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Platforms, Information Asymmetry and Leakage:

Why disintermediation may not hurt (so much) after all

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Zusammenfassung / Abstract:

Asymmetric information in markets puts economic transactions at risk, but it may also provide the opportunity for value creation through digital platforms. This paper develops a typology of digital platforms based on the specific information asymmetries they address. We distinguish three archetypes (search platforms, enforcement platforms, and full-service matchmakers) each substituting for different missing market functions. This typology reveals that platforms do not uniformly reduce information asymmetries but rather substitute for specific missing market functions, and that these substitutions determine both their value proposition and vulnerability to disintermediation. Using a formal model of expert service markets, we show how diagnostic and enforcement roles interact when users can bypass the platform after matching. The analysis demonstrates that disintermediation can increase platform value by expanding the user base and strengthening network effects. Subscription fees outperform transaction fees when diagnostic uncertainty dominates, as they monetize matching value while tolerating selective leakage. Platforms' strategic responses to disintermediation thus depend not on creating artificial lock-in but on addressing the market failures that justify their existence.

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Klassifikation / Classification: L00, C79, D89, D49 (JEL)

Schlagworte / Keywords: disintermediation, leakage, platforms, credence goods

1 Introduction

Asymmetric information in markets puts economic transactions at risk, but it may also provide the opportunity for value creation through digital platforms. Intermediaries who seek to thrive in such environments must successfully address a variety of information problems of economic agents, such as high information costs and opportunistic behavior. For instance, buyers often lack the knowledge to identify the right product or service, to evaluate provider quality, or to ensure compliance once a transaction is initiated. Sellers, by contrast, may enjoy superior information and some leeway due to unobservable behavior, but are still vulnerable to deferred payments (Akerlof, 1978, Bakos, 1998, Dulleck and Kerschbamer, 2006). Understanding these frictions is crucial to understand why many digital platforms have become so successful: they (i) reduce search costs for users, (ii) resolve uncertainty and facilitate matchmaking, and (iii) provide governance mechanisms that enforce transactions and create trust among participants (Bakos, 1998, Giaglis et al., 2002). In digital markets, these functions become even more critical than in traditional offline markets, as the potential for opportunistic behavior is amplified (Giaglis et al., 2002, Tang et al., 2023).

Disintermediation is widely seen as a major threat to digital platforms that aim to mitigate users' information problems (Ladd, 2022). Users may rely on the platform to identify transaction partners but then bypass it to avoid fees, which is an inherent risk of electronic intermediation. Once trust between parties is established, the intermediary risks being eliminated from the transaction (Giaglis et al., 2002, Novak and Schwabe, 2009). To counter this, platforms adopt measures such as restricting communication, offering guarantees or insurance, and experimenting with alternative revenue models like subscriptions or referral fees (Gu, 2024, Ladd, 2022, Hagiu and Wright, 2023). Yet such responses are often costly, constrained by regulation, as in the European Court of Justice's ruling against Booking.com's best-price clauses (Case C-264/23), and they address symptoms rather than root causes. Since the role and value added of intermediaries depend on the specific nature of information asymmetries, a more nuanced understanding of these conditions is needed. Distinguishing them allows for targeted strategies that not only contain disintermediation but also open up opportunities for platforms to strengthen and expand their role.

This paper aims to study value creation and platform pricing under different degrees of asymmetric information. In some settings, consumers are uncertain about what they need (type uncertainty). In others, they know their needs but cannot ensure provider compliance (enforcement uncertainty). While outside markets may sometimes mitigate

these problems through liability or verifiability mechanisms, such safeguards are often absent or weak in cases of experience or credence goods. Platforms step in to fill these gaps, and their value creation depends on which asymmetry they address.

Value creation in this context can be understood through three distinct roles, building on Bakos (1998) functions of electronic markets: diagnosis and service allocation (*matchmaking*), delivery of information (*facilitation*) and enforcement (*institutional*). We argue that platforms under asymmetric information can be understood through these distinct roles: search platforms, matchmakers, and enforcers. Each role corresponds to a different type of informational friction and implies distinct challenges for disintermediation. To illustrate this logic, we start from the extreme case of credence goods markets, where consumers cannot diagnose their own needs and outside enforcement is absent (Dulleck and Kerschbamer, 2006). Building on this model, we investigate how various pricing strategies and changes in the degree of information asymmetry influence user participation and disintermediation outcomes.

The rest of the paper proceeds as follows. We begin by reviewing prior research on platform disintermediation and information asymmetry. Building on Bakos' (1998) typology, we then argue that digital platforms can be grouped into three types depending on the informational frictions present in the market. After that, we introduce our model of expert-driven service markets and analyze consumer and expert behavior with and without platforms. We then extend the analysis by incorporating heterogeneity in user knowledge. Finally, we discuss the results, outline implications for platform governance, and conclude.

2 Literature review

Our analysis builds on two interconnected research streams: work on asymmetric information in electronic markets and studies of platform disintermediation. While the former examines how platforms create value by addressing information frictions, the latter reveals how this value creation paradoxically generates incentives for users to bypass the platform.

2.1 Information Asymmetry

Research on information asymmetry in digital platforms has primarily focused on specific uncertainty dimensions. Hałaburda and Yehezkel (2013) analyze how platforms strategically control information flows to gain competitive advantages, affecting user selection and market dynamics. Wang et al. (2022) develop a signaling model where

platforms possess private information about market demand, showing how this asymmetry influences contract design choices between fixed-fee and proportional-fee arrangements. Tang et al. (2023) conceptualize platform uncertainty as a distinct dimension of consumer risk perception, demonstrating how platform-related information asymmetry reduces purchase intention.

However, existing work largely treats information problems as uniform across product categories. The distinction between search, experience, and credence goods (Darby and Karni, 1973, Nelson, 1970) has received limited attention in platform research, despite its implications for value creation strategies and disintermediation risk. This gap is particularly notable given that different good types imply fundamentally different roles for platform intermediation.

2.2 Platform Leakage

The transformative potential of digital technologies for intermediation has been a central theme in electronic markets research. Early studies anticipated both the removal of traditional middlemen through lower coordination costs and the emergence of new intermediaries addressing trust and transparency (Giaglis et al., 2002, Novak and Schwabe, 2009). These dynamics manifested in practice as large platform firms redefined intermediation at scale, while incumbents in industries like automotive and banking repositioned themselves as platform providers (Alt and Zimmermann, 2019, Zachariadis and Ozcan, 2017).

The rise of blockchain and fintech revived debates on disintermediation by proposing algorithmic "trustless" governance as a substitute for traditional intermediaries (Chawla, 2020, Klems et al., 2017). However, research revealed a more nuanced picture: while these technologies reshape intermediation structures, they rarely eliminate intermediation entirely. Instead, they redistribute control and embed governance into new organizational forms (Vella and Gastaldi, 2025, Zamani and Giaglis, 2018). In fintech, classic drivers of intermediation such as market fragmentation and settlement mechanisms remain highly relevant despite decentralized infrastructures (Alt et al., 2024). This pattern across technologies suggests that certain intermediation functions persist, raising the question of which specific information problems create sustainable platform value.

For operating digital platforms, disintermediation is not only a technological displacement but a strategic user behavior: participants leverage the platform for matchmaking but transact outside it to avoid fees. participants connect through the platform but transact outside it to avoid fees. Hagiu and Wright (2023) provide a comprehensive theoretical framework analyzing six anti-leakage strategies, including transaction benefits, referral

fees, and price parity clauses. Notably, they identify situations with high information asymmetry, such as car repairs or plumbing, as particularly prone to disintermediation due to necessary seller-buyer communication.

Empirical measurement of disintermediation remains challenging since off-platform transactions are unobservable. Researchers have employed various proxy approaches: Gu and Zhu (2021)analyze buyer-seller communications for disintermediation signals, finding a non-linear trust-disintermediation relationship where excessive trust encourages platform bypass. Gu (2024) leverage China's Skype ban as a natural experiment, showing that restricted communication significantly reduces disintermediation. Geographic proximity studies yield mixed results: Karacaoglu et al. (2022) estimate 24 percent potential sales loss from disintermediation in European cleaning platforms, while Astashkina et al. (2022) and Lin et al. (2022) find lower rates of 5 percent for Russian cleaning services and Airbnb respectively. Lin et al. (2022) demonstrate that Instant Booking reduces disintermediation by limiting host-traveler communication.

2.3 Theoretical Foundation

While existing literature on platform disintermediation acknowledges that information asymmetry influences disintermediation risk (Hagiu and Wright, 2023), it does not systematically examine how different types of information problems shape platform value creation and leakage patterns. To the best of our knowledge, two papers are closely related to our approach.

Sekar and Siddiq (2023) model a two-sided market where sellers face the risk of delayed payments from buyers whose reliability is ex-ante unknown. The intermediating platform generates an informative but noisy signal about buyer type and collects transaction fees. Their analysis reveals that information withholding by the platform can be profit-maximizing, and that subscription fees are less effective than transaction fees. However, their model assumes users know their true needs, does not consider enforcement risks after matchmaking, and does not distinguish between different groups of informed and uninformed users on the platform.

He et al. (2023) examine platforms matching buyers to sellers of unobservable quality types, demonstrating that leakage only occurs when counterparty risks of transacting outside the platform are moderate. Their setup assumes homogeneous users with unambiguous preferences for higher quality. This contrasts with many matchmaking markets where customer needs are heterogeneous or unclear ex-ante to platform users. Moreover, they do not model different groups of uninformed customers, despite the risk of disintermediation potentially being group-dependent.

Our work extends this literature by examining how the degree and type of information asymmetry, following the search-experience-credence goods taxonomy (Darby and Karni, 1973, Nelson, 1970), affects both platform value creation and disintermediation. We build on Dulleck and Kerschbamer's (2006) credence goods framework, where consumers cannot assess quality even after consumption and offline markets fail absent liability or verifiability. By introducing platform intermediation into this framework and then systematically relaxing information asymmetry assumptions, we provide a unified analysis of how platforms create value across different market contexts.

Critically, we model heterogeneous user populations where some consumers possess diagnostic knowledge while others do not. This heterogeneity, largely absent from prior work, is empirically prevalent in many platform markets and fundamentally affects disintermediation dynamics. Unlike Sekar and Siddiq (2023), we explicitly model enforcement uncertainty after matchmaking. Unlike He et al. (2023), we allow for heterogeneous user needs and knowledge, showing how different consumer groups create distinct disintermediation patterns. Our analysis demonstrates that the risk and nature of platform bypass varies systematically with user knowledge composition and the specific informational friction the platform addresses.

3 Platform value creation in imperfect expert markets

What users on both sides of the platform risk by leaving depends on the type of information asymmetry that characterizes the market. In some settings, consumers are uncertain about what they need (diagnostic uncertainty). In others, they know their needs but cannot ensure provider compliance (execution uncertainty). While outside markets may sometimes mitigate these frictions through liability or verifiability, such safeguards are often absent or weak. Platforms step in to fill these gaps, and their value creation depends on which asymmetry they address.

Building on Bakos' (1998) framework of electronic market functions, we distinguish three roles that platforms can play: search platforms, full-service platforms (matchmakers), and enforcers. Each role reflects a different type of informational friction and implies distinct challenges for value creation and disintermediation. Table 1 summarizes this typology, linking outside market conditions, consumer uncertainty, and the platform's governance role.

Consumer Type Uncertainty	Platform Value Creation		Platform Type (Market Function Bakos (1988))	Description	Examples
	Diagnosis	Enforcement			
No	Yes	No	Search engine (facilitation)	Helps find options, outside market handles the rest (search good)	**Tripadvisor, Yelp, Skyscanner**
No	No	Yes	Enforcer (institutional)	Focuses solely on ensuring compliance/delivery (experience goods)	**Upwork, Fiverr, TaskRabbit**
Yes	Yes	Yes/No	Matchmaker (matchmaking)	Handles everything from diagnosis to enforcement (credence goods)	**Zocdoc, Doctolib, Ada Health**

Table 1: ***Typology based on informational frictions***

This taxonomy shows that platform roles emerge directly from the interaction between consumer uncertainty and the functionality of outside markets. When liability or verifiability mechanisms are available, platforms primarily act as search platforms, reducing transaction costs by aggregating options and helping consumers identify suitable matches or helping them to reveal needs that their not able to articulate clearly before (Novak and Schwabe, 2009). Well-known platforms like **Tripadvisor,** a travel review aggregator; **Yelp**, a US-based local business review site; or **Skyscanner**, a global flight comparison tool, illustrate this role: consumers may face uncertainty about which hotel, restaurant, or flight to choose, but outside institutions ensure basic trust and enforceability.

When consumers know what they need but the outside market cannot enforce contracts, platforms act as **enforcers.** Their primary role is to provide trust and compliance mechanisms through escrow, reputational systems, or dispute resolution. Platforms like **Fiverr**, a leading US-based freelance marketplace; **Upwork**, a global freelancing platform for professionals; or **TaskRabbit**, a gig platform for local errands and household tasks, fit this category, as clients usually have a clearly defined task (e.g., graphic design or furniture assembly) but depend on the platform to ensure timely and satisfactory execution.

Finally, when outside markets lack both liability and verifiability, platforms must assume more extensive functions. With consumer uncertainty present, platforms operate as matchmakers (or full-service platforms), combining the diagnosis of consumer needs with the enforcement of provider compliance. For example, **Zocdoc**, a US-based medical appointment booking platform; **Doctolib**, a major European telehealth service; or **Ada Health**,

an AI-based symptom checker, add value by helping patients identify appropriate treatment while simultaneously ensuring that providers deliver the agreed service.

Viewed through Bakos' (1998) functions, search platforms align with matching and searching, full-service platforms (matchmakers) extend matching by also providing institutional infrastructure, and enforcement platform emphasizes the facilitation of transactions through trust mechanisms. This alignment highlights how digital platforms dynamically substitute for missing outside market functions, and how their governance choices shape disintermediation outcomes.

While all three platform types illustrate how value creation depends on different informational frictions, the full-service platform case represents the most critical setting. Here, both consumer diagnostic uncertainty and weak outside enforcement coincide, creating the strongest need for platform intermediation. Starting with this case allows us to formalize the mechanisms through which platforms mitigate misaligned incentives and to analyze how these mechanisms shape resistance to disintermediation.

4 Baseline Model

In the following, we apply the basic DK model (Dulleck and Kerschbamer, 2006) on credence goods to a scenario where a digital platform facilitates beneficial transactions between parties under asymmetric information, and the provision of this platform service is at risk due to disintermediation. Additionally, we introduce the digital platform as a third maximizing economic agent. Consider platform (dis)intermediation as a strategic game with a single platform (P), n consumers (C) and m experts (E), and n and m are large. Consumers require a service from an expert, and they can search for such treatment in the offline market or via the digital platform.

Information asymmetry exists in this interaction in three ways: first, there are additional search costs d in the offline market for each visit of an expert. Second, we specify that outside the platform, neither liability of the expert nor verifiability of the true service applies. This produces the risks of undertreatment and overcharging for off-platform consumers and captures risks associated with experience goods. Third, customers are aware that they require assistance, but they do not know what type of service or treatment is required. In other words, "the customer knows that he has a problem, but does not know how severe it is" (Dulleck and Kerschbamer, 2006, p.11). All three properties then constitute the characteristics of credence goods. In this regard, assume that the correct type of service, however, can be assessed by the experts at no cost. The value creation of the platform then consists of

(1) matching consumers with the truly required service with a higher probability, (2) committing experts to the matched treatment, and (3) reducing search costs for its users.

Consider a single consumer who is unaware of what treatment is needed. Hence, she may receive overtreatment, undertreatment, or adequate treatment, depending on her true type and the provided service. She is also at risk of being overcharged by the expert. Assume that customers are homogenous in the following way: a customer can be one of two types, $\overline{c}$ or $\underline{c}$, and each consumer know that the probability of being type $\overline{c}$ is $h \in (0;1)$. Respectively, the type of service provided by the experts can be one of the two types, which we denote as "*treat* $\overline{c}$" or "*treat* $\underline{c}$*.*". We further specify that a consumer of type $\overline{c}$ ($\underline{c}$) requires the service of type $\overline{c}$ ($\underline{c}$). Let the consumer be unable to detect overtreatment, but undertreatment can be detected by her ex-post. This implies that a consumer of the low type $\underline{c}$ will gain utility v independent of the provided treatment, as the service can either be adequate or excessive in quality. A consumer of the high type $\overline{c}$, however, will gain a utility v if treated adequately with service $\overline{c}$, but receives a utility of zero if undertreated with service $\underline{c}$. Given the price menus for treatments, the consumer can choose between seeking an expert in the offline market ("*offline*"), via platform services ("*platform*",) or doing nothing ("*out*").

Consider the expert. Type-contingent costs of providing the respective service are denoted accordingly as $\overline{c}$ and $\underline{c}$, with $\overline{c} > \underline{c} > 0$. Experts compete for consumers in a Bertrand-fashion and ex-ante announce price menus $(\overline{p}, \underline{p})$ for services of type $\overline{c}$ and $\underline{c}$. As a simplification, we assume that there are always multiple experts active both on the platform and in the offline market. When a consumer meets an expert in the offline market, the expert first provides a diagnosis about the consumer´s type. Having received the diagnosis, one can imagine that some consumers may want to see a different expert but positive search costs exist, $d > 0$. Then, if the condition $d > (\overline{c} - \underline{c})(1 - h)$ is satisfied, economies of scope between joint diagnosis and treatment by a single expert are sufficiently high to prevent the consumer from continuing her search after having visited the first expert. We further assume that $v - \overline{c} - d > 0$ always holds, which implies that treatment by the expert is always efficient.

Consider the digital platform. A major part of its value creation is to match consumers on the platform with the correct treatment of experts. Assume that the platform correctly matches consumers of type $\overline{c}$ with probability $\phi_H > 0.5$ with the required service $\overline{c}$ by an expert. Accordingly, a consumer of type $\underline{c}$ can expect to find a correct match on the platform with probability $\phi_L > 0.5$. Let this matching signal be imperfect, but positively correlated to the true type of the consumer. In other words, platform matching for any consumer type is at least superior to

throwing a dice. Matching also implies that experts no longer decide themselves about what type of service is provided and are committed to the identified service by the matching algorithm of the platform. Moreover, let this matching accuracy be increasing in the number of users on the platform. In other words, the platform successfully generates a positive network effect[1]. The monopolist platform may impose prices t for its service, either upfront (t_1, i. e. a subscription fee) or when the treatment by an expert occurs (t_2, i.e., a transaction fee). Given these specifications, platform matching leads to the following choice of the consumer: either to be treated according to the matching outcome, to disintermediate and execute the transaction outside the platform ("*leave*"), or to do nothing ("*out*"). If a pair of consumers and experts decide to disintermediate, i.e., leave the platform after matching, they evenly split the savings from avoided platform prices. Moreover, we assert that the bargained 'price' upon disintermediation will never make the consumer worse off than exerting search costs d and consulting a different expert.

Furthermore, we assume that all players are risk-neutral, and that all information is common knowledge except for the consumer´s true type. As this paper focuses on platform (dis)intermediation, we assume that a consumer who decides right away to consult an expert only outside the platform is subject to the equilibrium outcome of the DK-model. Figure 1 displays the game tree from the perspective of a single consumer and a single expert.

[1] Belleflamme & Peitz (2021, p.12) define a network effect as the impact that an additional user of a service has on the value that other users attach to this service. We assume that the accuracy of the matching algorithm improves with the number of users (consumers, experts), and this increases the valuation (and willingness-to-pay) of users for platform services. The platform then manages such network effects by pricing access to its services and the intensity of usage.

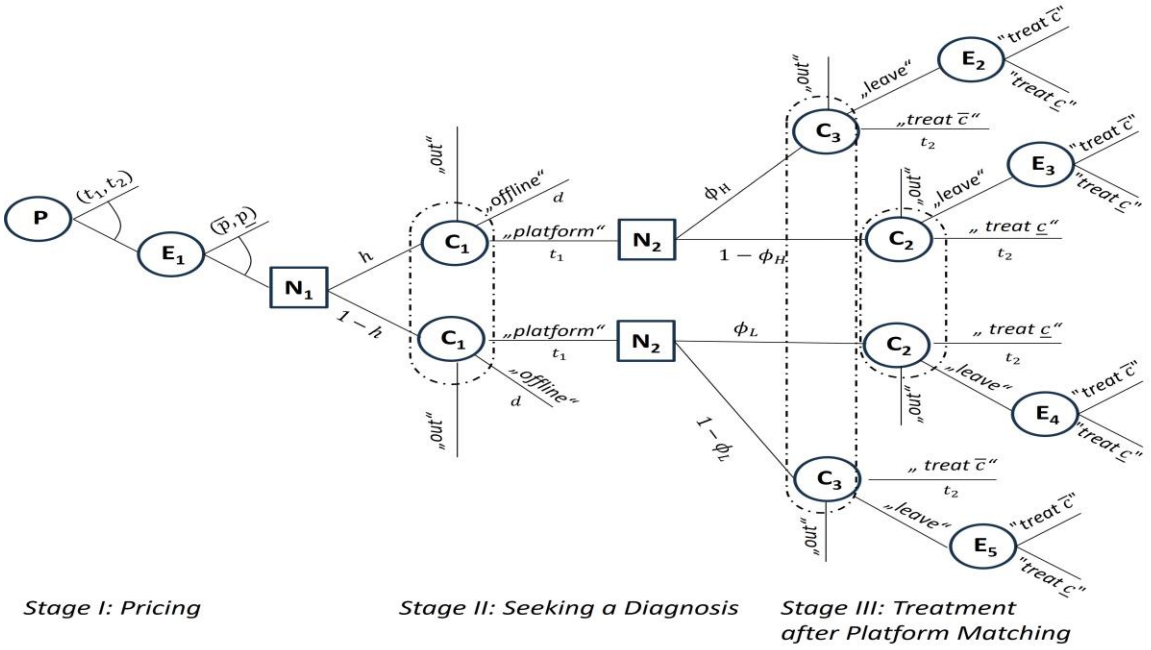

Figure 2: ***Game Tree for Disintermediation Game***

The game starts with the platform to define its fees, and afterwards experts propose their price menus. Nature then determines the consumer´s type, either $\overline{c}$ or $\underline{c}$. The consumer, in need for treatment, then has three options: consulting an expert offline directly leads to the DK-model outcome, doing nothing ends the game as well, or seeking platform services (subject to a subscription fee t_1). On the platform, nature determines the signal about the consumer´s true type. The consumer then may either be treated according to the signal (subject to transaction fee t_2), leave the platform and be treated by the expert outside the platform (but prone to the risks of overcharging or undertreatment), or do nothing.

5 Platform disintermediation: Equilibria of the game

5.1 Methodology

To derive the outcomes of the specified dynamic game, we will apply the concept of perfect Bayesian equilibrium (PBE). Any PBE is fully defined by the strategy profile s^* with beliefs μ_H and μ_L. In other words, the strategies of the players are mutually best responses and players form rational beliefs consistent with their strategies "such that, at any stage of the game, strategies are optimal given the beliefs, and the beliefs are obtained from the equilibrium strategies and observed action using Bayes´ rule" (Fudenberg and Tirole, 1991). In this regard, the equilibrium strategy profile $s^* = \{s_P^*, s_E^*, s_C^*\}$ consists of the chosen fee scheme by the platform $s_P = (t_1, t_2)$,

expert behavior $s_E = \left(\left(\overline{p}, \underline{p}\right), e_1, e_2, e_3, e_4\right)$ with pricing p and treatment decisions $e_i \in \{$"treat $\overline{c}$"; "$treat\ \underline{c}$"$\}$ for $i = 1, 2, 3, 4$, and consumer choice $s_C = (c_1, c_2, c_3)$ with $c_1 \in$ {"out"; "offline"; "platform"}, $c_2 \in \{$"out"; "leave"; "treat $\underline{c}$"$\}$ and $c_3 \in$ {"out"; "leave"; "treat $\overline{c}$"}. Moreover, consumers form rational beliefs μ_H (μ_L) about the probability of truly being a high-type (low-type) consumer when observing the signal $\overline{c}$ (signal $\underline{c}$) by the platform.

Let us begin by establishing some general characteristics of the game. Basically, the platform as intermediator is only relevant if consumers at decision node C_1 prefer its services to the outside options, i.e., either go for the offline market where high-type treatment is not to be expected or do nothing. Thus, the expected net utility of finding experts outside the platform for the consumer is given as

$$u_0 = max\left((1-h)v - \underline{c} - d, 0\right) \tag{1}$$

This leads us to *Corollary 1.*

Corollary 1. *(i) Given the absence of liability and verifiability, the experts will never apply the higher treatment $\overline{c}$ outside the platform. (ii) Experts will always choose the efficient price menu ($\overline{p} = \overline{c}; \underline{p} = \underline{c}$).*

Proof: obvious from the text and therefore omitted.

The first statement captures the classic expert market outcome. Without verifiability, payments cannot be made contingent on treatment. Furthermore, potential undertreatment has no negative consequences for the expert under nonliability. Given that the high-type treatment is costlier, the expert can never be better off by choosing the $\overline{c}$-treatment at the last stage of the game. The second statement directly follows from the standard Bertrand price-cutting argument. Experts must anticipate that their price menu will apply to both the platform and the offline market. On the platform, performance is verified by the intermediator, and any overcharging expert will be undercut by competitors[2]. Outside the platform and given the first statement, experts will effectively compete for the provision of low-type treatments only, and this again ensures marginal cost pricing. It follows from the corollary that the equilibrium strategy of the experts has to be $s_E^* = \left(\left(\overline{c}, \underline{c}\right), "treat\ \underline{c}", "treat\ \underline{c}", "treat\ \underline{c}", "treat\ \underline{c}"\right)$.

[2] This situation falls under Lemma 1 by Dulleck & Kerschbamer (2006, p. 15).

We will now analyze two distinct scenarios: the consumer expects (4.2) disintermediation to be feasible after platform matching, or (4.3) she expects to be committed to the platform.

5.2 Scenario 1: Disintermediation is feasible

In many digital business models, disintermediation cannot be prevented after platform matching. This brings some additional properties to the game.

First, the option to disintermediate allows consumers to make use of decision nodes C_2 and C_3, i.e. they can react to the proposed treatment by the platform based on their beliefs and potentially seek the services of the expert off the platform. Disintermediation saves some transaction costs as consumers and experts split savings among them when they bargain off the platform. However, it also implies a low-type treatment due to a lack of verifiability and liability in the offline market, which is of zero value to the high-type consumer. The third alternative, as before, is to do nothing with a value of zero. Thus, a consumer who receives the $\overline{c}$-signal at decision node C_3 will form rational beliefs μ_H about truly being the high-type and stay on the platform if the following condition is met

$$v - \overline{c} - t_2 \geq max\left[(1-\mu_H)v - \underline{c} - \min\left(\frac{t_2}{2}, \mathrm{d}\right), 0\right]. \quad (2)$$

Similarly, a consumer who receives the $\underline{c}$-signal at decision node C_2 will form rational beliefs μ_L about truly being the low-type and stay on the platform if only

$$\mu_L(v - \underline{c} - t_2) - (1-\mu_L)(\underline{c} + t_2) \geq max\left[(\mu_L v - \underline{c} - \min\left(\frac{t_2}{2}, \mathrm{d}\right), 0\right] \quad (3)$$

Evidently, condition (2) tells us that a consumer will stay on the platform on observing signal $\overline{c}$ if she sufficiently believes she is the high-type consumer. Moreover, condition (3) reveals that a consumer has nothing to gain on the platform when transaction fees $t_2 > 0$ are in place and signal $\underline{c}$ is observed. Following conditions (2) and (3), the consumer will reject the offered treatment by the platform if she sufficiently believes to require a different treatment. Note that a potentially high-type consumer who is offered low-type treatment will prefer to terminate the transaction while a potentially low-type consumer who is offered the high-type treatment can safely disintermediate to get the preferred treatment.

Corollary 2. *(i) The consumer will use platform services on observing the signal* $\overline{c}$ *if only* $t_2 < v - \overline{c}$ *and her belief adheres to* $\mu_H \geq \frac{\overline{c} - \underline{c} + \frac{t_2}{2}}{v} = \overline{\mu_H}$. *Otherwise, she chooses "leave". (ii) The consumer will always leave the*

platform on the signal $\underline{c}$ when transaction fees exist, i.e. $t_2 > 0$. For this case ($t_2 = 0$), the option "out" is favorable to "treat $\underline{c}$" for a belief $\mu_L < \frac{c}{v} = \overline{\mu_L}$.

Proof: See Annex.

Second, we can derive relevant insights for platform pricing. *Corollary 2* tells us that platform services are only value-enhancing for a consumer if the posterior belief of receiving the correct treatment is sufficiently high. This implies that matching accuracy must exceed a certain minimum level, which is dependent on the valuation v, respective treatment costs and the ex-ante probability h. Clearly, the economically relevant case is that platform services are potentially value-enhancing to customers in the credence goods market.

Definition. *Platform accuracy (ϕ_H, ϕ_L) is sufficient to make the allocated treatment desirable, which means the inequalities $\mu_H \geq \overline{\mu_H}$ and $\mu_L \geq \overline{\mu_L}$ hold (minimum accuracy assumption).*

Under this minimum accuracy assumption, we specify expected utility of platform services for the consumer u_{nc}^* at C_1 for the scenario of no commitment (nc) as

$$u_{nc}^* = h\left[\phi_H \cdot (v - \overline{c} - t_2) - (1 - \phi_H) \cdot \left(\underline{c} + \frac{t_2}{2}\right)\right]$$

$$+(1-h)\left[\phi_L \cdot \left(v - \underline{c} - \tfrac{t_2}{2}\right) + (1 - \phi_L)(v - \overline{c} - t_2)\right] \quad (4)^3$$

For the monopoly platform, the pricing options are as follows: (i) apply a subscription fee on all users or (ii) apply a transaction fee (which effectively applies only for the $\overline{c}$-signal consumers).

(1) Subscription fee: Such a fee applies to all users and thus avoids revenue losses due to potential disintermediation. The profit-maximizing platform will charge the subscription fee to fulfill $t_1^* = u_{nc}^* - u_0$ and zero transaction fees. Total profit of the platform for consumers of mass one then is $\pi_1 = t_1^*$. Using expressions (1) and (4), we derive profits π_{SF} as

$$\pi_{SF}(t_1^*, t_2^* = 0) = h\left[\phi_H \cdot (v - \overline{c}) - (1 - \phi_H) \cdot (\underline{c})\right]$$

$$+(1-h)\left[\phi_L \cdot (v - \underline{c}) + (1 - \phi_L)(v - \overline{c})\right] - (1-h)v + \underline{c} + d \quad (5)$$

(2)Transaction fee: This fee applies to consumers with signal $\overline{c}$ directly, but disintermediation allows consumers who receive signal $\underline{c}$ to avoid the fee to some extent (although its impact on bargaining remains). This implies that

[3] If this requirement for the beliefs do not hold, the consumer would also disintermediate at C_3. This would imply that no transaction occurs on the platform. We leave this scenario aside.

the profit-maximizing transaction fee will be higher than the subscription fee, but the number of paying users is lower. For the optimal transaction fee, a maximizing platform will set t_2 to fulfill $u^*_{nc}(t^*_2) - u_0 = 0$. Again, using expressions (1) and (4), we can then calculate t_2 as

$$t_2 = \frac{h[\phi_H \cdot (v-\overline{c}) - (1-\phi_H)\cdot \underline{c}] + (1-h)[\phi_L \cdot (v-\underline{c}) + (1-\phi_L)(v-\overline{c})] - (1-h)v + \underline{c} + d}{0.5h(1+\phi_H) + (1-h)(1-0.5\phi_L)} \quad (6)^4$$

Total profit of the platform then is $\pi = t_2^*(h\phi_H + (1-h)(1-\phi_L)$, as only consumers who receive signal $\overline{c}$ will pay the transaction fee. Inserting (6) into this consideration, we can calculate total profits π_{TF} for the case of transaction fees. Interestingly, this can be rewritten as

$$\pi_{TF}(t_1^* = 0, t_2^*) = \pi_{SF} \cdot \frac{(h\phi_H + (1-h)(1-\phi_L)}{0.5h(1+\phi_H) + (1-h)(1-0.5\phi_L)} \quad (7)$$

Thus, equation (7) tells us whether platform profits are higher when implementing a transaction fee. For this to be true, π_{SF} must be multiplied with a factor larger than one. However, this would require $h > \frac{\phi_L}{\phi_H + \phi_L - 1}$, and this cannot reasonably be fulfilled.[5] We summarize in *Corollary 3*.

Corollary 3. *The profit-maximizing platform mandates a subscription fee and zero transaction fees.*

Proof: Obvious from the text and therefore omitted.

Having established these characteristics of the disintermediation game, we turn to the analysis of equilibria. We begin with *Proposition 1*.

Proposition 1. *An equilibrium where the consumer does not seek platform services cannot exist*.

Proof: See annex.

Proposition 1 appears surprising, but it follows from the price-setting power of the intermediator and the assumption that treatment by the expert is socially desirable. In other words, an eventually disintermediating consumer cannot be worse off (but likely better off) than seeking treatment in the offline market, and fees can be lowered below the level of offline search costs. It must be emphasized that this finding is not a consequence of the restrictive minimum accuracy assumption for platform matching: if matching is superior to throwing a dice, some

[4] The numerator of this expression is positive as long as at least free platform services are preferable to the outside option (i.e., "leave" or "offline"). The nominator cannot be negative and is always smaller than one. Thus, the optimal transaction fee is always higher than the subscription fee.

[5] A transaction fee yields at the most identical profits, and this only if all high-type consumers are correctly identified with certainty and no low-type consumers exist.

consumers do always benefit, and others are still free to quit the transaction. This leads us to *Proposition 2* which summarizes the equilibria of the game.

Proposition 2.1 *The strategies* $s^* = \{s_P^* = (t_1^* = \mathrm{u}_{nc}^* - u_0, t_2 = 0), s_E^*, s_C^* = (\text{"platform","treat } \underline{c}\text{", "treat } \overline{c}\text{"})\}$ *with beliefs* $\mu_H = \frac{h\phi_H}{h\phi_H + (1-h)(1-\phi_L)}$ *and* $\mu_L = \frac{(1-h)\phi_L}{(1-h)\phi_L + h(1-\phi_H)}$ *constitute a PBE if* $\frac{h\phi_H}{h\phi_H + (1-h)(1-\phi_L)} \geq \frac{\overline{c}-\underline{c}}{v}$ *and* $\frac{(1-h)\phi_L}{(1-h)\phi_L + h(1-\phi_H)} \geq \frac{\underline{c}}{v}$.

Proposition 2.2 *The strategies* $s^* = \{s_P^* = (t_1^* = u_{nc} - u_0, t_2 = 0), s_E^*, s_C^* = (\text{"platform","out", "treat } \overline{c}\text{"})\}$ *with beliefs* $\mu_H = \frac{h\phi_H}{h\phi_H + (1-h)(1-\phi_L)}$ *and* $\mu_L = \frac{(1-h)\phi_L}{(1-h)\phi_L + h(1-\phi_H)}$ *constitute a PBE if* $\frac{h\phi_H}{h\phi_H + (1-h)(1-\phi_L)} \geq \frac{\overline{c}-\underline{c}}{v}$ *and* $\frac{(1-h)\phi_L}{(1-h)\phi_L + h(1-\phi_H)} < \frac{\underline{c}}{v}$.

Proposition 2.3 *The strategies* $s^* = \{s_P^* = (t_1^* = u_{nc} - u_0, t_2 = 0), s_E^*, s_C^* = (\text{"platform","treat } \underline{c}\text{", "offline"})\}$ *with beliefs* $\mu_H = \frac{h\phi_H}{h\phi_H + (1-h)(1-\phi_L)}$ *and* $\mu_L = \frac{(1-h)\phi_L}{(1-h)\phi_L + h(1-\phi_H)}$ *constitute a PBE if* $\frac{h\phi_H}{h\phi_H + (1-h)(1-\phi_L)} < \frac{\overline{c}-\underline{c}}{v}$ *and* $\frac{(1-h)\phi_L}{(1-h)\phi_L + h(1-\phi_H)} \geq \frac{\underline{c}}{v}$.

Proof: Obvious from corollaries and therefore omitted.

This proposition describes an equilibrium in which experts apply marginal cost pricing (*Corollary 1*) and the platform implements a subscription fee scheme (*Corollary 3*). Zero transaction fees, however, impact consumer choice at C_2 and C_3. Under the minimum accuracy assumption, only equilibrium 2.1 will exist and all consumers seek platform services. In this outcome, consumers are sufficiently confident to receive the correct treatment and platform profits are highest. For equilibrium 2.2, the probability of being a low-type consumer is so small that an allocated low-type treatment is rejected, and clearly the outside market is no option for this consumer. Apparently, the enforcement capability of the platform then proves crucial for customers. Under equilibrium 2.3, the probability of being a high-type consumer is so low that the consumer rejects an allocated high-type treatment and turns to the offline market. For low-type consumers, the platform is still attractive due to lower search costs. Note that an equilibrium where consumers always leave the platform cannot occur: matching cannot simultaneously be insufficient for both types of consumers.[6] Moreover, outcome 2.2 and outcome 2.3 yield lower expected utility for consumers, $u_{nc} < \mathrm{u}_{nc}^*$, and thus less revenue potential for the platform.

[6] In other words, $\mu_H < \frac{\overline{c}-\underline{c}}{v}$ and $\mu_L < \frac{\underline{c}}{v}$ cannot hold at the same time if platform accuracy is not worse than throwing a dice.

Scenario 1 illustrates that under strong information asymmetry (i.e., the credence good setup), leakage will never occur if the matching accuracy is sufficiently high and a subscription fee is implemented. If information asymmetry is less severe (i.e., type uncertainty is lower), however, the platform serves rather as an enforcement or a search device depending on the prevalence of consumer types.

5.3 Scenario 2: Disintermediation is impossible

We now turn to the scenario where disintermediation is impossible and treatment is allocated, executed and paid via the platform once consumers decide to seek its services. For example, the platform could use technical devices to prevent leakage such as limiting the communication between experts and consumers. In this scenario, the game effectively ends after decision node C_1, as "*treat* $\overline{c}$" and "*treat* $\underline{c}$" are then assigned by exogenous probabilities.[7] This implies that the inability to disintermediate also precludes the option to terminate the transaction after matching has occurred. We believe this to be a realistic assumption, as the discretion to abort the transaction on the platform is a prerequisite for disintermediation.

Let us consider how platform pricing is different in a scenario without the risk of potential leakage. The expected utility of platform services for the consumer at C_1 is described by

$$u_c = h\left[\phi_H \cdot (v - \overline{c}) - (1 - \phi_H)\underline{c}\right] + (1 - h)\left[\phi_L \cdot \left(v - \underline{c}\right) + (1 - \phi_L)(v - \overline{c})\right] - t_2 \qquad (8)$$

When comparing conditions (4) and (8), it is obvious that the only difference is the partly avoided transaction fee in the scenario of potential disintermediation (section 4.2). In other words, expected utility for the consumer prior to entering the platform is always higher in the "no commitment"-case, when disintermediation is possible, except for zero transaction costs. This reasoning also applies for attainable profits. Furthermore, the distinction between transaction and subscription fees becomes irrelevant as all consumers are committed to the platform.[8]

Considering the expected utility of platform services to consumers, (8), it becomes obvious that *Proposition 1* does no longer hold. Distinct from a scenario where consumers can disintermediate, the special case of $u_c < u_0$ may now apply. This is possible as the first summand of (8) may even turn negative if the matching algorithm is only poorly identifying high-type consumers, i.e. the probability ϕ_H is fairly low. In such a situation, the platform is unable to keep consumers attracted to its services, as lowering fees towards zero no longer helps. Consequently,

[7] In this section, we thus only speak of equilibria instead of PBEs.

[8] Using (8), it becomes evident that the optimal subscription fee $t_1^* = u_c - u_0$ for $t_2 = 0$ is identical to $u_c(t_2^*) - u_0 = 0$ for $t_1 = 0$.

consumers prefer the outside option (1) to choosing "*platform*" whenever $u_c < u_0$. For $u_c \geq u_0$, the platform will impose positive fees, and all consumers are served on the platform. This leads to *Proposition 3*.

Proposition 3.1 The strategies $s^* = \{s_P^* = (t_1^* \geq 0, t_2 \geq 0), s_E^*, s_C^* = (\neg\text{"platform"})\}$ constitute an equilibrium if $u_c < u_0$ applies.

Proposition 3.2 The strategies $s^* = \{s_P^* = (t_1^* = u_c \vee t_2 = u_n), s_E^*, s_C^* = (\text{"platform"})\}$ constitute an equilibrium if $u_c > u_0$ applies.

Proof: Obvious from the text and therefore omitted.

Scenario 2 complements the finding that disintermediation may not be so troublesome in markets with strong information asymmetries. The revenue potential is never higher when disintermediation is ruled out, and usually measures to prevent leakage generate additional costs. Our analysis also shows that ruling out disintermediation may create a strong disutility for consumers when this involves taking away the option to end the transaction after obtaining the matching information, and thus expected negative matches cannot be avoided.

5.4 Beyond the credence good problem

To see when the two different pricing schemes can have an impact on the network effect (and the platform's profits), consider the following modification to our game: assume that consumers know their true type, i.e., what treatment they really need. How does this affect the outcome of the game?

At first glance, matching services by the platform are no longer relevant for consumers. However, the problem of non-verifiability and non-liability outside the platform remains. Even though consumers know their type, $\overline{c}$-type consumers have to expect undertreatment by the expert: consumers are unable to make payments contingent on the (unobservable) treatment, experts who behave dishonestly make higher profits, and Bertrand competition again leads to the standard lemon market outcome. Evidently, only $\underline{c}$-type consumers are treated efficiently.

The added value of the platform in this modified game is now type-dependent: for the $\overline{c}$-type consumers, it guarantees the type of treatment after matching. For $\underline{c}$-type consumers, platform services may save them search costs d. What is different to the basic game, however, is that the $\underline{c}$-type consumers will never accept a (uniform) subscription fee that applies to $t_1 > d$, as she bears no performance or payment risk in the outside market. This constraint does not apply to transaction fees, as the consumer can always decide to disintermediate and bargain with the expert outside the platform or safely leave the platform and exert search costs in the lemon market. In

other words, the number of users on the platform is now sensitive to the price scheme, with potentially many more users under transaction fees.

Let's consider the basic game and this modification as two extreme cases: either complete uncertainty about the required treatment or perfect knowledge of it. We can envision a real-world scenario for a matching platform that lies in between. Assume that a share $g \in [0; 1]$ in the population of consumers know their true type, while share $(1 - g)$ is prone to information asymmetry as specified in the basic model. As before, let the prevalence of high-type consumers in the population be described by h. Under the assumption of feasible disintermediation, the participation constraint for the informed $\overline{c}$-type consumer then is given as

$$u_H = \phi_H \cdot (v - \overline{c} - t_2) > 0 \qquad (9)^9$$

The informed $\overline{c}$-type consumer will only accept treatment if allocated the high treatment by the platform. Otherwise, she will choose "*out*" to avoid undertreatment. For the informed $\underline{c}$-type consumer, the platform is basically a potential shortcut in the search for experts. However, she will always disintermediate in the end, either to avoid transaction fees for a correctly allocated treatment or to receive the low-type treatment off the platform. It is notable that as long as the platform imposes a transaction fee alone, all users will be active on the platform.

Facing this two-dimensional consumer heterogeneity (informed vs. uninformed, high-type vs. low-type), the platform has to choose its pricing strategy. *Table 2* summarizes the different consumer groups and their basic needs. The informed $\underline{c}$-type consumers use the platform as a search device and bears no risk in the offline market. Thus, she enjoys the facilitation function of the market and shows the lowest willingness-to-pay (*wtp*). At the same time, her participation would strongly restrict the ability of the platform to extract rents via a (uniform) subscription fee. On the contrary, informed $\overline{c}$-type consumers know their needs, have the highest willingness to pay and face considerable performance risks in the offline market. Such consumers enjoy the institutional function of the market, i.e. enforcement of contracted treatments. The third group, the uninformed customers, are primarily dependent on matchmaking as described in the basic scenario.

Share	Type	remark
gh	Informed $\bar{c}$-type	Highest willingness-to-pay; expects undertreatment offline
g(1-h)	Informed $\underline{c}$-type	Lowest willingness-to-pay; expects search costs offline
(1-g)	uninformed	Intermediate willingness-to-pay

[9] Note that it is not a priori clear whether (9) will exceed net benefit u_{nc}. Pricing will be constrained by the lower of the two net benefits.

Table 3: ***Consumer types and needs.***

Whether it is profit-maximizing for the platform to target a specific user group with a subscription fee model or use transaction fees will depend, among other factors, on the relative size of each group. However, a higher number of users under the transaction fee scheme may improve the matching algorithm. When matching accuracy (ϕ_H, ϕ_L) is indeed increased through more users on the platform, this clearly provides a higher net benefit (u_{nc}) for its users (network effect). A profit-maximizing platform can then influence the user share on the platform and, consequently, the network effect through its pricing strategy: an appropriate transaction fee will induce all user groups to be active on the platform (for different reasons), even though only the share $gh + (1 - g)$ will execute the transaction on the platform and pay the transaction fee. Due to the improved matching accuracy, this transaction fee is higher than without the network effect. Transaction fees are optimal if revenue gains through increased matching accuracy more than offset revenue losses through potential disintermediation by uninformed customers. Leakage severely restricts the platform´s revenue potential if the informed low-type consumer group prevails in the market, i.e. information asymmetry is rather low.

5.5 The case of imperfect verifiability on the platform

In our setup, the platform creates added value for consumers by correctly matching consumer types to corresponding treatments with a positive probability and committing experts to the assigned service. But what happens if experts are still inclined to behave dishonestly to increase profits, i.e., they remain a genuine player in the game and platform control is not perfect?

Overtreatment will not occur, as it cannot increase the payment arranged by the platform. Similarly, overcharging is ruled out as treatment and prices are specified only by the platform. Undertreatment, however, may occur when the platform is unable to perfectly verify whether the expert has truly applied a 'diagnosed' high-type treatment. The platform will thus expect that self-interested experts will still comply with low-type 'diagnoses' but may underperform in cases of assigned high-type consumers due to limited verifiability. When evaluating the applied treatment by the expert, let the platform err with positive probability as follows: with probability e_I, the platform will rule 'undertreatment' even though the expert applied the high-type treatment (type I error), and with probability e_{II}, the platform will rule 'adequate treatment' even though the expert undertreated the consumer (type II error). Furthermore, assume that the price for the low-type treatment still equals treatment costs, i.e. $\underline{p} = \underline{c}$, as in the basic model.

A platform payment mechanism that incentivizes experts to apply high-quality treatment following the corresponding diagnosis honestly requires the incentive compatibility constraint (10) and the participation constraint (11) to hold.

$$(1 - e_I)\overline{p} + e_I\underline{c} - \overline{c} \geq (1 - e_{II})\underline{c} + e_{II}\overline{p} - \underline{c} \tag{10}$$

$$(1 - e_I)\overline{p} + e_I\underline{c} - \overline{c} \geq 0 \tag{11}$$

It is easy to see that only condition (11) is binding with the price $\overline{p}_{lv}$ under limited verifiability as

$$\overline{p}_{lv} = \frac{\overline{c} - e_I\underline{c}}{1 - e_I} \geq \overline{c} \tag{12}$$

It follows that limited verifiability leads to a higher and above costs price for the high-type treatment on the platform. Furthermore, this price increase is only responsive to type I verification errors and becomes larger if such errors become more probable ($\frac{\partial \overline{p}_{lv}}{\partial e_I} > 0$).

For consumers, limited verifiability induces higher expected costs for platform matching. In other words, value creation by the platform and thus expected utility for consumers diminishes under limited verifiability when type I errors increase. We can interpret this error probability as the risk of unjustified punishments that the platform, as regulator, imposes on experts. Compensating experts for this risk leads to higher prices, and the platform can eventually extract lower profits via platform fees. Interestingly, it is not the risk of undetected underperformance (type II errors) from the offline 'lemon market' that drives inefficiency and revenue loss on the platform under limited verifiability.

6 Discussion

Our analysis demonstrates how the type of information asymmetry fundamentally shapes both platform value creation and disintermediation dynamics. Building on Bakos' (1998) framework of electronic market functions, we distinguished three platform roles that emerge from different configurations of consumer uncertainty and outside market conditions: search platforms that primarily reduce transaction costs when liability and verifiability mechanisms exist; enforcement platforms that ensure compliance when consumers know their needs but outside markets cannot guarantee service delivery; and full-service platforms (matchmakers) that must address both diagnostic uncertainty and weak enforcement simultaneously. This typology reveals that platforms do not simply reduce information asymmetries in a uniform way, rather, they substitute for specific missing market functions,

and the nature of these substitutions determines both their value proposition and their vulnerability to disintermediation.

The credence goods setting analyzed in our formal model represents the most demanding case within this typology, where full-service platforms must combine matching, diagnosis, and enforcement in the absence of both consumer knowledge and outside market safeguards. By starting with this extreme case, our analysis identifies the fundamental mechanisms through which platforms create value under severe information asymmetry. Importantly, the insights extend beyond pure credence goods markets: as we relax assumptions about consumer knowledge and outside market functionality, our model traces a path from full-service platforms toward enforcement-only platforms (when consumers gain diagnostic capability) or search platforms (when outside enforcement improves). This gradual transition across platform types, and not a pure binary distinction, better reflects the empirical reality where many platforms operate in intermediate settings with partial information asymmetries and imperfect outside market conditions.

A critical methodological contribution of our approach lies in explicitly modeling outside market conditions rather than treating them as exogenously given switching costs. While much of the existing literature, including Hagiu and Wright (2023), emphasizes platform-created switching costs or lock-in mechanisms as barriers to disintermediation, we demonstrate that the characteristics of the outside market, in our case, the presence or absence of liability and verifiability, fundamentally determine platform value creation. In credence goods markets, the outside option is inherently limited: absent platform intermediation, consumers can only expect low-quality treatment due to expert opportunism under non-liability and non-verifiability. This creates a natural differentiation where the platform's value stems not from artificially imposed barriers but from genuinely superior market outcomes. The distinction matters both theoretically and practically: platforms cannot simply rely on increasing switching costs to retain users, but must understand which specific market failures they address and how outside market conditions shape the sustainability of their value proposition.

This perspective reveals why disintermediation patterns are fundamentally type-dependent in our model. Consumers who require high-quality treatment remain on the platform because the outside market cannot credibly deliver such services, not because they face prohibitive switching costs or contractual obligations. In contrast, consumers identified as needing only low-quality treatment may bypass the platform, as they can obtain equivalent services outside at lower cost. Crucially, this selective disintermediation does not erode platform value; rather, it can enhance it by attracting a broader user base who value the flexibility of informed exit decisions. Users benefit

from the platform's diagnostic capability and retain the option to pursue simpler transactions elsewhere once their actual needs are clarified. This mechanism, which has received limited attention in prior research, suggests that platforms in high-asymmetry markets may optimally tolerate, or even facilitate, certain forms of leakage rather than investing in costly prevention measures.

A key insight emerging from this analysis is that disintermediation can actively increase platform value under certain conditions. Conventional wisdom in platform strategy treats leakage as purely value-destroying, leading to investments in prevention mechanisms such as communication restrictions, transaction guarantees, or contractual lock-ins. Our model challenges this view by demonstrating that allowing selective disintermediation may harm the platform in two distinct ways when prevented: first, enforcement mechanisms themselves are costly to implement and maintain; second, and more fundamentally, restricting users' ability to exit after receiving diagnostic information may reduce the perceived value of platform participation ex ante. Users who anticipate being "locked in" regardless of the matching outcome may be deterred from joining the platform initially. By contrast, preserving exit flexibility attracts a broader user base, including those who value the diagnostic function but wish to retain autonomy over transaction execution. The net effect can be positive for platform profits, as increased user participation strengthens network effects and matching quality, even if some transactions subsequently leak off-platform.

Consider the case of expert service platforms such as Fiverr, where users frequently seek professional assistance but struggle to assess task complexity or determine appropriate service levels. A client may approach the platform uncertain whether they need basic logo design or comprehensive brand identity development; routine website maintenance or full-scale technical migration; simple copyediting or substantive content restructuring. The platform's primary value lies in helping users articulate their actual needs and identifying suitable service providers. Searching for freelancers outside the platform entails significant costs: time invested in communicating requirements across multiple providers, limited access to diverse expertise, uncertainty about provider quality and reliability, and friction in payment and dispute resolution. Critically, the platform's value extends beyond simple matching—it ensures appropriate service specification and creates commitment mechanisms that align expert behavior with diagnosed needs. Users who discover through platform interaction that they require only basic services may choose to transact off-platform for subsequent similar tasks, but this leakage occurs precisely because the platform successfully fulfilled its diagnostic function. Meanwhile, users requiring complex, high-stakes services remain on-platform where quality assurance and enforcement mechanisms justify the fees charged.

6.1 Platform strategies and the limits of anti-leakage measures

The existing literature on platform disintermediation proposes various countermeasures to mitigate leakage risks (Hagiu and Wright, 2023, Ladd, 2022). Our analysis reveals that in credence goods markets, and more broadly, in settings with severe information asymmetry, many conventional anti-leakage strategies may be ineffective or even counterproductive. This divergence stems from the fundamental difference between platforms that create artificial switching costs and those that address genuine market failures.

Consider three common strategies. First, investing in additional transaction benefits such as insurance, secure payments, or buyer protection programs aims to increase the value of on-platform transactions (Hagiu and Wright, 2023). In credence goods markets, however, such benefits primarily matter for high-quality services where enforcement is critical. Low-type consumers, who can obtain adequate services outside the platform at lower cost and risk, remain largely unaffected by these enhancements. High-type consumers, by contrast, already face strong incentives to remain on-platform because the outside market cannot credibly deliver high-quality treatments, additional benefits may reinforce but do not fundamentally alter this calculus. Second, price-parity clauses that prevent providers from offering lower off-platform prices assume that price competition drives disintermediation (Hagiu and Wright, 2023). In our setting, experts lack price-setting power due to Bertrand competition, and more importantly, service quality rather than price differentiates platform from outside options. High-type consumers avoid disintermediation not because of price parity but because high-quality service is unavailable elsewhere. Third, communication restrictions between buyers and sellers, while potentially effective in preventing coordination for off-platform transactions, may increase information asymmetry and reduce platform value (Gu, 2024). Users who cannot adequately communicate their needs or assess provider suitability may be deterred from platform participation entirely.

Two strategies from the literature, however, align closely with our findings. Ladd (2022) notes that platforms may rationally ignore certain degrees of disintermediation when prevention costs exceed the value of retained transactions. Our model formalizes this intuition: allowing selective disintermediation by informed low-type consumers can enhance overall platform value by attracting a broader initial user base. Similarly, the strategy of unbundling platform functions, this is, charging only for services that are difficult to disintermediate, corresponds to our result that subscription-based matching fees may dominate transaction fees (Ladd, 2022). In our framework, the platform can provide diagnostic services to all users while monetizing primarily those transactions where

enforcement and quality assurance justify the fees, namely high-type treatments that cannot be reliably obtained outside the platform.

Additionally, platforms operating in credence goods markets may benefit from complementary revenue streams such as advertising or data monetization (Ladd, 2022). By granting broad access to matching services while charging selectively for high-value transactions, platforms accumulate rich data on user needs and expert performance. This information can improve matching algorithms over time and generate revenue through targeted advertising, particularly relevant for platforms embedded in larger digital ecosystems (Dewenter and Rösch, 2024). The key insight is that platform value in high-asymmetry markets derives primarily from diagnostic accuracy and enforcement capability, not from maximizing transaction volume or preventing all forms of leakage.

6.2 The role of subscription fees

Our analysis demonstrates that subscription fees generally outperform transaction fees in credence goods markets, a finding that contrasts with prevailing practices in many platform categories but aligns with emerging patterns in expert service platforms. Hagiu and Wright (2023) explicitly exclude subscription fees from their model, arguing that commission-based pricing dominates in most marketplaces. Empirical evidence from Sharetribe's analysis of top marketplaces confirms this pattern for physical goods, where 80% rely solely on commissions and only 4% use subscription-only models. However, the viability of subscription pricing varies systematically with product characteristics and the type of information asymmetry platforms address (Handgraaf and Antikainen, 2024).

For digital goods and expert service marketplaces, or more precisely, in our case, the contexts where diagnostic uncertainty is most pronounced, subscription models become substantially more prevalent. Sharetribe's data show that 45% of digital goods platforms and 19% of service marketplaces rely exclusively on subscriptions, with additional shares combining subscriptions with transaction fees. This empirical pattern aligns with our theoretical prediction: when platform value derives primarily from matching and diagnosis rather than transaction execution, subscription pricing better captures the value created while preserving user flexibility.

Critically, our model's subscription fee functions similarly to the referral fees discussed by Hagiu and Wright (2023), but with an important conceptual distinction. Users pay for access to the platform's diagnostic and matching services but retain discretion over whether to complete transactions on-platform (in the scenario where disintermediation is still possible). This pricing structure makes platform participation more attractive ex ante, particularly for users uncertain about their service needs. A user who discovers through platform matching that

they require only basic, low-cost services can disintermediate without incurring additional fees (though the subscription fee is sunk), while still benefiting from the diagnostic function. Meanwhile, users requiring high-quality services remain on-platform where enforcement mechanisms justify continued engagement. Such a subscription model thus monetizes the diagnostic value that all users receive while avoiding revenue losses from type-dependent disintermediation that would occur under transaction-based pricing.

This logic reveals a subtle but critical tension in anti-disintermediation strategies. In our model, the option to disintermediate serves two distinct purposes from the user's perspective: the ability to pursue transactions outside the platform at lower cost (traditional disintermediation), and the ability to terminate transactions when platform matching yields unfavorable outcomes (exit flexibility). Countermeasures that effectively commit users to allocated services, eliminate both options simultaneously. While preventing opportunistic disintermediation, such measures also remove valuable exit flexibility, thereby reducing the expected utility of platform participation and potentially deterring user acquisition. The expected value of platform matching for consumers, and consequently the platform's revenue potential, is therefore lower when anti-disintermediation measures eliminate the option to abort unfavorable matches.

From a platform management perspective, this creates a challenging observability problem: it is inherently difficult to distinguish between users who terminate transactions because matching outcomes appear unfavorable (signaling platform failure to deliver value) versus users who leave the platform strategically to eliminate intermediation fees while pursuing the same transaction outside (genuine leakage). The former group represents users for whom the platform successfully provided diagnostic value, even if no on-platform transaction occurs; the latter group represents revenue leakage that the platform might legitimately seek to prevent. Optimal platform strategy depends on the relative prevalence of these two behaviors, which in turn depends on matching accuracy, outside market conditions, and the distribution of user types. In credence goods markets where outside enforcement is weak, our analysis suggests that most apparent disintermediation reflects the former pattern, this is, users leaving after unfavorable diagnosis, and not the opportunistic bypass of a platform that successfully matched them with needed services.

This pricing logic extends beyond pure subscription models to hybrid approaches. Platforms can offer free or low-cost basic matching to maximize user acquisition and network effects, then charge for premium features, enhanced matching accuracy, or guaranteed service quality, thereby effectively creating tiered subscription structures. The key insight is that in markets with diagnostic uncertainty, platforms should price the diagnostic service (which all

users value) separately from transaction completion (which only high-type users require from the platform). This unbundling allows platforms to capture value from their core function, helping users understand their needs, while tolerating selective disintermediation for transactions that can be adequately executed outside the platform.

6.3 Limitations

Our analysis builds on the credence goods framework to isolate fundamental mechanisms of platform value creation under severe information asymmetry. While this theoretical focus provides analytical clarity, several extensions would enrich both theoretical understanding and empirical applicability.

First, the model assumes stark outside market conditions where neither liability nor verifiability mechanisms exist. While pure credence goods markets are rare, the underlying logic extends to the broader class of expert service markets where asymmetric information creates genuine frictions. Many digital platforms operate in intermediate settings: outside markets may offer partial enforcement through reputation systems, consumer protection laws, or professional liability insurance, but these mechanisms remain imperfect. Experts may still exploit information advantages through subtle forms of overtreatment or underservice that are difficult to detect or penalize. Our typology framework explicitly addresses this continuum, as outside market conditions improve or consumer diagnostic capability increases, platforms transition from full-service intermediaries toward enforcement-only or search-facilitating roles. Empirically examining how platform strategies and disintermediation patterns vary across this spectrum would provide valuable insights into the boundary conditions of our predictions.

Second, we model single interactions between consumers and experts, abstracting from repeated engagements and reputation building. This simplification isolates the diagnostic value of platform matching, but overlooks important dynamic considerations. Repeated interactions could attenuate information asymmetries in two ways: consumers may learn to diagnose their own needs through experience, reducing their dependence on platform matching; alternatively, they may develop trust relationships with specific providers, making direct off-platform engagement more attractive. However, the implicit logic of expert markets suggests that problems often vary across occasions—a consumer who learns the solution to one technical issue still faces diagnostic uncertainty when encountering a different problem domain. Nevertheless, incorporating reputation mechanisms, ratings systems, and the value of future interactions would strengthen the model's realism. Platform strategies might optimally differ between facilitating first-time matches (where diagnostic value is highest) versus repeat engagements (where relationship continuity and reputation matter more).

Third, our model considers homogeneous network effects where matching accuracy improves uniformly with platform scale. In practice, network effects may exhibit more complex patterns: matching quality might improve faster for common service types than for specialized niches; certain user segments might contribute disproportionately to algorithm training; and cross-side effects between user and provider populations may create asymmetric growth dynamics. Exploring heterogeneous network effects and their implications for platform pricing and user acquisition strategies represents a promising avenue for future research. Similarly, platforms embedded in larger digital ecosystems may leverage complementary services, data synergies, or cross-subsidization strategies that our focused model does not capture (Dewenter and Rösch, 2024).

Finally, we abstract from competitive dynamics by modeling a monopoly platform. In markets with multiple competing platforms or where platforms face competition from traditional intermediaries, strategic considerations become more complex. Platforms might compete on matching accuracy, fee structures, or governance mechanisms, potentially leading to different equilibria than our monopoly analysis suggests. Extending the model to incorporate platform competition would illuminate how market structure affects the viability of subscription versus transaction-based pricing and the strategic tolerance of disintermediation.

7 Contribution and Conclusion

This paper advances the theoretical understanding of platform intermediation by systematically linking information asymmetries to platform value creation and disintermediation dynamics. We demonstrate that platforms operating under different types of information frictions, diagnostic uncertainty, enforcement uncertainty, or both, face fundamentally different strategic challenges and should adapt their governance approaches accordingly.

7.1 Theoretical contribution

We make three primary theoretical contributions. First, building on Bakos (1998) framework of electronic market functions, we develop a typology that distinguishes search platforms, enforcement platforms, and full-service platforms based on the interaction between consumer diagnostic capability and outside market enforcement mechanisms. This typology reveals that platforms do not uniformly reduce information asymmetries but rather substitute for specific missing market functions. The nature of these substitutions determines both platform value propositions and vulnerability to disintermediation.

Second, by introducing platform intermediation into the credence goods framework (Dulleck and Kerschbamer, 2006) we formalize how diagnostic and enforcement capabilities create platform value when outside markets fail. Our analysis shows that platforms in credence goods markets optimally tolerate type-dependent disintermediation: users requiring low-quality services may bypass the platform after diagnosis, while those requiring high-quality services remain on-platform where enforcement mechanisms are critical. Importantly, allowing this selective leakage enhances rather than diminishes platform value by attracting users who value diagnostic services but wish to retain transaction flexibility.

Third, we demonstrate that subscription fees generally dominate transaction-based pricing in markets with diagnostic uncertainty, contrary to prevailing assumptions in the platform literature. Subscription pricing monetizes the diagnostic value that all users receive while avoiding revenue losses from selective disintermediation. This finding helps explain the empirical prevalence of subscription models in expert service and digital goods platforms, where diagnostic functions are central to value creation.

Our contributions extend recent work by Hagiu and Wright (2023) and He et al. (2023) by explicitly modeling outside market conditions rather than treating switching costs as exogenous, by incorporating heterogeneous user knowledge levels, and by analyzing how information asymmetry type shapes optimal platform strategies.

7.2 Managerial implications

Platform managers should recognize that disintermediation is not uniformly detrimental and that prevention strategies must align with the specific information frictions their platforms address. Three actionable insights emerge from our analysis.

First, platforms should assess whether they primarily provide diagnostic services, enforcement mechanisms, or both. In pure enforcement settings where users know their needs, transaction-based pricing and strong anti-leakage measures may be appropriate. In diagnostic-intensive settings, however, subscription models that monetize matching services while tolerating selective disintermediation may prove more profitable. The key is understanding which market failure the platform genuinely solves.

Second, costly anti-leakage measures such as communication restrictions, transaction guarantees, or price-parity clauses may be counterproductive in high-asymmetry markets. These interventions can reduce perceived platform value by limiting user flexibility or increasing uncertainty. Platform managers should evaluate whether disintermediation actually occurs among high-value users (where prevention is critical) or primarily among low-

value users (where tolerance may be optimal). Our analysis suggests that in credence goods markets, users who disintermediate are typically those requiring only basic services that the outside market can adequately provide.

Third, platforms should leverage indirect monetization strategies rather than attempting to capture transaction fees from all users. By providing diagnostic services broadly while charging for high-value transactions or complementary services (premium features, enhanced matching, advertising), platforms can maximize user acquisition and network effects. Data generated from all users, which means also including those who eventually may disintermediate, improves matching algorithms and creates value that can be monetized through multiple channels. This approach aligns particularly well with platforms embedded in larger digital ecosystems where cross-subsidization and data synergies create additional revenue opportunities.

7.3 Concluding remarks

The fundamental insight of our analysis is that platform value in markets with asymmetric information derives from addressing specific market failures, not from maximizing transaction volume or preventing all forms of disintermediation. Platforms that understand which information frictions they solve—and which users genuinely require their services—can design governance structures and pricing models that enhance rather than constrain user value. As digital platforms continue to evolve and compete, success will increasingly depend on strategic alignment between the information asymmetries present in the market, the platform's value creation mechanisms, and its approach to managing disintermediation. Our framework provides both theoretical foundations and practical guidance for navigating these strategic choices.

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ANNEX

A1 Corollary 2

(i) A consumer who received the $\overline{c}$-signal will stay on the platform if condition (2) is fulfilled. The condition $(1-\mu_H)v - \underline{c} - \min\left(\frac{t_2}{2}, d\right) \geq 0$ implies that the outside option "leave" (disintermediation) is preferable to "out". This condition holds for the belief $\mu_H \leq 1 - \frac{\underline{c}+\min\left(\frac{t_2}{2},d\right)}{v} = \widehat{\mu_H}$. Given such beliefs ($\mu_H \leq \widehat{\mu_H}$) about being a $\overline{c}$-type consumer, condition (2) is fulfilled for any belief also adhering to $\mu_H \geq \frac{\overline{c}-\underline{c}+\frac{t_2}{2}}{v}$. Using both inequalities, we find that such a belief does exist under $v - \overline{c} > t_2$. As $\widehat{\mu_H} \geq \frac{\overline{c}-\underline{c}+\frac{t_2}{2}}{v}$ applies, the consumer will choose "leave" if the belief of being the high type is rather low, i.e. $\mu_H < \frac{\overline{c}-\underline{c}+\frac{t_2}{2}}{v}$ holds. Second, consider $\mu_H > \widehat{\mu_H}$. Then (2) is fulfilled as long as $v - \overline{c} \geq t_2$ applies. (ii) A consumer who received the $\underline{c}$-signal will stay on the platform if condition (3) is fulfilled. First, assume the case $\mu_L v - \underline{c} - \frac{t_2}{2} \geq 0$: Then, (3) holds only if $t_2 = 0$. Second, consider $\mu_L v - \underline{c} - \frac{t_2}{2} < 0$. Then, (3) holds only if $\mu_L v - \underline{c} - t_2 > 0$ applies which clearly contradicts this second case. The latter implies that the outside option "out" is chosen for the belief $\mu_L < \frac{\underline{c}}{v}$.

A2 Proposition 1

For this Proposition to hold, neither the strategy "out" nor "offline" at decision nod C_1 can be part of an equilibrium profile. In order to prove this, let us first contradict the hypothesis that choosing "out" can ever be favorable to the consumer at C_1. Such an outcome would require that both the offline market and platform services yields a negative expected utility for the consumer at decision nod C_1, so choosing "out" upfront is the only remaining option. However, for platform services to be generally unfavorable for the consumer, it would require that the expected gains at both decision nods C_2 and C_3 must be negative as well.[10] Given that the intermediator will always be inclined to further reduce platform fees if this keeps the consumer at least indifferent to the outside options (and thus on the platform by assumption), this statement must still hold in a world of zero platform fees, i.e. $(t_1 = 0, t_2 = 0)$ applies. This is impossible as the expected utility at decision nod C_3 can then never be negative: Being allocated the high-type treatment by the platform, the consumer receives the certain positive payoff $v - \overline{c} >$

[10] To see this, note that the consumer at nodes C_2 and C_3 may also choose "*out*" and secure a utility of zero at this information set. Thus, if only one of the two decision nodes offers a positive utility, a rational consumer would prefer choosing "*platform*" at C_1 over the other two zero-gain options.

0. Consequently, choosing "out" at decision nod C_1 can never be part of an equilibrium profile. Let us then contradict the second hypothesis that choosing "offline" upfront can ever be favorable to the consumer. Bearing corollary 1 in mind, the offline market as outside option offers the expected gains of $u_0 = (1-h)v - \underline{c} - d$. In other words, consumers always receive the low-type treatment, and this is at least sufficient for the low-type consumer. Hence, depending on the probability of being a $\underline{c}$-type consumer, the valuation for a correct treatment, treatment costs $\underline{c}$, and search costs d, the condition $u_0 > 0$ can apply. However, a better result can easily be obtained via platform services. For instance, if the consumer always chooses "leave" later in the game, she will receive the same treatment as in the offline market, but she will save the search costs d. Again, the intermediator will be inclined to reduce platform fees below the extent of search costs, and thus the strategy "offline" can never be part of an equilibrium as well. Note that seeking platform services at C_1 is not identical with the later decision to disintermediate or leave after matching.

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