer can make both platforms better off than under disagreement, thereby enabling an agreement. We therefore examine the welfare effects of introducing the cross-channel plan when the contractual arrangement includes both revenue sharing and a lump-sum transfer.

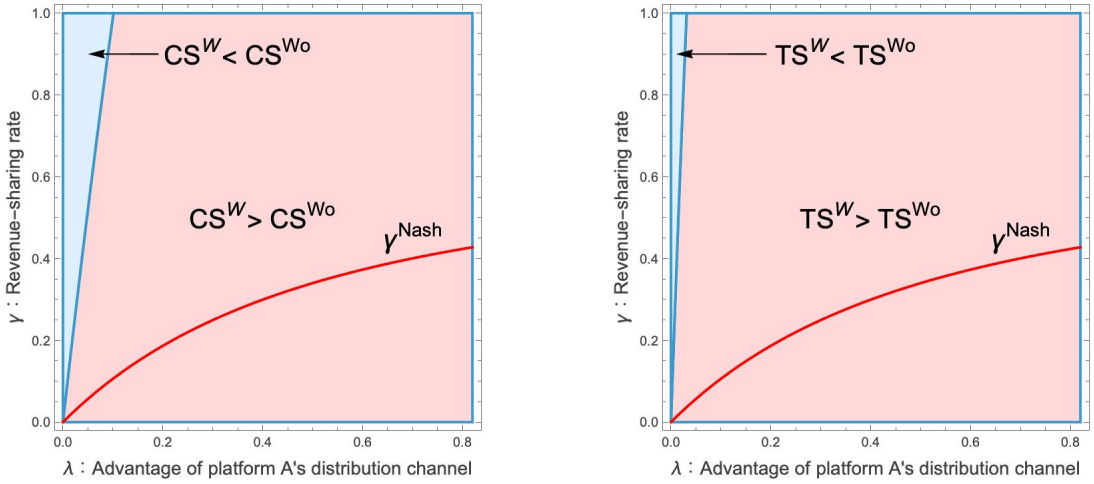
Proposition 5. The introduction of the cross-channel plan with revenue sharing and a lump-sum transfer has the following welfare effects:

1. Industry profit increases for any revenue-sharing rate γ.
2. Consumer surplus decreases when the revenue-sharing rate γ is sufficiently high and the advantage of platform A's distribution channel, λ, is sufficiently small.
3. Total surplus decreases when the advantage of platform A's distribution channel, λ, is sufficiently small.

The first result implies that, in the contractual term with a lump-sum transfer, even at revenue-sharing rates where the no crossing strategy arises in equilibrium, the gain of one platform exceeds the loss, if any, incurred by the other platform, resulting in an increase in industry profit. On the other hand, consumer surplus and total surplus may decrease in the contractual term with a lump-sum transfer illustrated in Figure 5. The effects of the cross-channel plan on consumer surplus reflect two opposite forces. On the one hand, the cross-channel plan softens price competition by partially internalizing competition between platforms. This competition-softening effect becomes stronger as the revenue-sharing rate increases, reducing consumer surplus. On the other hand, the cross-channel plan allows consumers to access platform B's content

[5]The Walt Disney Company: https://s206.q4cdn.com/979796730/files/doc_financials/2025/ar/2025-Annual-Report.pdf
Warner Bros. Discovery: https://s201.q4cdn.com/336605034/files/doc_financials/2025/ar/2025-WBD-Annual-Report.pdf

through platform A's superior distribution channel, potentially expanding demand and increasing consumer surplus. When the revenue-sharing rate γ is sufficiently high and the advantage of platform A's distribution channel, λ, is sufficiently small, the competition-softening effect dominates the demand-expanding effect, resulting in a decrease in consumer surplus. Regarding total surplus, consumer payments are simply transfers to the platforms, so total surplus is determined by consumers' gross utilities. Introducing the cross-channel plan increases the gross utility of consumers who access platform B's content through platform A's superior distribution channel by λ. However, revenue sharing softens price competition, leading to higher equilibrium prices and a reduction in demand. When the advantage of platform A's distribution channel, λ, is sufficiently small, the loss in consumers' gross utilities resulting from reduction in demand outweighs the gross utility gains from access to platform B's content through platform A's superior distribution channel. Consequently, total surplus decreases.



(i) Consumer surplus (ii) Total surplus

Figure 5: Comparison of welfare with and without the cross-channel plan
In the red region, both consumer surplus and total surplus are higher with the cross-channel plan than without it, whereas in the blue region, both are lower. The red line represents the Nash bargaining solution.

A comparison of Propositions 4 and 5 suggests the importance of contractual terms for the welfare implications of partnerships between platforms. In particular, although the contractual term with not only revenue-sharing but also a lump-sum transfer facilitates agreement between platforms, it may also enable agreements under which price competition is excessively softened, harming consumers and reducing total surplus. Policymakers should therefore pay attention to the contractual terms governing such partnerships.

7 Extension

In the main analysis, platform B can choose prices such that no consumer subscribes to the cross-channel plan AB, even when the plan is introduced. Specifically, this outcome arises when $p_{AB} - p_B > \lambda$, which we refer to as the no crossing strategy. In practice, however, platform B may be unable to adopt this strategy. For example, choosing prices that effectively prevent consumers from subscribing the cross-channel plan may violate the contract between the two platforms. To examine the implications of this restriction, we consider a setting in which platform B cannot choose prices such that $p_{AB} - p_B > \lambda$, which corresponds to the no crossing strategy, once the cross-channel plan has been introduced through bargaining in stage 1.

In stage 2, platform B therefore chooses either the full crossing strategy or the partial crossing strategy. By compering platform B's profit under each strategy, we can summarize the equilibrium as in the following proposition.[6]

Proposition 6. When platform B cannot choose prices corresponding to the no crossing strategy, there exists a threshold γ^* at which makes $\pi_B^{FC} = \pi_B^{PC}$, and the equilibrium prices and profits are given by

$$p_A^W = \begin{cases} p_A^{FC} & \text{if } \gamma \leq \gamma^*, \\ p_A^{PC} & \text{if } \gamma > \gamma^*, \end{cases} \quad p_B^W = \begin{cases} p_B^{FC} & \text{if } \gamma \leq \gamma^*, \\ p_B^{PC} & \text{if } \gamma > \gamma^*, \end{cases}, \quad p_{AB}^W = \begin{cases} p_{AB}^{FC} & \text{if } \gamma \leq \gamma^*, \\ p_{AB}^{PC} & \text{if } \gamma > \gamma^*, \end{cases}$$

$$\pi_A^W = \begin{cases} \pi_A^{FC} & \text{if } \gamma \leq \gamma^*, \\ \pi_A^{PC} & \text{if } \gamma > \gamma^*, \end{cases} \quad \pi_B^W = \begin{cases} \pi_B^{FC} & \text{if } \gamma \leq \gamma^*, \\ \pi_B^{PC} & \text{if } \gamma > \gamma^*. \end{cases}$$

Unlike the main analysis in Section 4, Proposition 6 shows that the partial crossing strategy can arise in equilibrium when the no crossing strategy is unavailable. Specifically, as illustrated in Figure 6, the partial crossing strategy arises in equilibrium when the revenue-sharing rate γ is sufficiently high, whereas the full crossing strategy arises in equilibrium when the revenue-sharing rate γ is sufficiently low. As described in the main analysis, platform B faces a trade-off associated with the introduction of the cross-channel plan AB. When the revenue-sharing rate is low, platform B retains a relatively large share of revenue generated by plan AB, making the full crossing strategy more profitable. When the revenue-sharing rate is high, however, platform B loses most of the revenue generated by plan AB. In the extreme case of $\gamma = 1$, platform B receives no revenue from plan AB. Hence, platform B should provide its content through its own distribution channel without revenue sharing, that is, the partial crossing strategy.

Although preventing platform B from choosing prices corresponding to the no crossing strategy changes the equilibrium in stage 2, the outcome of the bargaining in stage 1 remains the same as in Proposition 3. This

[6] See Appendix for details on prices and profits under the partial crossing strategy.

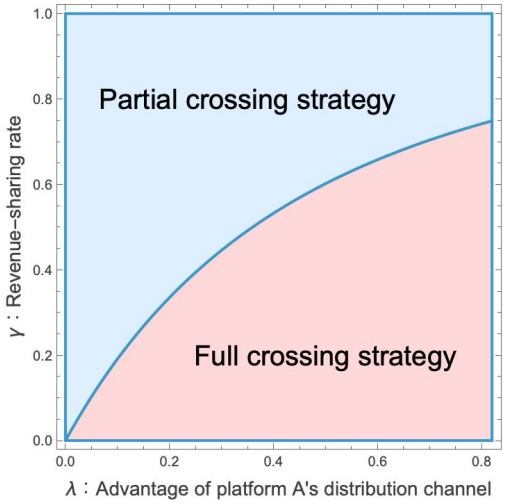


Figure 6: Optimal strategy in the equilibrium in the extension

is because, at the revenue-sharing rate where the partial crossing strategy arises in equilibrium, platform B's profit without the cross-channel plan is larger than that with the plan and does not agree to introduce the plan. Consequently, it is only when the full crossing strategy arises in equilibrium to succeed in the bargaining in stage 1. Moreover, the welfare results remain qualitatively similar to those established in Propositions 5 and 4. In summary, preventing platform B from choosing prices corresponding to the no crossing strategy changes its optimal strategy when the revenue-sharing rate is sufficiently high. In that case, the partial crossing strategy arises in the equilibrium if the cross-channel plan is introduced. However, because platform B earns less under the partial crossing strategy than it does without the cross-channel plan, bargaining in stage 1 does not succeed at such a revenue-sharing rate. Thus, although the restriction changes the equilibrium in stage 2, it does not alter outcomes of the bargaining in stage 1 and welfare implications.

8 Conclusion

This paper examined a cross-channel plan that allows consumers to access one platform's content through a rival platform under a revenue-sharing agreement between the two platforms. Unlike the existing literature on co-opetition, which typically takes such cooperative arrangements as given, we endogenized their formation by analyzing bargaining over the revenue-sharing contract associated with the cross-channel plan.

The introduction of a cross-channel plan softens competition between platforms by internalizing part of the competition with the rival platform. For the platform providing its content under the cross-channel plan, it gains access to the rival's superior distribution channel but must give up part of the revenue generated from the plan. Therefore, the cross-channel plan will be introduced only when the content-providing platform

captures a moderately large proportion of the revenue. For the platform providing its distribution channel, the cross-channel plan generates revenue-sharing income and softens competition, allowing it to benefit when it captures a sufficiently high proportion of the revenue. As a result, bargaining succeeds only for an intermediate range of revenue-sharing rates. When an agreement is reached, the equilibrium involves the full crossing strategy: the content-providing platform ceases distribution on its own platform and distributes its content only through the rival's superior distribution channel. Moreover, the Nash bargaining solution assigns about half or more of the revenue generated by the cross-channel plan to the content-providing platform. We also show that the welfare effects of the cross-channel plan depends on how the contractual terms are determined. In the contractual term with only revenue sharing determined through Nash bargaining, industry profit, consumer surplus, and total surplus increase. In contrast, in the contractual term with not only revenue sharing but also a lump-sum transfer, industry profit increases, but consumer surplus and total surplus may decrease. These results highlight that the contractual terms governing co-opetition strategy can be important not only for the participating platforms but also for consumers.

An interesting direction for future research is to allow consumers to have heterogeneous preferences over the platforms' distribution channels. In our model, all consumers perceive that platform A's distribution channel as superior to platform B's distribution channel. Allowing consumers to differ in their preferences over distribution channels could generate richer outcome of the co-opetition strategy. In particular, the partial crossing strategy, which never arises in equilibrium in our model, may emerge when consumers have heterogeneous preferences over the platforms' distribution channels.

A Appendix

A.1 Proof of Lemma 2

Given p_A, we derive prices that maximize platform B's profit for each strategy, which includes the no crossing strategy, the partial strategy, and the full crossing strategy. We denote the profits for each strategy as π_B^{NC}, π_B^{PC}, and π_B^{FC}. Comparing these profits, we find $\max\{\pi_B^{NC}, \pi_B^{FC}\} > \pi_B^{PC}$.[7]

A.2 Proof of Proposition 1

Let $\Delta\pi_B$ denote the difference in platform B's profit employing the full crossing strategy and the no crossing strategy, defined as $\Delta\pi_B \equiv \pi_B^{FC} - \pi_B^{Wo}$. Taking the derivative of $\Delta\pi_B$ with respect to γ, we find that it is

[7] In the appendix, we use Mathematica to verify some of the calculations, as they are quite complex. The corresponding Mathematica file is available upon request.

decreasing in γ. The values of $\Delta\pi_B$ at $\gamma = 0$ and $\gamma = 1$ are given by, respectively,

$$\Delta\pi_B(\gamma = 0) = \frac{(2-\delta^2)\{4 - 2\delta + \delta^3 + (2 - 2\delta - \delta^2)\lambda\}\lambda}{(4-\delta^2)^2} > 0,$$
$$\Delta\pi_B(\gamma = 1) = -\frac{\{(4 - 2\delta + \delta^3) - 2\delta\lambda\}^2}{(4-\delta^2)^2} < 0.$$

Thus, there exist a threshold value $\bar{\gamma}$ such that $\pi_B^{FC} = \pi_B^{Wo}$.

A.3 Proof of Proposition 2

Let $\Delta\pi_A$ denote the difference in platform A's profit with and without the cross-channel plan, defined as $\Delta\pi_A \equiv \pi_A^W - \pi_A^{Wo}$. First, it is clear that $\Delta\pi_A = 0$ if $\gamma \in [\bar{\gamma}, 1)$ because the no crossing strategy arises in equilibrium and $\pi_A^W = \pi_A^{Wo}$. Below, we focus the discussion on $\gamma \in (0, \bar{\gamma})$ Taking the derivative of $\Delta\pi_A$ with respect to γ, we find that it is increasing in γ. The value of $\Delta\pi_A$ at $\gamma = 0$ is given by

$$\Delta\pi_A(\gamma = 0) = -\frac{\delta\{(4 - 2\delta + \delta^3) + (4 - \delta - 2\delta^2)\lambda\}\lambda}{(4-\delta^2)^2} < 0.$$

On the other hand, we can find that the value of $\Delta\pi_A$ at $\gamma = \bar{\gamma}$ is positive. Thus, there exist a revenue-sharing rate $\underline{\gamma}$ such that $\pi_A^W = \pi_A^{Wo}$, and $\pi_A^W < \pi_A^{Wo}$ if $\gamma \in (0, \underline{\gamma})$ and $\pi_A^W > \pi_A^{Wo}$ if $\gamma \in (\underline{\gamma}, \bar{\gamma})$.

A.4 Proof of Proposition 3

The Nash bargaining solution is a revenue-sharing rate that satisfies the following condition:

$$L \equiv \frac{\Delta\pi_A}{\Delta\pi_B} + \frac{\frac{\partial\pi_A^W}{\partial\gamma}}{\frac{\partial\pi_B^W}{\partial\gamma}} = 0.$$

First, we show that (ii) γ^{Nash} is increasing in λ. By the implicit function theorem,

$$\frac{\partial\gamma^{Nash}}{\partial\lambda} = -\frac{\frac{\partial L}{\partial\lambda}}{\frac{\partial L}{\partial\gamma}} = -\frac{\frac{\partial}{\partial\lambda}\left(\frac{\Delta\pi_A}{\Delta\pi_B}\right) + \frac{\partial}{\partial\lambda}\left(\frac{\frac{\partial\pi_A^W}{\partial\gamma}}{\frac{\partial\pi_B^W}{\partial\gamma}}\right)}{\frac{\partial}{\partial\gamma}\left(\frac{\Delta\pi_A}{\Delta\pi_B}\right) + \frac{\partial}{\partial\gamma}\left(\frac{\frac{\partial\pi_A^W}{\partial\gamma}}{\frac{\partial\pi_B^W}{\partial\gamma}}\right)}. \tag{A.1}$$

In (A.1), the first and second terms in the numerator are negative and zero, respectively, while both terms in the denominator are positive. Therefore, the Nash bargaining solution γ^{Nash} is increasing in λ.

Second, we show that (i) $\gamma^{Nash} < 0.504$ for all admissible values o δ and λ. As shown above, the Nash bargaining solution γ^{Nash} is increasing in λ. Hence, for a given $\delta \in (0, 0.47)$, the Nash bargaining

solution γ^{Nash} is maximized at $\lambda = \frac{2-2\delta+\delta^2}{2}$. We therefore evaluate γ^{Nash} at $\lambda = \frac{2-2\delta+\delta^2}{2}$ and find that it is below 0.504 for $0 < \delta < 0.47$.

A.5 Proof of Proposition 4

Negotiation over the revenue-sharing rate succeeds only when the introduction of the cross-channel plan is profitable for both platforms. Therefore, the Nash bargaining solution γ^{Nash} must lie between $\underline{\gamma}$ and $\bar{\gamma}$ derived in Propositions 1 and 2. First, since negotiation succeeds, industry profit increases. Next, comparing consumer surplus and total surplus with and without the cross-channel plan, we find that both consumer surplus and total with the cross-channel plan is larger than those without the plan for any $\gamma \in (\underline{\gamma}, \bar{\gamma})$. Therefore, when the cross-channel plan is introduced by the revenue-sharing rate determined through Nash bargaining, consumer surplus and total surplus increase.

A.6 Proof of Proposition 5

Let $\Delta\Pi$, ΔCS, and ΔTS denote the differences in industry profit, consumer surplus, and total surplus when platform B employs the full crossing strategy and the no crossing strategy, respectively. First, we find $\Delta\Pi > 0$ for any $\gamma \in (0, 1)$.

Next, we consider consumer surplus. Taking the derivative of ΔCS with respective to γ, we find that it is decreasing in γ. The value of ΔCS at $\gamma = 0$ is given by

$$\Delta CS(\gamma = 0) = \frac{\{8 - 2\delta^2 + 2\delta^3 + \delta^4 + (4 - 3\delta^2 - 2\delta^3)\lambda\}\lambda}{2(4 - \delta^2)^2} > 0.$$

On the other hand, we find that the value of ΔCS at $\gamma = 1$ can be either positive or negative. Consequently, there exist a revenue-sharing rate γ^*_{CS} such that $\Delta CS = 0$, and we obtain

$$\Delta CS \begin{cases} > 0 & \text{if } \gamma < \gamma^*_{CS}, \\ < 0 & \text{if } \gamma > \gamma^*_{CS}. \end{cases}$$

Finally, we consider total surplus. Taking the derivative of ΔTS with respective to γ, we find that it is decreasing in γ. The value of ΔTS at $\gamma = 0$ is given by

$$\Delta TS(\gamma = 0) = \frac{\{24 - 16\delta - 6\delta^2 + 10\delta^3 - \delta^4 - 2\delta^5 + (12 - 16\delta - 9\delta^2 + 6\delta^3 + 2\delta^4)\lambda\}\lambda}{2(4 - \delta^2)^2} > 0.$$

On the other hand, we find that the value of ΔTS at $\gamma = 1$ can be either positive or negative. Consequently,

there exist a revenue-sharing rate γ_{TS}^* such that $\Delta TS = 0$, and we obtain

$$\Delta TS \begin{cases} > 0 & \text{if } \gamma < \gamma_{TS}^*, \\ < 0 & \text{if } \gamma > \gamma_{TS}^*. \end{cases}$$

A.7 Proof of Proposition 6

Following the partial crossing strategy, the prices for each plan and profits of each platform are given by

$$\begin{aligned}
p_A^{PC} &= \frac{(2-2\delta+\delta^2)\{2(2+\delta)+\delta\gamma\}}{2\{4(2-\delta^2)-\delta^2\gamma\}} + \frac{2(4-\delta-2\delta^2)-(4-5\delta)\gamma-\delta(1-\delta)\gamma^2}{(2-\gamma)\{4(2-\delta^2)-\delta^2\gamma\}}\lambda, \\
p_B^{PC} &= \frac{4-2\delta+\delta^3}{4(2-\delta^2)-\delta^2\gamma} - \frac{4(1+\delta)-2(2+\delta+\delta^2)\gamma+\delta^2\gamma^2}{(2-\gamma)\{4(2-\delta^2)-\delta^2\gamma\}}\lambda, \\
p_{AB}^{PC} &= \frac{4-2\delta+\delta^3}{4(2-\delta^2)-\delta^2\gamma} + \frac{2\{2(3-\delta-\delta^2)-(2-\delta-\delta^2)\gamma\}}{(2-\gamma)\{4(2-\delta^2)-\delta^2\gamma\}}\lambda, \\
\pi_A^{PC} &= \frac{(2-2\delta+\delta^2)^2\{4(2+\delta)^2+2(4+4\delta-\delta^2-\delta^3)\gamma-\delta^2(1+\delta)\gamma^2\}}{4\{4(2-\delta^2)-\delta^2\gamma\}^2} \\
&\quad + \frac{(2-2\delta+\delta^2)\{4(8+2\delta-5\delta^2-2\delta^3)-2\delta^2(3-2\delta^2\delta^2)\gamma-8(1-\delta^2)\gamma^2+\delta^2(1-\delta^2)\gamma^3\}}{(2-\gamma)\{4(2-\delta^2)-\delta^2\gamma\}^2}\lambda, \\
&\quad + \frac{4(4-\delta-2\delta^2)^2-4\Theta_1\gamma-\Theta_2\gamma^2+2(1-\delta)^2(4+4\delta+\delta^2+\delta^3)\gamma^3-\delta^2(1+\delta)(1-\delta)^2\gamma^4}{(2-\gamma)^2\{4(2-\delta^2)-\delta^2\gamma\}^2}\lambda^2, \\
\pi_B^{PC} &= \frac{[(2-\gamma)(4-2\delta+\delta^3)+\{2(2-2\delta-\delta^2)-(4-2\delta-3\delta^2)\gamma\}\lambda]^2}{2(2-\gamma)\{2(4-\delta^2)-\delta^2\gamma\}^2}
\end{aligned}$$

where $\Theta_1 = 10-4\delta-7\delta^2-2\delta^3+2\delta^4+2\delta^5$ and $\Theta_2 = 16-16\delta-21\delta^2+24\delta^3-4\delta^5$. Let $\Delta\pi_B^{Ex}$ denote the difference in platform B's profit employing the full crossing strategy and the partial crossing strategy, defined as $\Delta\pi_B^{Ex} \equiv \pi_B^{FC} - \pi_B^{PC}$. Taking the derivative of $\Delta\pi_B^{Ex}$ with respect to γ, we find that it is decreasing in γ. The values of $\Delta\pi_B^{Ex}$ at $\gamma = 0$ and $\gamma = 1$ are given by, respectively,

$$\begin{aligned}
\Delta\pi_B^{Ex}(\gamma=0) &= \frac{(2-\delta^2)\{2(4-2\delta+\delta^3)+(6-4\delta-3\delta^2)\lambda\}\lambda}{4(4-\delta^2)^2} > 0, \\
\Delta\pi_B^{Ex}(\gamma=1) &= -\frac{\{(4-2\delta+\delta^3)-\delta(2-\delta)\lambda\}^2}{2(8-3\delta^2)^2} < 0.
\end{aligned}$$

Thus, there exist a threshold value γ^* such that $\pi_B^{FC} = \pi_B^{PC}$, and $\pi_B^{FC} > \pi_B^{PC}$ if $\gamma < \gamma^*$ and $\pi_B^{FC} < \pi_B^{PC}$ if $\gamma > \gamma^*$.

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