

From Perfect Competition to Imperfect Competition: Explaining the Gap Between Theory and Reality -- A Case Study of China's Live Streaming Industry

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Abstract. This report sets out to tackle a puzzle that has long occupied microeconomists: if perfect competition delivers the best possible outcomes, why is it so hard to find in the real world? Market structures like monopolistic competition and oligopoly are everywhere, not just as exceptions but as the rule. We start by laying out the textbook conditions for perfect competition and what Pareto optimality actually means, then turn to the forces that pull markets away from that ideal — network effects, product differentiation, barriers to entry, and scale economies. The live streaming industry in China serves as our empirical lens. We use a mix of literature review, theoretical modeling, and case analysis. Section 2 zooms in on within-platform dynamics — specifically the "head effect" — with a two-sided market framework and a welfare model. Section 3 shifts to inter-platform rivalry, comparing Douyin and Kuaishou's strategic positioning and walking through the SAMR's decision to block the Tencent-backed HUYA-DouYu merger. Throughout the report, we draw out regulatory implications for both platforms and antitrust authorities.

Keywords: *Live Streaming; Perfect Competition; Monopolistic Competition; Oligopoly; Network Effects; Two-Sided Market; Differentiated Strategies; Merger.*

1. Introduction

1.1. Perfect Competition and Pareto Optimality

Neoclassical theory takes perfect competition as the gold standard for efficient markets. But the conditions required are demanding. There must be many buyers and sellers, none large enough to move the price on its own. Products must be identical — no branding, no differentiation, no consumer loyalty. Information has to be perfect: everyone knows prices, quality, and production methods. And entry and exit must be costless, so capital and labor can flow freely to where they are most valued [1]. When these conditions hold, the First Welfare Theorem kicks in: the competitive equilibrium is Pareto optimal. No one can be made better off without making someone else worse off. In that sense, resources are used as efficiently as possible, and the combined surplus — consumer plus producer — is maximized.

1.2. Why Live Streaming Platforms Exhibit Monopolistic Competition and Oligopoly

Perfect competition is elegant in theory, but in practice it is hard to find an industry that satisfies all its assumptions. China's live streaming sector is a case in point. Inside platforms, a structural monopoly takes shape through the head effect — a tiny group of top streamers captures most of the viewers and revenue [2]. This is not accidental. Live streaming platforms are two-sided markets with strong network effects: viewers gravitate toward rooms that are already crowded, and platform algorithms reinforce this by steering traffic toward top streamers through preferential recommendations and lower commission rates. The result: small and medium-sized creators struggle for visibility, and market power becomes highly concentrated within the platform.

Across platforms, two forms of imperfect competition coexist. Douyin and Kuaishou compete through differentiation — Douyin targets younger urban users with polished, influencer-driven content, while Kuaishou leans into authenticity and community in lower-tier cities and rural areas [3].

That is monopolistic competition. But oligopoly is also present. In 2021, SAMR blocked the HUYA-DouYu merger, noting that the combined entity would control over 70 percent of the live game-streaming market and create vertical foreclosure risks upstream [4]. The case shows how platform markets, left unchecked, tend toward concentration through M&A.

1.3. Report Structure

The rest of the report proceeds as follows. Section 2 looks inside the platform — specifically, how monopolistic competition and oligopoly play out through the head effect. We lay out a two-sided market model covering viewer utility, streamer profit, and welfare implications. Section 3 shifts to platform-level competition, using Douyin and Kuaishou as a case study of differentiated monopolistic competition and the HUYA-DouYu merger case as an example of oligopolistic consolidation. Policy recommendations are provided at the end of each section. Section 4 concludes by summarizing the key findings and their implications for platform regulation.

2. Platform-Internal Monopolistic Competition and Oligopoly: The Head Effect

2.1. Industry Status Analysis

2.1.1. Two-Sided Market and Network Effects

Live streaming platforms fit the classic definition of two-sided markets: they sit between viewers and streamers, connecting the two sides through a digital intermediary [5]. On the cost side, the platform faces near-zero marginal cost for serving additional users — content can be copied and delivered with little added expense, a standard feature of digital information goods [6]. On the demand side, cross-group network effects run both ways. More streamers draw more viewers looking for variety; more viewers raise streamers' revenue prospects and push them to produce better content.

One specific mechanism matters a lot here: viewers prefer crowded rooms. Because live streaming is inherently social, audiences are more likely to stay where they see large audiences already present — interactions among viewers and real-time host activity create a sense of social presence [7]. This sets off a self-reinforcing loop. Popular streamers get more viewers, which makes their rooms seem even more attractive, which pulls in even more viewers. Once the network effect parameter crosses a certain threshold, the market tips toward a winner-takes-all outcome — one or a handful of streamers end up with almost all the audience [2].

2.1.2. The Head Effect

The head effect describes a simple but striking outcome: a tiny group of top streamers captures the bulk of viewer attention and revenue. This is not accidental — several forces drive the concentration. Platform design is the first piece. Commission rates — the cut platforms take from streamer earnings — vary systematically. Top streamers often get lower rates, which boosts their net income and gives them a reason to stay put rather than jump to a rival [8]. Traffic allocation works the same way. Recommendation algorithms tend to direct advertising traffic toward the biggest streamers, since that maximizes short-term platform revenue [9].

Network effects add a second layer. A streamer who starts with a modest viewer advantage tends to pull in disproportionately more new viewers. That larger audience, in turn, justifies more investment in content quality, and the cycle feeds on itself [10]. Then there is the matter of who these top streamers actually are. Some are established brands or professional performers brought into shopping livestreams specifically for their interactive appeal — their presence moves both viewership and purchase decisions [6]. The combined effect of these factors is a monopolistic-like market structure within the platform, where small and medium-sized streamers struggle to gain sufficient visibility and resources, potentially limiting innovation and competition in the long run [11].

2.2. Model Construction

2.2.1. Viewer Utility and Streamer Profit

To formalize the intuition developed above, this section presents the static model from [2]. Consider a platform connecting a set of streamers $I = \{1, 2, \dots, N\}$ with a set of viewers $J = \{1, 2, \dots, M\}$.

The utility function of viewer j watching streamer i is given by:

$$U_{ij} = \alpha_i q_i - p_i + \beta n_i + \varepsilon_{ij} \quad (1)$$

Where α_i (intrinsic attractiveness) reflects the overall appeal of streamer i ; q_i (content quality) represents production value; p_i (price or cost) indicates the fee to watch streamer i ; β (network-effect parameter) measures the additional attractiveness based on the current number of viewers n_i ; and ε_{ij} captures idiosyncratic viewer preferences.

The profit function of streamer i is:

$$V_i = (1 - \tau)Rn_i - c(q_i) \quad (2)$$

Where τ (commission rate) is the proportion extracted by the platform; R (average revenue per viewer) encompasses tips, advertising revenue, or subscription payments; and $c(q_i)$ is a strictly increasing and convex cost function reflecting the increasing marginal cost of producing higher-quality content.

2.2.2. Consumer Surplus, Producer Surplus, Platform Profit and Optimal Choice

Based on standard welfare economics, we define the following measures to evaluate market outcomes under the head effect.

Consumer Surplus (CS) measures viewers' net benefit:

$$CS = \sum_{j=1}^M (U_j - p) \quad (3)$$

When a few top streamers attract most viewers, niche-content-loving viewers may be left out. Although large-audience channels offer high utility due to network effects, the loss of content variety can reduce overall CS, especially as smaller creators exit the market in the long term.

Producer Surplus (PS) is calculated as:

$$PS = \sum_{i=1}^N [(1 - \tau)Rn_i - c(q_i)] \quad (4)$$

The head effect makes top streamers capture most revenue, while smaller streamers face low returns and may exit. Although total PS can be high with a few large streamers, lack of competition reduces incentives for quality and innovation, harming long-term content diversity.

Platform profit is:

$$\Pi = \tau RM \quad (5)$$

The head effect has a temporal trade-off. In the short run, channeling viewers toward top streamers lowers costs and lifts efficiency. But over time, the same dynamic can erode content diversity and user engagement — and with them, the platform's long-term profitability. Getting the balance right between these competing horizons is what makes promotion strategy difficult.

To counter the negative impacts of excessive concentration, the platform can choose a traffic allocation vector $\{\theta_i\}$ to maximize total social welfare $W = CS + PS + \Pi$:

$$\max_{\{\theta_i\}} W(\theta_i) = CS(\theta_i) + PS(\theta_i) + \Pi(\theta_i) \quad (6)$$

Subject to $\theta_i \geq 0$ and $\sum_{i=1}^N \theta_i = 1$. Promoting smaller streamers may reduce short-term profit but preserves diversity for future consumer surplus. The optimal allocation changes dynamically as market conditions evolve.

2.3. Policy Recommendations

The model in [2] points to three regulatory levers that can offset the welfare losses from the head effect:

- Algorithmic adjustment. Platforms should be required to spread viewer traffic more evenly, giving small and medium-sized creators a fair shot at exposure [12]
- Commission relief for smaller streamers. Lower take rates would let them keep more of what they earn, which in turn encourages a more varied creator base [13].
- Antitrust enforcement. Stop dominant streamers or their backing platforms from locking in control — keep the market open [14].

These are not just theoretical fixes. Each targets a specific channel through which the head effect concentrates attention and revenue, and each has a clear welfare rationale.

3. Platform-Level Monopolistic Competition and Oligopoly: Case Studies

3.1. Monopolistic Competition: The Case of Douyin versus Kuaishou

Douyin and Kuaishou are not competing on price. Instead, each has built a distinct product identity, targeting different user segments with different content philosophies — a classic pattern of monopolistic competition.

Douyin's core competence lies in algorithmic curation. The platform's recommendation engine learns individual user preferences and delivers a highly personalized feed, which keeps viewers engaged for longer periods [3]. The brand leans toward polished, trend-sensitive content that appeals to younger, urban audiences. During high-profile events like the "Double 11" shopping festival, Douyin mobilizes top influencers and interactive features to amplify viewership. Advertising and sponsored content are its primary revenue streams — a model that leans heavily toward commercialization.

Kuaishou sits on the other side of the spectrum. Its emphasis is on authenticity and community, with a strong foothold in lower-tier cities and rural areas. The "Village Live Streaming" initiative encourages local creators to broadcast everyday life and promote agricultural products, building a more personal connection between streamers and their audiences [3]. Monetization relies more on e-commerce transactions and virtual gifting — viewers support creators by buying products or sending digital gifts during streams. Technologically, Douyin offers a curated spectacle; Kuaishou delivers an interactive community space. Both approaches have carved out sustainable market positions, reducing direct price rivalry and allowing the two platforms to coexist with substantial market power — precisely the outcome predicted by monopolistic competition theory.

3.2. Oligopoly: The Tencent-HUYA-DouYu Merger Case

On July 10, 2021, SAMR blocked the HUYA-DouYu merger — only the third prohibition decision under China's Anti-Monopoly Law since its enactment in 2008, and the first ever in the internet sector [4]. Tencent, which operates online game services, held sole control over HUYA and joint control over DouYu. SAMR delineated three relevant product markets — live game-streaming, short videos, and online game operation services — with China as the relevant geographic market, given that game licensing is jurisdiction-specific.

Horizontally, HUYA and DouYu were the two dominant players in live game-streaming. Their combined market share exceeded 80 percent by active users, 70 percent by turnover, and 60 percent by streamer count. SAMR also found that entry barriers were high, owing to copyright restrictions, licensing requirements, capital needs, and access to streamer resources. The merger would have left consumers and streamers with fewer platform options, giving the combined entity room to degrade service quality, hike prices, or compromise user experience.

Vertically, SAMR examined whether Tencent had both the incentive and the ability to engage in two-way foreclosure. In the upstream market for online game operation services, Tencent held over

40 percent of the market — the largest share. Downstream live game-streaming platforms depend on upstream game content to operate, while upstream providers rely on downstream platforms for user reach and promotion. The merged entity could have leveraged its position in both markets to build a closed ecosystem, locking out existing rivals and blocking new entrants. SAMR concluded that the remedies proposed by the parties were inadequate, and no credible pro-competitive arguments were put forward. The merger was therefore prohibited.

3.3. Policy Recommendations

Regulatory priorities should differ by market structure. Under monopolistic competition, the goal is to preserve product diversity. Regulators should push platforms to expand into niche content and experiment with new formats. Better interactive features — personalized feeds, community tools — help sustain user engagement and keep competition alive [3].

For digital mergers with oligopoly implications, HUYA-DouYu sets a useful precedent. Reviews must go beyond horizontal overlaps to examine vertical foreclosure and ecosystem closure risks. Remedies, whether structural or behavioral, should be tailored precisely — protecting market entry and safeguarding upstream and downstream competitors [4].

4. Conclusion

This report started with a simple observation: China's live streaming market doesn't look anything like perfect competition. What we see instead are the fingerprints of monopolistic competition and oligopoly — concentrated viewership, platform dominance, and a handful of top creators taking most of the attention and money.

We looked inside platforms first. The head effect isn't accidental. It's built into the system — network effects pull viewers toward popular streamers, algorithms amplify that pull, and preferential commission rates lock in the advantage for top creators. The result is a structural tilt: a few winners capture the bulk of traffic and revenue, while smaller creators struggle for visibility and eventually drop out. On welfare, the trade-off is clear. Viewers may enjoy the spectacle of top-tier streaming in the short run, but over time, content variety suffers and overall welfare declines.

Across platforms, the picture is more mixed. Douyin and Kuaishou have chosen different paths — different audiences, different content styles, different revenue logics — which keeps competition alive in a monopolistically competitive space. But the oligopoly threat is real. The blocked HUYA-DouYu merger shows what could have happened: a single entity controlling too much of the upstream and downstream market.

So what should regulators do? Two levels. Inside platforms, tweak the algorithms, cut commission rates, and enforce antitrust rules to spread attention more evenly and keep content diverse. Across platforms, watch mergers closely — not just for horizontal concentration but for vertical foreclosure risks.

The bottom line: China's live streaming industry is a case study in how far real markets can drift from textbook ideals. That gap doesn't just call for regulation — it calls for regulation that's grounded in how these platforms actually work, not how theory says they should.

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