Commission Bans and the Source and Quality of Financial Advice
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* Views expressed are those of the author and do not necessarily reflect official positions of De Nederlandsche Bank.
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Abstract

In the wake of the financial crisis, several countries are to ban commission payments to improve the quality of financial advice. This paper investigates the potential impact of commission bans on the source and quality of financial advice. To this end, we extend Inderst and Ottaviani’s (2012) framework by allowing for both direct and intermediary advice. Our extended model has a unique separating equilibrium where customers that are naïve about conflicts of interests prefer direct advice to intermediary advice, though the latter is of better quality. Alert customers rationally prefer intermediary advice. Accordingly, the welfare benefits from commissions bans may be limited in practice.

JEL classification: D18, D83, G24, G28

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“[T]he history of retail financial services over the last 20 years has not been a happy one: punctuated with too many waves of mis-selling – large-scale customer detriment followed by large imposed compensation.” Lord Turner, Chairman of the UK Financial Services Authority, Mansion House Speech, 2011.

1. Introduction

Sound financial advice is key to the well-functioning of financial markets. Financial decisions tend to be complex and errors can have serious consequences. Retail customers find it particularly hard to evaluate financial products. They therefore tend to rely on expert advice when making financial decisions. Unfortunately, as the quote of Lord Turner highlights, expert advice has not prevented waves of mis-selling in retail financial services. In light of this, several countries have recently adopted laws to improve the quality of financial advice. Notably, as from 2013, independent financial advisers in Australia, the Netherlands and the United Kingdom are prohibited to accept commissions from financial institutions. At the European level, the European Commission has proposed to ban inducements in the context of the review of the Markets in Financial Instruments Directive (European Commission 2011) and the Insurance Mediation Directive (European Commission 2012). With a ban on commissions, financial advisers are remunerated directly by their customers, through an hourly or fixed fee. It is envisaged that fee-based remuneration will lead to more suitable advice, as there is no incentive to advise a particular, high commission product.

This paper investigates the source and quality of financial advice when commission payments are prohibited. To this end, we extend the Inderst and Ottaviani (2012) framework by also allowing for direct advice by financial institutions. In an innovative article, Inderst and Ottaviani show why specialized financial advisers (henceforth intermediaries) are commonly remunerated through commissions rather than through fees. Commission-based remuneration enables financial institutions to benefit more from so-called naïve customers that do not properly take into account the incentives behind advice. Since commissions undermine the

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1 According to a survey by Hung et al. (2008), over seventy percent of US retail investors consult an adviser before buying shares. Chater, Huck, and Inderst (2010) survey recent buyers of financial products across eight EU countries and find that almost sixty percent were strongly influenced by an adviser before buying shares.

2 While these countries are all implementing commissions bans for retail financial products, there are differences. In Australia, the ban is expected to hold for superannuation and investment products, and not for pure protection products and mortgages. Moreover, the ban will commence on 1 July 2012, yet compliance will be mandatory only from 1 July 2013 (Commonwealth Treasury 2012). In the Netherlands, the commission ban will hold for complex financial products, such as mortgages, life insurance, funeral insurance and disability insurance. Other insurance products are outside the scope of the commission ban (Minister van Financiën 2011). In the United Kingdom, the commission ban is expected to hold for advised sales, not for non-advised sales. Protection-only insurance products, e.g. mortality insurance and property and casualty insurance, and mortgages are currently outside the scope of the commission ban (Financial Services Authority 2009).
quality of financial advice and are therefore detrimental to consumer surplus and welfare, the authors conclude there is an economic rationale for commission bans. We show that even with commission bans, financial institutions can take advantage of naïve customers, namely by providing direct advice. Given that direct advice is common in retail financial services, there is a clear risk that the quality of financial advice remains substandard in practice.

In our model there are two types of advisers: a financial institution and an intermediary. While advice is non-verifiable, advisers incur costs in case of unsuitable advice. These costs may be interpreted as reputational costs, yet we assume, for concreteness, that these represent regulatory fines. In terms of remuneration, we specify that intermediaries are remunerated through fees, as our analysis focuses on financial advice when commissions are prohibited. Besides conditional payments, fixed transfers between the financial institution and the intermediary are also prohibited. The financial institution and the intermediary operate at arm’s length, which is different from Inderst and Ottaviani’s (2012) baseline model, where these parties cooperate and maximize joint profits. The model treats financial products as experience goods, since customers sooner or later find out whether they have bought the right product or not. Ex ante, however, customers are unaware which product is most suitable. Moreover, customers differ in their understanding of incentives that advisers have. While alert customers understand that the financial institution has an incentive to recommend the most profitable product, naïve customers believe that profitability does not play a role and that financial advice is always balanced.

By way of preview, our main findings are as follows. In equilibrium, financial institutions find it optimal to sell to alert customers via intermediaries, and to naïve customers directly. As profit maximization implies that direct advice is tilted to the most profitable products, naïve customers unfortunately receive distorted advice. The root cause of this inefficient market outcome is that naïve customers mistakenly believe that the quality of direct advice is equivalent to that of intermediary advice. This misunderstanding of advice incentives makes it more profitable to financial institutions to deal with naïve customers directly. Alert customers obtain sound advice, however, as their willingness to pay for financial products and advice depends directly on the quality of financial advice. The model’s equilibrium is incentive compatible: neither alert nor naïve customers have an incentive to switch from direct to intermediary advice, or vice versa.

In terms of advice quality and overall welfare, our equilibrium is identical to the equilibrium of Inderst and Ottaviani’s (2012) baseline model with commission payments and the possibility of indirect price discrimination (see Proposition 3 in their paper). The intuition behind this similarity is relatively clear when it comes to naïve customers. In our model these customers receive direct advice, which is equivalent to intermediary advice that is steered by
the financial institution through commissions, as analyzed by Inderst and Ottaviani. With respect to alert customers, the correspondence is more subtle. In Inderst and Ottaviani’s equilibrium, alert customers are convinced that advice is sound as they are only charged a fee for advice. By contrast, in our equilibrium, alert customers are charged both a fee for advice and a positive premium product price. Since commission payments are forbidden, alert customers rightly do not associate a positive product price with substandard advice quality.

The model’s equilibrium thus depends crucially on customer rationality. An important question is then to what extent customers fail to take the incentives behind advice into account. In a large-scale survey among recent purchasers of retail investment products in Europe, Chater, Inderst, and Huck (2010) find that the majority of respondents are unaware of potential conflicts of interest. Of the respondents who were advised directly by product provider staff, more than half perceived the advice given to be completely independent and unbiased. In a study of stock recommendations, Malmendier and Shantikumar (2007) find that small investors follow analyst recommendations literally, even though many analysts are affiliated to underwriters and thus not independent. The authors conclude that naiveté about advice distortions is a realistic explanation of this great willingness to follow advice. Similarly, Cain, Loewenstein, and Moore (2005) report experimental evidence that many participants have an excessive tendency to follow advice, even if distorting incentives behind advice are disclosed. By adopting the distinction between naïve and alert customers, this paper fits within a growing stream of industrial organization research that takes consumer biases into account (see Ellison 2006 for a recent review). A related paper on consumer biases in financial services is Carlin (2009). In his model, however, customers vary in their understanding of prices, not in terms of their understanding of advice incentives. Moreover this paper examines horizontally differentiated products, while Carlin (2009) investigates homogenous goods.

Information provision by product providers is also analyzed by, among others, Lewis and Sappington (1994), Moscarini and Ottaviani (2001), Bolton, Freixas, and Shapiro (2007), and Bar-Isaac, Caruana, and Cuñat (2010). Of these, only Bolton et al. (2007) focus on the financial services industry. Their key finding is that competition between financial institutions can lead to full credible information provision, even with only a small reputation cost. This result is comparable to our result with alert customers, whereby in our model reliable information provision is not the result of competition but of the presence of a trustworthy intermediary. Inderst and Ottaviani (2009) also analyze situations where product advice is tied to the sale, but they focus on how financial institutions can optimally compensate internal sales agents. The benefits of steep sales incentives need to be balanced with the costs, that is, expected losses from selling unsuitable products.
In addition to financial advice, this paper sheds light on distribution strategies in financial services. For example, in insurance, there are two types of distribution strategies. So-called independent-agency insurers sell via intermediaries, whereas so-called direct writers sell directly. While independent-agency insurers have higher costs, both types of insurers have coexisted in insurance markets for decades. The dominant explanation for this coexistence is that independent-agency insurers provide higher-quality services, which explains their higher costs (Berger, Cummins, and Weiss 1997). Our analysis reveals that the choice of distribution channel may also depend on intermediaries’ remuneration. When commissions are banned and intermediaries are directly remunerated by their customers, it is attractive to follow a so-called multichannel distribution strategy, that is, selling to naïve customer directly and to alert customer via an intermediary.

The rest of the paper is organized as follows. Section 2 describes the model that allows for both direct and intermediated sales. Section 3 investigates what determines advice and how the quality of advice affects profits, consumer surplus and total welfare. To focus initially on direct sales, Section 4 examines market equilibriums without intermediary involvement. Section 5 analyses the full model, whereby the financial institution has two distribution channels to choose from: direct and intermediated sales. Section 6 gives policy implications, and Section 7 concludes the paper. Appendix A gives the proofs of the propositions in the paper. An illustration of the model without intermediary involvement is given in Appendix B.

2. Model outline

The model builds on Inderst and Ottaviani’s (2012) baseline model. There are three strategic players: a financial institution, an intermediary and a customer. The main difference with the existing model is that we allow for two sources of financial advice: that is, both financial institutions and intermediaries advise on product suitability.

The financial institution has two financial products on offer, products A and B. These products are imperfect substitutes. Product A is a premium product that is only provided by the modeled financial institution; product B is a plain-vanilla product that is provided by many other firms and is competitively priced. For simplicity, the production costs of the two products are normalized to zero. Since B is also provided by other firms with equal cost levels, the price of B is zero. The financial institution does have price-setting power over product A, however. A high price for product A raises the profitability differential between A and B, which is key to the equilibrium outcome. In the insurance domain, product A could be a unit-linked life insurance

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3 Note that the results are identical when the financial institution offers only product A (it is in this respect a monopolist) and the other firms provide product B.
policy with interest rate guarantees included, whereas product B could be a basic fixed annuity. The difference between A and B can also be more subtle. For example, in banking, both products could be fixed rate mortgages, yet A offers more flexibility than B in terms of monthly payments.

While the model is specifically related to financial services, the analysis of direct advice by product providers has wider applicability. Indeed, in any market where the seller has considerable informational advantage over the buyer, the seller does not only sell the product but typically also provides product advice. Examples of such markets outside financial services are consumer electronics, residential real estate and the automotive industry.

2.1 Customers
There are N customers in the market. For simplicity, and in line with the related literature, we assume that each customer buys only one product. There are two types of customers, α and β. Customers are unaware of their type, yet know that in the population a fraction q₀ is of type α and 1 − q₀ is of type β. For concreteness and without loss of generality we assume q₀ = 1/2.

A key element of the model is match suitability. When type α (β) customers buy product A (B), they are matched with the product that matches their preferences and achieve high utility uₜ. On the other hand, when type α (β) customers buy product B (A), we speak of unsuitable choice, and as result customers achieve low utility uᵢ. Since suitable matches lead to higher utility, we have uₜ > uᵢ. For further reference we define Δᵤ≡ uₜ − uᵢ. Since customers are expected utility maximizers, they prefer uₜ over uᵢ. Accordingly, products A and B are horizontally differentiated in the sense of Hotelling (1929). At equal prices, neither A nor B is unanimously preferred by the customers. Without advice, customers make their product choice randomly and have expected utility u₀ = uᵢ + q₀Δᵤ = uᵢ + q₀Δᵤ.

Besides product preference differences, customers also vary in terms of rationality. There are alert and naïve customers. While the former are aware of possible incentives behind product advice, the latter completely ignore this possibility. Note that no assumption is made about the relationship between customer rationality and customer preferences.

2.2 Financial institution and intermediary adviser
Customers can consult the financial institution or the intermediary to obtain information on product suitability. We assume that the quality of information of both advisers is the same. There can be a difference in advice quality, however, namely when advisers face dissimilar advice incentives. We delay a discussion of the particular incentives behind advice to Section 3.

When consulted by a customer, an adviser forms a posterior belief q that the respective customer is of type α, which implies a belief 1 − q that this customer is of type β. With perfect information, q is either 0 or 1, and an adviser is certain which product is optimal and which is
not. With imperfect information, however, $q$ may be any value on the interval $[0,1]$. Consequently, an imperfectly informed adviser is never fully sure which product is most suitable. The information quality of advisers is reflected by the cumulative distribution of the posterior belief, $G(q)$, which is assumed to be exogenous and known to the customers. The corresponding density function is $g(q) > 0$ for $q \in [0,1]$, which implies imperfect information. Though imperfectly informed, as a rule advisers have an informational advantage over their customers with respect to product suitability (the exception to the rule is when the posterior belief is equal to the prior, i.e. $q = q_0 = \frac{1}{2}$).

Product suitability beliefs are formed in practice through customer profiling. Adviser tend to ask their clients about their objectives, income, degree of risk aversion, investment horizon, et cetera. Combining such customer information with product information gives an adviser knowledge about product suitability. For example, when the customer is highly risk-averse and needs a financial product to pay off a mortgage in thirty years’ time, simple savings products are more suitable than investment products with a variable rate of return.

The financial institution has three ways to sell its products. It can sell directly without advice, sell directly with advice, and/or sell via the intermediary with advice. The first option leads to a so-called non-advised sale. In the model, non-advised sales lead to zero profits, since customers a priori do not have a preference for $A$ over $B$, and $B$ is competitively priced at zero marginal costs. This implication of the model echoes Bester’s (1998) result that information provision increases the market power of firms, that is to say, the ability to set prices above marginal costs. Hence, non-advised sales are typically not in the interest of the financial institution.

With advised sales, customers receive suitability advice either from the financial institution or the intermediary. In the model, both types of advisers face an direct incentive to provide suitable advice. Specifically, in case of mismatch, an adviser’s pay-outs are reduced by $\rho > 0$ (cf. Bolton et al. 2007). This parameter $\rho$ may be interpreted as a loss of business from word-of-mouth that the adviser gives biased advice. $\rho$ may also be interpreted as representing regulatory fines for providing unsuitable advice to customers. For concreteness, we use the latter interpretation of $\rho$, i.e. a regulatory fine in case of unsuitable choice. Note that an adviser is always fined for a mismatch, even if it is unintentional, that is, caused by imperfect information.

The financial institution’s aim is to maximize its total profits. As discussed, profitability must come from advised sales. Denote the profits from direct and intermediated advised sales $\pi^B$ and $\pi^I$, respectively. Total profits are then $\pi = \pi^B + \pi^I$. While product $B$’s price is fixed at marginal costs, the financial institution has price-setting power over advanced product $A$.

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* Financial Services Authority (2006a) explains the distinction between advised and non-advised sales in insurance.
Denote $A$'s direct advised sales price $P^D$, and the intermediary price $P^I$. In the baseline model, the product provider provides a take-it-or-leave-it offer to the intermediary. As a robustness exercise, we verify our results when it is the other way around, that is, when the intermediary provides a take-it-or-leave-it offer to the financial institution.

The intermediary is remunerated through a fee for advice $f \geq 0$. This fee is directly paid by the customer. Indeed, other than in Inderst and Ottaviani (2012), indirect compensation of the intermediary through commissions is prohibited in our model. This allows us to focus on market outcomes when commission bans are effective. The intermediary aims to maximize its profits $F$. Like the financial institution, the intermediary has zero costs. Since the intermediary is directly remunerated, the quality of advice and the size of the regulatory fines do not depend on $f$. As a result, the intermediary has an incentive to set $f$ as high as possible.

2.3 Timeline
The timing of the game is as follows. In stage $t = 1$, the financial institution sets product $A$'s advised-sales prices, i.e., $P^D$ and $P^I$. The non-advised sales price of product $A$ is always zero. Based on the intermediated sales price $P^I$, in $t = 2$, the intermediary chooses its advisory fee $f$. In $t = 3$, the customer decides between non-advised sales, direct advised sales and intermediated sales. For simplicity, we do not allow for switching between these sales channels after $t = 3$.

When the customer opts for no advice, all payoffs are immediately realized. In this case the financial institution and the adviser earn zero profits and the customers receive payoff $u_0$. In case of advised sales, however, the game proceeds. When the customer chooses for direct advice from the financial institution, in $t = 4$ the financial institution privately receives information on the customer's type, represented in the model by posterior belief $q$. Using this information, in $t = 5$ the financial institution recommends the customer which product to buy, $A$ or $B$. In $t = 6$, the customer chooses and, subsequently, all payoffs are realized. In $t = 3$, the customer may also choose for intermediary advice, in exchange for fee $f$. After the fee is paid, in $t = 4$, the adviser obtains information on the customer's type, represented by its posterior belief $q$. Using this information, the intermediary gives a product recommendation in $t = 5$. In $t = 6$, the customer

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5 This is less restrictive as it may seem. Since the financial institution has a monopoly over product $A$, it can easily prevent switching between direct and intermediary advice. Non-advised sales are potentially more troublesome. Indeed, when switching would be allowed for, customers could obtain financial advice, directly or indirectly, and subsequently buy the advised product via the non-advised sales channel at zero costs. Such switching behavior can also be prevented by the financial institution. Indeed, it could simply cease non-advised sales of premium product $A$. This would not materially change the model, as non-advised sales would still yield expected utility $u_0$. 


chooses its product and all payoffs are realized. In line with the related literature, all players in
the game are risk neutral and payoffs are not discounted.6

3. Advice, profits and surplus

Advice. When the financial institution gives advice, it has a suitability concern which is captured
by parameter $\rho$. Choosing between products $A$ and $B$, the institution advises $A$ if

$$P^D - \rho(1 - q) \geq -\rho q.$$  

For convenience, define cutoff $q^*$ that determines when $A$ is advised. This is the case when
$q \geq q^*$, with

$$q^* = \frac{1}{2} - \frac{p^D}{2\rho}, \text{ for } P^D < \rho, \text{ and}$$

$$q^* = 0, \text{ for } P^D \geq \rho. \quad (1)$$  

For $P^D < \rho$, (1) implies that the higher the price of $A$ ($P^D$), the lower $q^*$ and the more likely it is
that $A$ is advised. This effect of $P^D$ on product advice is alleviated by regulatory fines $\rho$, which are
payable in case of mismatch. Nonetheless, for $P^D > 0$ advice cutoff $q^* < \frac{1}{2}$, and advice is tilted
towards the more profitable premium product. Indeed, when the financial institution assesses,
for instance, that $A$ and $B$ are equally suitable ($q = \frac{1}{2}$), it will actually advise product $A$ if $P^D > 0$.
When $P^D \geq \rho$, advice becomes completely uninformative, as $q^* = 0$ and product $A$ is always
advised.

The intermediary is another source of advice in the model. As a result of its direct
remuneration, the intermediary provides sound advice and thus applies advice cutoff $q^* = \frac{1}{2}$.

After customers have received advice in $t = 5$, they may possibly deviate from the advice
given in $t = 6$. We will show in Sections 4 and 5, however, that in equilibrium, customers always
follow financial advice. The intuition is that prices $P^D$ and $P^I$ and fee $f$ are chosen in such a way
that customers find it optimal to receive and follow advice, as profits are made from advised
sales only. In the remainder of this section, we derive equations for profits, consumer surplus

6 The assumption of risk neutral preferences simplifies the model and focuses attention to financial advice.
Given that in practice people tend to be risk averse, it would be interesting to explore the model with risk‐
averse players. We expect that risk‐averse customers have a lower willingness to pay for advice than risk‐
neutral customers, as product suitability remains uncertain, even after having received advice. A full
derivation with risk‐averse preferences is beyond the scope of this paper, however.
and total surplus, all under the premise that product advice is followed. Again, the validity of this premise is verified in the next two sections.

**Profits.** Recall that profits originate from advised sales. Let $\varepsilon$ be the fraction of customers that buy without advice, $\gamma$ the fraction of customers that opt for intermediary advice, and $1 - \gamma - \varepsilon$ the fraction that opt for direct advice. Direct sales profits are then $\pi^D = N(1 - \gamma - \varepsilon)\bar{\pi}^D$, where $\bar{\pi}^D$ are the respective profits per customer. Profits from intermediated sales are $\pi^I = N\gamma\bar{\pi}^I$, where $\bar{\pi}^I$ are the corresponding profits per customer. Taking $\pi^D$ and $\pi^I$ together, total profits are

$$\pi = N[(1 - \gamma - \varepsilon)\bar{\pi}^D + \gamma\bar{\pi}^I].$$

(2)

Not all customers that obtain direct advice are profitable to the financial institution. Indeed, of the customers that obtain direct advice, only a fraction $1 - G(q^*)$ buys the premium product, at price $P^D$. Hence, given zero production and advisory costs, we have per customer profits

$$\bar{\pi}^D = P^D[1 - G(q^*)] - \rho UC(q^*),$$

(3)

where

$$UC(q^*) = \int_0^{q^*} q dG(q) + \int_{q^*}^1 (1 - q) dG(q).$$

$UC(q^*)$ is the ex ante probability of unsuitable choice, which is minimized for $q^* = \frac{1}{2}$.\footnote{By Leibniz’s rule, we have $UC'(q^*) = (2q^* - 1)g(q^*)$. Hence, the only potential minimum of $UC(q^*)$ is at $q^* = \frac{1}{2}$. Since $UC''(\frac{1}{2}) > 0$, $q^* = \frac{1}{2}$ minimizes unsuitable choice.} It depends on the information quality to what extent unsuitable choice can be completely eliminated. In case of mismatch, the financial institution needs to pay $\rho$ to the regulator, which is transferred from the adviser to the general public.

With intermediated sales, a fraction $1 - G\left(\frac{1}{2}\right)$ of the customers buys the premium product at price $P^I$. In this case, regulatory fines are payable by the intermediary. Per customer profits from intermediated sales are therefore

$$\bar{\pi}^I = P^I \left[1 - G\left(\frac{1}{2}\right)\right].$$

(4)
The intermediary’s profits are \( F = N\gamma \hat{F} \), where net earnings per customer \( \hat{F} \) are

\[
\hat{F} = f - \rho UC \left( \frac{1}{2} \right).
\]  
\[(5)\]

**Consumer surplus.** When customers buy without advice, their choice is based on the prior that half of the population is best off with product \( A \), and the other half is best off with product \( B \). Hence, without additional information, customers have a fifty percent probability of buying the right product (recall \( q_0 = \frac{1}{2} \)). Non-advised sales yield consumer surplus \( N\varepsilon u_0 \), with \( u_0 = u_t + \frac{1}{2} \Delta u \).

Denote consumer surplus from direct advised sales \( CS^D = N(1 - \gamma - \varepsilon)\bar{C}S^D \), where the surplus per customer is \( \bar{C}S^D \). As customers follow advice, we have

\[
\bar{C}S^D = u_t + \Delta u [1 - UC(q^*)] - P^D[1 - G(q^*)].
\]  
\[(6)\]

With intermediated sales, consumer surplus is \( CS^I = Ny\bar{C}S^I \), where every customer obtains

\[
\bar{C}S^I = u_t + \Delta u \left[ 1 - UC \left( \frac{1}{2} \right) \right] - P^I \left[ 1 - G \left( \frac{1}{2} \right) \right] - f.
\]  
\[(7)\]

**Total surplus.** Non-advised sales yield no profits, so the contributed to welfare is consumer surplus \( N\varepsilon u_0 \). In case of advised sales, total surplus is potentially greater. Let \( TS^D \) be total surplus created by direct sales with advice. Then we have \( TS^D = N(1 - \gamma - \varepsilon)\bar{T}S^D \), where \( \bar{T}S^D \) is the surplus per direct customer. Adding (3), (6) and the regulatory fines, we have

\[
\bar{T}S^D = \bar{\pi}^D + \bar{C}S^D + \rho UC(q^*) = u_t + \Delta u [1 - UC(q^*)].
\]  
\[(8)\]

Similarly, total surplus created by intermediated sales is \( TS^I = Ny\bar{T}S^I \), where

\[
\bar{T}S^I = \bar{\pi}^I + \bar{C}S^I + \bar{F} + \rho UC \left( \frac{1}{2} \right) = u_t + \Delta u \left[ 1 - UC \left( \frac{1}{2} \right) \right].
\]  
\[(9)\]

Since unsuitable choice is minimized with \( q^* = \frac{1}{2} \) (9) implies that total welfare is maximized when all sales are done via the intermediary, that is \( \gamma = 1 \). We will show in Section 5 that in equilibrium \( \gamma \neq 1 \).
4. Direct advice

As the model is quite extensive, it is useful to concentrate on direct sales first. To this end, we assume that the financial institution interacts only directly with its customers ($\gamma = 0$). This has the following consequences for the timing of the game. In $t = 1$, the financial institution sets just $A$’s direct price $P^D$, instead of two prices. In $t = 2$ nothing happens and in $t = 3$ the customer chooses between no advice and direct advice as $\gamma = 0$. The equilibrium results developed in this section will be useful in Section 5, where we analyze the full model with endogenous $\gamma$.

Below, in 4.1, it is first assumed that all customers are alert about the incentives behind advice. Conversely, in 4.2, all customers are assumed to be naïve and believe that advice is always unbiased. Both assumptions are extreme. In the last subsection, 4.3, we allow for a mix of alert and naïve customers, which is particularly relevant when it is not possible to price discriminate between customers.

4.1 Alert customers

Alert customers understand that advice is potentially biased when one product is more profitable to the financial institution than the other. While such alertness seem to be at odds with extant empirical evidence on typical consumer behavior in financial services, as partly described in Section 1, this subsection helps to shed light on a world wherein customers would be a relatively strong counterforce to profit-maximizing financial institutions.

*Customer participation.* Recall that the financial institution advises product $A$ if $q \geq q^*$. In $t = 6$, alert customers follow advice to buy $A$ if the expected payoff is greater than or equal to buying $B$ (at zero costs) while $A$ is advised, that is,

$$u_i + \Delta u \int_{q^*}^{1} q \frac{dG(q)}{1 - G(q^*)} - P^D \geq u_i + \Delta u \int_{q^*}^{1} (1 - q) \frac{dG(q)}{1 - G(q^*)}. \quad (10)$$

Equation (10) can be rewritten to the participation constraint

$$P^D \leq \Delta u V(q^*), \quad (11)$$

where

$$V(q^*) = \int_{q^*}^{1} (2q - 1) \frac{dG(q)}{1 - G(q^*)}. $$
When \( q^* = 0 \) and product \( A \) is always recommended, advice is uninformative, \( V(0) = 0 \) and alert customers have zero willingness to pay for product \( A \). Their willingness to pay increases, however, when \( q^* \) gets closer to \( \frac{1}{2} \) and advice becomes increasingly informative.\(^8\) Note that since \( q^* \) and \( P^D \) are negatively related for interior cutoff values \( (q^* > 0) \), by (1), the financial institution’s pricing power is directly restricted by (11). Raising the price of \( A \) actually reduces alert customers’ willingness to pay for \( A \).

The financial institution advises to buy \( B \) in \( t = 5 \) when \( q < q^* \). This advice is followed when the expected value of buying \( B \) given the advice to buy \( B \) is larger than the expected value of buying \( A \) given the advice to buy \( B \):

\[
u_t + \Delta u \int_0^{q^*} \frac{dG(q)}{G(q^*)} - P^D \leq u_t + \Delta u \int_0^{q^*} (1 - q) \frac{dG(q)}{G(q^*)},
\]

which always holds. Hence, advice to buy \( B \) is followed by the customer.

In \( t = 3 \), when choosing between advised and non-advised sales, an alert customer chooses the former when

\[
u_t + \Delta u \int_0^{q^*} (1 - q)dG(q) + \int_0^{1} (\Delta_u q - P^D) dG(q) \geq u_0,
\]

where \( u_0 = u_t + q_0\Delta_u \) is the expected payoff without advice. By Bayes’ law, the expectation of posterior belief \( q \) is equal to prior \( q_0 \), or \( q_0 = \int_0^1 (q)dG(q) \). This implies

\[
u_0 = u_t + \Delta u \int_0^{q^*} (q)dG(q) + \Delta_u \int_{q^*}^{1} (q)dG(q).
\]

Substituting for \( u_0 \) in (12) yields

\[
P^D \leq \int_0^{q^*} (1 - 2q) \frac{dG(q)}{1 - G(q^*)} = \Delta_u V(q^*).
\]

As (13) is identical to (11), and since advice to buy product \( B \) is always followed, we conclude that direct financial advice is always followed. Intuitively, both in \( t = 3 \) and in \( t = 6 \), alert customers evaluate the value of product advice on the basis of cutoff \( q^* \) and distribution \( G(q^*) \). So, if the value of advice is deemed insufficient in \( t = 6 \), that is if (11) is not satisfied, it will also

\(^8\) See Appendix A for a formal proof. Crucial in this respect is the postulation that \( g(q) > 0 \) for \( q \in [0,1] \). If \( g(q) = 0 \) for any \( q \) in the respective interval, an increase in \( q^* \) does not necessarily affect the willingness to pay for product \( A \).
be deemed insufficient in $t = 3$, when (13) is not satisfied. Note the actual advice in $t = 5$ does remain informative, though, as it informs customers whether $q < q^*$ or $q \geq q^*$.

**Financial institution participation.** The financial institution provides advice only if the resulting profits are non-negative. Though production costs are set to zero, profits can still be negative because of regulatory fines. If the expected profits are indeed negative, the institution decides either to sell exclusively without advice ($\epsilon = 1$) or leave the market altogether; in both cases total profits are zero. Using (2) and (3), the financial institution’s participation constraint is

$$P^D[1 - G(q^*)] \geq \rho UC(q^*).$$

(14)

**Equilibrium.** In $t = 1$, the financial institution sets $P^D$ so as to maximize total profits in (2), with $\gamma = 0$. It is shown in Appendix A.1 that total profits are increasing in $P^D$ as long as customer participation constraint (11) is satisfied. Accordingly, the financial institution will raise $A$’s price until (11) becomes binding. Therefore, provided that (14) holds, the equilibrium direct sales price of $A$ with alert consumers, $P^D_{A,eq}$, is

$$P^D_{A,eq} = \Delta_u V(q^*_{A,eq}),$$

(15)

where $q^*_{A,eq}$ is the equilibrium advice cutoff with alert customers. Combining (15) with (1) pins down a unique equilibrium, with $P^D_{A,eq} > 0$ and cutoff $0 < q^*_{A,eq} < \frac{1}{2}$.

**Proposition 1.** On condition that (14) holds and it is thus attractive to provide direct advice, there exists a unique equilibrium where the financial institution uses advice cutoff $q^*_{A,eq}$, and charges alert customers $P^D_{A,eq} = \Delta_u V(q^*_{A,eq})$. $q^*_{A,eq}$ is the solution to $\rho(1 - 2q^*_{A,eq}) = \Delta_u V(q^*_{A,eq}).$ Since $0 < q^*_{A,eq} < \frac{1}{2}$, financial advice is tilted towards recommending product $A$.

A formal proof of Proposition 1 is in Appendix A. Note that with alert customers, advice remains informative in equilibrium as $q^*_{A,eq} > 0$. In fact, the equilibrium price that alert customers pay for $A$ is exactly equal to the added value from advice in expected utility terms. To see this, substituting $P^D_{A,eq}$ and $q^*_{A,eq}$ into (6), we have

$$\tilde{\xi}^D_{A,eq} = u_t + \Delta_u[1 - UC(q^*_{A,eq})] - \Delta_u \int_{q_{A,eq}^*}^{1} (2q - 1)dG(q) = u_0,$$

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where we have used \( \int_q^1 (2q - 1) dG(q) = \frac{1}{2} - UC(q^*) \). Since all customers opt for advice in equilibrium (i.e. \( \varepsilon = 0 \)), total consumer surplus is \( CS^{D, EQ} = Nu_0 \), which is equal to consumer plus with non-advised sales only (i.e. \( \varepsilon = 1 \)). Hence, alert customers are equally well off with and without information, as the financial institution is able to capture the full welfare increase due to its price-setting power. Total surplus increases with information, thanks to a greater likelihood of suitable choice. Indeed, given that \( q_{A}^{*, EQ} > 0 \), total surplus is

\[
TS^{D, EQ} = NT^{D, EQ} = N(u_t + \Delta_u [1 - UC(q_{A}^{*, EQ})]) > Nu_0.
\]

The next subsection shows that with naïve customers, a completely different equilibrium arises.

4.2 Naïve customers

Here we analyze market outcomes when customers are naïve in the sense that they do not recognize that a higher price for product \( A \), and with that a greater price differential with product \( B \), reduces the quality of advice.

**Customer participation.** Regardless of price \( P^D \), naïve customers expect sound advice and thus belief that the advice cutoff is \( \frac{1}{2} \), which may well deviate from the actual cutoff \( q^* \). In \( t = 6 \), naïve customers are willing to follow advice to buy product \( A \) if

\[
P^D \leq \Delta_u \int_{1/2}^1 (2q - 1) \frac{dG(q)}{1 - G(1/2)} = \Delta_u V\left(\frac{1}{2}\right).
\]

Recall that the decision between advised and non-advised sales is made in \( t = 3 \). Naïve customers make a similar assessment as analyzed before for alert customers, with the only difference that former expect balanced advice regardless. Consequently, using advice cutoff \( \frac{1}{2} \) in (13), we have that alert customers opt for direct advice if (16) is satisfied.

**Equilibrium.** Provided that firm participation constraint (14) holds, profits are increasing in \( P^D \) until customer participation constraint (16) binds. Hence, in equilibrium, naïve customers pay for the premium product
Given that $V'(q^*) > 0$ for $0 < q^* < \frac{1}{2}$, it is clear that in equilibrium naïve customers pay more for product A than alert customers.

The equilibrium cutoff with naïve customers is

$$q_{N}^{*,EQ} = \frac{1}{2} - \frac{\Delta_u V(1/2)}{2 \rho}$$

for $\Delta_u V \left( \frac{1}{2} \right) < \rho$, and

$$q_{N}^{*,EQ} = 0$$

for $\Delta_u V \left( \frac{1}{2} \right) \geq \rho$. 

\textbf{Proposition 2.} Provided that participation constraint (14) is satisfied, the outcome with naïve customers is that the financial institutions uses advice cutoff $q_{N}^{*,EQ}$ in (18) and naïve customers pay $p_{N}^{D,EQ} = \Delta_u V \left( \frac{1}{2} \right)$ for product A. As $p_{N}^{D,EQ} > p_{A}^{D,EQ}$, financial advice is more biased than with alert consumers, and becomes completely uninformative when $p_{N}^{D,EQ} \geq \rho$.

Appendix A gives a proof of Proposition 2. Because naïve consumers erroneously expect honest advice, they are worse off than without advice. Indeed, substituting (17) and (18) into (6) gives

$$\bar{C}^{D,EQ} = u_1 + \Delta_u \left[ 1 - UC(q_{N}^{*,EQ}) \right] - \Delta_u \int_{1/2}^{1} (2q - 1)dG(q) < u_0,$$

since $\left[ 1 - UC(q_{N}^{*,EQ}) \right] - \int_{1/2}^{1} (2q - 1)dG(q) < \frac{1}{2}$. As long as advice remains informative, total welfare still increases with advice, though. Indeed, total surplus in (8) exceeds $u_0$ when the probability of suitable choice is more than 50%, which is the case with informative advice.

4.3 Both alert and naïve customers

Thus far we have analyzed markets with either alert or naïve customers. Suppose now that a fraction $\mu$ of the customers are alert, and $1 - \mu$ customers are naïve, and that the financial institution cannot engage in price discrimination. No price discrimination implies that in $t = 1$ the firm has to set a single direct sales price $P^D$ for all customers. There are two likely alternatives. The first option is to try to sell to all $N$ customers with advice, which is possible at the alert customer price as characterized in Proposition 1. Naïve customers are certainly willing to obtain advice at that price, as they believe that the expected payoff exceeds the payoff from
non-advised sales. The second option is to give advice only to naïve customers, which happens when \( P^D \) is set at the naïve customer price \( P^{D,\text{EQ}}_N \). Given Proposition 2, we know that this second option leads to a higher premium product price. Total profits may be lower, however, because alert customer won't pay \( P^{D,\text{EQ}}_N > P^{D,\text{EQ}}_A \) for \( A \).

**Equilibrium.** Denote per customer profits with the alert and naïve customer price \( \bar{\pi}^D_{P_A} \) and \( \bar{\pi}^D_{P_N} \), respectively. To guarantee firm participation, assume \( \bar{\pi}^D_{P_A} > 0 \), which implies \( \bar{\pi}^D_{P_N} > 0 \). Whether the alert or the naïve customer price maximizes total profits depends on the fractions of alert and naïve customers in the population. Define cutoff \( 0 < \mu^* < 1 \), for which it holds that \( \bar{\pi}^D_{P_A} = (1 - \mu^*) \bar{\pi}^D_{P_N} \). When the fraction of alert customers becomes sufficiently large, defined by \( \mu \geq \mu^* \), the financial institution finds it optimal to sell \( A \) at the alert customer price, provided that expected profits are non-negative of course. In this case the fraction of non-advised sales \( \varepsilon = 0 \), and total profits are, by (2), \( \pi = N \bar{\pi}^D_{P_A} \) (we still fix \( \gamma = 0 \)). On the other hand, when \( \mu < \mu^* \), only naïve customers obtain advice. In this equilibrium, \( \varepsilon = \mu \) and total profits are \( \pi = N(1 - \mu) \bar{\pi}^D_{P_N} \). Figure 1 shows graphically that when the fraction of alert customers \( \mu = \mu^* \), total profits with the alert customer price equal total profits with the naïve customer price. Note that the naïve customer price is also chosen if the alert customer price leads to a negative profit margin whereas the naïve customer price is still profitable.

**Proposition 3.** With both alert and naïve customers, and on condition that direct advice is profitable \( (\bar{\pi}^D_{P_A} > 0) \), there are two possible equilibrium outcomes. If the fraction of alert customers is relatively large, that is, if \( \mu \geq \mu^* \) for a cutoff \( 0 < \mu^* < 1 \), then the equilibrium outcome is as characterized in Proposition 1. When \( \mu < \mu^* \), however, the financial institution sets the premium product price as defined in Proposition 2. In that case only naïve customers will obtain advice.

Interestingly, when a sufficiently large fraction of the population is alert, naïve customers are protected from exploitation and achieve consumer surplus \( u_0 \). In the next section we show that with two distribution channels, naïve customers are not protected by their alert counterparts.
Figure 1. Total profits with alert and naïve customer price

Profits per customer

$\pi^D_{PA}$  $\pi^D_{PN}$

Note: $\pi^D_{PA}$ and $\pi^D_{PN}$ are per customers profits with product $A$ priced at the alert and naïve customer price, respectively.

5. Two sources of financial advice

While Section 4 has looked exclusively at direct sales, this section explores the market outcome when intermediated sales are also allowed for. Recall that the intermediary does not produce financial products, yet advises on product suitability and distributes products to customers. The intermediary can offer product $A$ at price $P^I$, which may differ from direct advised sales price $P^D$. The adviser has the same information on product suitability as the financial institution, and also gets regulatory fine $\rho$ in case of unsuitable advice. Note that when the intermediary gives advice, the financial institution cannot be fined, and vice versa. As before, information is exogenously given and comes at no costs. The customer base is assumed to be heterogeneous, with a fraction $\mu$ alert customers, and a fraction $1 - \mu$ naïve customers. Since this paper is focused on market dynamics when commissions are banned, the adviser is remunerated exclusively through a fee for advice $f \geq 0$.

In 5.1 we explore the baseline model, where the financial institution sets its product prices first, and the other players take these prices as given. By contrast, in 5.2 we assume that the intermediary moves first and gives a take-it-or-leave-it offer to the financial institution.
5.1 Baseline model

*Customer participation.* In \( t = 3 \), customers decide between the three sales channels: non-advised sales, direct advised sales and intermediated sales. Let us focus first on the decision between intermediary and non-advised sales. With intermediary sales, recall that the advice cutoff is \( q^* = \frac{1}{2} \). When customers decide between intermediary advice and no advice, both alert and naïve customers choose the former if

\[
u_t + \Delta_u \int_0^{1/2} (1 - q) dG(q) + \int_{1/2}^1 [\Delta_u q - P'] dG(q) - f \geq u_0,
\]

which can be simplified to participation constraint

\[
P' \leq \Delta_u V \left( \frac{1}{2} \right) - \frac{f}{1 - G(1/2)}.
\] (19)

In \( t = 6 \), customers decide whether to follow the intermediary’s advice or not. The analysis of this decision is similar to the direct advice analyses in the previous section. That is, customers follow the intermediary’s advice to buy product \( A \) if

\[
u_t + \Delta_u \int_{1/2}^1 q \frac{dG(q)}{1 - G(1/2)} - P' \geq u_t + \Delta_u \int_{1/2}^1 (1 - q) \frac{dG(q)}{1 - G(1/2)},
\]

which simplifies to participation constraint

\[
P' \leq \Delta_u V \left( \frac{1}{2} \right).
\] (20)

Comparing (19) and (20), and noting that \( f \geq 0 \), we find that if customers opt for intermediary advice in \( t = 3 \), they follow advice to buy \( A \) in \( t = 6 \). Similarly, it can be shown that customers always follow advice to buy product \( B \) at zero costs (cf. analysis in Section 4). Hence, we conclude that intermediary advice is always followed.

The choice between direct advice and no advice has been analyzed in Section 4. Recall that for alert customers this choice is determined by participation constraint (11); for naïve customers it is determined by (16).

What remains to be investigated is the choice between direct and intermediary advice. Naïve customers believe that the financial institution and the intermediary both use advice
cutoff $q^* = 1/2$. Consequently, their choice between both advisers is solely driven by product prices $P^D$ and $P^I$, and advisory fee $f$. Naïve customers choose direct rather than intermediary advice if

$$P^D \leq P^I + \frac{f}{1 - G(1/2)}. \tag{21}$$

So, if the direct advised sales price of $A$ is sufficiently low compared to the intermediated sales price and the advisory fee, naïve customers prefer direct advice, though the advice quality is certainly lower. Whether naïve customers opt for direct advice depends also on constraint (16). If this constraint is satisfied, naïve customers prefer direct advice to no advice, and find it optimal to follow the advice given.

Alert customers recognize that advice quality may differ between the direct and intermediary channel. They prefer intermediary to direct advice if (derivations are in Appendix A.4)

$$P^I \leq \frac{P^D [1 - G(q^*)]}{1 - G(1/2)} - \frac{f}{1 - G(1/2)} + \Delta_u \int_{q^*}^{1/2} \frac{dG(q)}{1 - G(1/2)} + \Delta_u \int_{q^*}^{1/2} \frac{dG(q)}{1 - G(1/2)}. \tag{22}$$

As alert customers realize that the quality of advice may differ between the two types of advisers, constraint (22) is more complex than the analogous naïve customer constraint (21). Intuitively, when $q^* = 1/2$, the quality of advice is actually the same and, consequently, (22) and (21) are alike, the only difference being the sign of the inequality. For $q^* < 1/2$, the intermediary offers better advice than the financial institution. Since alert customers realize this, they are willing to pay a higher intermediated sales price $P^I$ than naïve customers, for given $P^D$ and $f$. This follows from a comparison of (21) and (22). Naïve customers prefer direct sales when $P^I \geq P^D - \frac{f}{1 - G(1/2)}$, while alert customers prefer intermediary advice for some $P^I \geq P^D - \frac{f}{1 - G(1/2)}$.

All in all, we have derived five customer participation constraints. Constraint (19) applies to both naïve and alert customers; (16) and (21) are applicable only to naïve customers; and (11) and (22) are applicable only to alert customers.

Intermediary and financial institution participation. Although the adviser is unbiased, it may still give unsuitable advice as a result of imperfect information. In case of unsuitable choice, the
adviser is fined by the regulator, just as the financial institution is fined when its advice is followed by unsuitable choice. In view of that, the adviser’s participation constraint is

\[ f \geq \rho UC \left( \frac{1}{2} \right). \quad (23) \]

A necessary condition for the financial institution to engage in intermediated sales is that the resulting profits are non-negative. Since fines are payable by the intermediary, \( P^I \geq 0 \) guarantees firm participation. Note that financial institution participation constraint with direct sales is (14).

Equilibrium. In \( t = 1 \), the financial institution sets prices \( P^D \) and \( P^I \) with the aim to maximize profits \( \pi \) in (2). Recall that of the \( N \) customers, a fraction \( \gamma \) choose intermediated sales, a fraction \( \epsilon \) choose non-advised sales, and all others are advised by the financial institution. Per customer profits \( \pi^I \) and \( \pi^D \) determine to what extent the financial institution wants to steer customers toward direct respectively intermediated sales.

It is convenient to start with an analysis of \( \pi^I \). (4) shows that \( \pi^I \) increases linearly in intermediated sales price \( P^I \). Given participation constraints (19) and (23), the intermediated sales price has upper bound \( P^I = \Delta_u V \left( \frac{1}{2} \right) - \frac{\rho UC(1/2)}{1-G(1/2)}. \) When \( P^I = P^i \), per customer profits for the intermediary are \( \overline{F} = f - \rho UC(1/2) = 0. \) When \( P^I > P^i \), the intermediary leaves the market and the game is reduced to the model with direct sales only, which we analyzed in Section 4.

Substituting \( P^I = P^i \) in (4) yields

\[ \pi^I = \Delta_u \left[ \frac{1}{2} - UC \left( \frac{1}{2} \right) \right] - \rho UC \left( \frac{1}{2} \right). \quad (24) \]

(24) gives maximum profits that can be earned per customer via the intermediary channel.

\( \pi^D \) is increasing in direct sales price \( P^D \). As discussed in 4.3, there are two plausible alternatives for \( P^D \), that is, the alert customer price as characterized in Proposition 1 and the higher naïve customer price as characterized in Proposition 2. Substituting the alert customer price and advice cutoff into (3), per customer profits are

\[ \pi_{PA} = \Delta_u \left[ \frac{1}{2} - UC \left( q^*_A \right) \right] - \rho UC(q^*_A), \quad (25) \]

where \( q^*_A \) is the equilibrium cutoff with alert customers, defined in Proposition 1. Comparing (24) and (25), we observe that \( \pi^I > \pi_{PA} \), since \( q^*_A < \frac{1}{2} \) and \( UC(q^*) \) is minimalized for \( q^* = \frac{1}{2} \).
Accordingly, the financial institution prefers intermediated sales with price $P_I^I$ to direct sales with alert customer price $P_A^{D,EQ}$.

The alternative direct sales price of product $A$ is the higher naïve customer price $P_N^{D,EQ} = \Delta_u V(\frac{1}{2})$. With $P_D = P_N^{D,EQ}$, per customer profits are

$$\bar{\pi}_D = \Delta_u \left[ \frac{1}{2} - UC \left( \frac{1}{2} \right) \right] \Gamma - \rho UC(q_{N^{EQ}}^{*}),$$

(26)

where $\Gamma = [1 - G(q_{N^{EQ}}^{*})]/[1 - G(1/2)] > 1$, and $q_{N^{EQ}}^{*}$ is the equilibrium cutoff with naïve customers as in Proposition 2. From (24) and (26), it is not directly clear how $\bar{\pi}_D$ and $\bar{\pi}_P$ compare. While direct sales have a higher gross profit margin, they also lead to more unsuitable choice and thus to higher regulatory fines. Nonetheless, it can be shown that $\bar{\pi}_D < \bar{\pi}_P$ for any $q_{N^{EQ}}^{*} \in [0, \frac{1}{2})$. See Appendix A for the proof.

Taking into account that $\bar{\pi}_{P} > \bar{\pi}_A > \bar{\pi}_P$, $P_D^{D,EQ} = P_N^{D,EQ} = \Delta_u V(\frac{1}{2})$ as in (17). The equilibrium intermediated sales price of product $A$ is

$$P_I^{l,EQ} = \Delta_u V(\frac{1}{2}) - \frac{\rho UC(1/2)}{1 - G(1/2)}, \quad \text{for} \Delta_u V(\frac{1}{2}) \geq \frac{\rho UC(1/2)}{1 - G(1/2)}.$$ 

(27)

Note that when $\Delta_u V(\frac{1}{2}) < \frac{\rho UC(1/2)}{1 - G(1/2)}$, $\bar{\pi}_I < 0$ and the financial institution does not offer its products via the intermediary ($y = 0$). Conversely, when $\bar{\pi}_I \geq 0$, both direct and intermediary advice are attractive, since this implies $\bar{\pi}_P > 0$. With $P_I^{l,EQ}$ as in (27), the intermediary sets $f^{EQ} = \rho UC(\frac{1}{2})$ in $t = 2$, as this is the maximum fee it can charge to its customers. In this equilibrium, by (16), (19) and (21) naïve customers choose direct advice; by (11), (19) and (22), alert customers opt for intermediary advice. Note that constraint (22) is not binding in equilibrium. $P_I$ cannot be higher than $P_I^{l,EQ}$, however, as alert customers would then prefer no advice to intermediary advice by (19).

**Proposition 4.** With both direct and intermediary advice, and on condition that $\bar{\pi}_I$ in (24) is non-negative, a unique separating equilibrium exists. In this equilibrium, alert customers receive unbiased advice from the intermediary in exchange for fee $f^{EQ} = \rho UC(\frac{1}{2})$ and pay $P_I^{l,EQ}$ for premium product $A$, as characterized in (27). By contrast, naïve customers obtain biased financial advice from the financial institution and pay $P_N^{D,EQ} = \Delta_u V(\frac{1}{2})$ for product $A$. 

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The equilibrium in Proposition 4 is incentive compatible since neither alert nor naïve customers have an incentive to switch distribution channel. All customers have an expected surplus $u_0$, yet naïve customers actual surplus is lower, and they would therefore be better off with intermediary advice. Naïve customers do not choose intermediary advice, however, because they overestimate the quality of direct advice. As a result, overall consumer surplus is below $Nu_0$, irrespective of the fraction of alert customers $\mu$. By contrast, the financial institution is possibly better off with two distribution channels. It earns total profits $\pi = N[(1 - \mu) \bar{\pi}_P^D + \mu\bar{\pi}^I]$, which exceed profits without intermediated sales when $\bar{\pi}^I > 0$. There are two reasons for this. First, two distribution channels enable the financial institution to offer two contracts and (second-degree) price discriminate between alert and naïve customers. Second, with an intermediary, the financial institution is able to extract more surplus from alert customers. The intuition is that when commissions are banned, intermediaries are able to credibly promise sound financial advice, which benefits the financial institution.

How does this equilibrium compare to Inderst and Ottaviani’s (2012) outcome with a heterogeneous customer base? Recall that Inderst and Ottaviani investigate intermediary advice, where the intermediary can be remunerated either indirectly, through a contingent commission, or directly, through a fee for advice. When indirect price discrimination is possible, the authors find a market equilibrium that is identical to Proposition 4 in terms of advice quality, and thus overall welfare. Alert customers receive balanced advice ($q^* = \frac{1}{2}$), whereas advice to naïve customers is tilted towards premium product $A$ ($q^* = q^{*E_Q}$). When price discrimination is impossible though, the outcome of Inderst and Ottaviani’s baseline model depends on the fraction of alert customers (cf. our Proposition 3). When the fraction of alert customers is sufficiently large, all customers receive sound advice. When there are a lot of naïve customers, though, alert customers acquire no advice, whereas naïve customers are exploited ($q^* = q^{*E_Q}_N$).

5.2 Robustness exercise: the intermediary moves first

We conclude this section with a variation of the baseline model. In this variation, the game starts with the intermediary setting its advisory fee $f$ in $t = 1$. The financial institution takes $f$ as given and sets its prices $P^D$ and $P^I$ in $t = 2$. The rest of the game remains unchanged.

Equilibrium. The intermediary sets $f$ as high as possible and never below $\rho UC(\frac{1}{2})$, as that would imply an expected loss. By participation constraint (19) we have that an increase in $f$ decreases the intermediated sales price $P^I$ that intermediary customers are willing to pay. However, the intermediary does not only need participation of the customers but also of the financial institution. When it is profitable to do so, the financial institution may stop intermediated sales.
altogether and sell its products only directly. Choosing between a multi-channel distribution strategy and direct sales only, the financial institution prefers the former when

\[(1 - \mu)\hat{\pi}^D_N + \mu \hat{\pi}^I \geq \hat{\pi}^D_A, \quad (28)\]

with \(\hat{\pi}^D_N, \hat{\pi}^I\) and \(\hat{\pi}^D_A\) as in (26), (4), and (25), respectively.

Recall from Section 4.3 that with a heterogeneous customer base and \(\hat{\pi}^D_A > 0\), there exists a cutoff value \(\mu^*\) for which \((1 - \mu^*)\hat{\pi}^D_N = \hat{\pi}^D_A\). Hence, if the fraction of alert customers is small, i.e. \(\mu \leq \mu^*\), it follows from (28) that the financial institution prefers to have both direct and intermediated sales as long as \(\hat{\pi}^I \geq 0\). Taking this into account, the intermediary sets \(f^{EQ} = \Delta_u \int_{1/2}^{1} (2q - 1)dG(q)\) in \(t = 1\). This leaves zero intermediated sales profits for the financial institution. The intermediary has positive earnings, since \(\hat{\pi}^D_A > 0\) implies \(\hat{\pi}^I > 0\) and thus \(\Delta_u \int_{1/2}^{1} (2q - 1)dG(q) > \rho UC\left(\frac{1}{2}\right)\). Equilibrium prices of premium product \(A\) are \(p^{L,EQ} = 0\) and \(p^{D,EQ} = \Delta_u V\left(\frac{1}{2}\right)\).

When the fraction of alert customers is large, however, intermediated sales profits of the financial institution cannot be pushed to zero by the intermediary. Indeed, with \(\mu > \mu^*\) and \(\hat{\pi}^D_A > 0\), (28) implies that the financial institution will only consider a multi-channel strategy when \(\hat{\pi}^I > 0\). In Appendix A.5 we show that in this equilibrium, \(P^{L,EQ} > 0, \rho UC\left(\frac{1}{2}\right) < f^{EQ} < \Delta_u \int_{1/2}^{1} (2q - 1)dG(q)\), and the direct advised sales price \(p^{D,EQ}_N = \Delta_u V\left(\frac{1}{2}\right)\).

**Proposition 5.** When the intermediary provides a take-it-or-leave-it offer to the financial institution, the source and quality of advice are the same as in the outcome of the baseline model, characterized in Proposition 4. The intermediary product price and advisory fee are different, however, and depend on the fraction of alert customers \(\mu\). On condition that \(\hat{\pi}^D_A > 0\), there exists cutoff \(0 < \mu^* < 1\). When \(\mu \leq \mu^*\), \(P^{L,EQ} = 0\) and \(f^{EQ} = \Delta_u \int_{1/2}^{1} (2q - 1)dG(q)\). By contrast, when \(\mu > \mu^*, P^{L,EQ} > 0\) and \(\rho UC\left(\frac{1}{2}\right) < f^{EQ} < \Delta_u \int_{1/2}^{1} (2q - 1)dG(q)\).

Proposition 5 implies that the main results of the paper are robust to changing the sequence of the first two stages of the game. The distribution of intermediated sales profits does change, however. When the intermediary moves first and the fraction of alert customers is small, all intermediated sales profits are pocketed by the intermediary. By contrast, when there are many alert customers and \(\hat{\pi}^D_A > 0\), the financial institution also earns intermediated sales profits, even though the intermediary moves first. The intuition here is that with many alert customers,
the financial has a credible threat to bypass the intermediary. As a result, the intermediary rationally shares intermediated sales profits with the financial institution.

6. Policy implications

As explained by Inderst and Ottaviani (2012), there is an economic rationale for commission bans when customers do not adequately take into account the incentives behind advice. We have shown in Section 5 that such unawareness of advice incentives actually makes commission bans ineffective. When commissions are banned, financial institutions have an incentive to by-pass intermediaries and transact with naïve customers directly. To correct the potential market failure of biased direct advice, an obvious - though admittedly radical - intervention would be to prohibit direct advice altogether.

A more gradual way to mitigate the risk of advice bias would be to increase the regulatory penalty for unsuitable advice. With commissions banned, our analysis suggests that policy intervention should focus on advice by financial institutions. By (1) we have that the quality of direct advice increases in penalty $\rho$. In the limit, direct advice may become fully informative, yet it is more likely that financial institutions stop providing advice altogether, as the regulatory fines become prohibitively high. In addition, to increase the probability that misconduct is quickly detected regulators could use so-called mystery shoppers. Mystery shoppers act as potential customers and allow regulators to obtain a detailed insight in how financial firms treat their consumers (Financial Services Authority 2006b).

Policy intervention could also focus on customers’ awareness of conflicts of interests inherent in direct financial advice. Specifically, product advice by financial institutions may need to come with a health warning that the advice given is not independent. To be effective, such a warning needs to turn naïve customers into alert customers, which could be assessed empirically. Research in this area could be initiated by the conduct of business supervisors in the countries that are adopting commission bans, i.e. the Australian Securities and Investments Commission, the Netherlands Authority for the Financial Markets, and the new Financial Conduct Authority in the United Kingdom. Note that transparency also has potential disadvantages. For example, Cain, Loewenstein, and Moore (2005) provide evidence that the disclosure of conflicts of interest may act as a moral-license for self-interested behavior.
7. Conclusion

This paper investigates the source and quality of financial advice when financial institutions are prohibited to induce financial advisers through commission payments. Since several large countries have recently adopted laws to ban commission-based remuneration per 2013, our analysis sheds light on the possible future of financial advice in the respective countries. The paper builds on Inderst and Ottaviani (2012), who have developed a theoretical framework to investigate the interaction between customers, a financial adviser and a financial institution. Our extension to the existing model is that apart from the financial adviser also the financial institution can give product suitability advice. Since both types of advisers have the same informational advantage vis-à-vis the customers, they are both in a position to increase the probability of suitable choice and, therewith, to increase total surplus in the market.

Our main finding are as follows. With a ban on commissions, the financial institution finds it optimal to offer its products both directly and via an intermediary. Customers that are alert about the incentives behind advice realize that direct advice by the financial institution is of lower quality than intermediary advice. Accordingly, alert customers have a greater willingness to pay for financial products that are advised by an independent financial adviser. Naïve customers, on the other hand, are under the impression that advice is always balanced. The financial institution can benefit from this naïveté through its product pricing. Specifically, it can set its prices in such a way that naïve customers prefer direct advice to intermediary advice. Consequently, in equilibrium, alert customers obtain balanced advice from the intermediary, whereas naïve customers receive advice directly from the financial institution, which is tilted towards the most profitable product. The market outcome thus depends crucially on customer alertness about the incentives behind advice. When a significant fraction of customers is in fact naïve about advice quality, there may be a case for policy intervention. We discuss policy suggestions to correct potential market failure, including higher regulatory fines for unsuitable advice and disclosure of conflicts of interests.

Future work could enrich our analysis by introducing competition between financial institutions and intermediaries. Inderst and Ottaviani (2012) go into the effect of competition on financial advice. They show that competition does not only lead to lower product prices, it also increases the quality of advice that is given to naïve customers. Our intuition is that competition has the same effect in our model, that is, it will drive prices closer to marginal costs and therewith reduce the incentive to tilt advice to profitable products. Another possible extension of the paper is to endogenize the quality of information, where advisers incur costs to obtain information. We leave this for future research.
Appendix A: Proofs

A.1 Proof of Proposition 1
We build this proof on the result from Section 4.1 that when customers choose direct advice, i.e. when (13) holds, they find it optimal to follow the advice that is given. Accordingly, total profits π are in (2), with \( \bar{\pi}^D \) as in (3). The financial institution sets its price \( P^D \) with the aim to maximize π. Since \( \gamma = 0, \pi = N(1-\varepsilon)\bar{\pi}^D \), Given that Proposition 1 is under the condition that (14) holds, we have that \( \bar{\pi}^D \geq 0 \). Accordingly, the financial institution prefers advised sales to non-advised sales (\( \varepsilon = 0 \)). Now, for interior \( q^* \), the first-order derivative \( \frac{\partial \pi^D}{\partial P^D} = [1 - G(q^*)] + g(q^*) \frac{P^D}{2P} + g(q^*) \left(q^* - \frac{1}{2}\right) = [1 - G(q^*)] \), where we have used (1). For corner solution \( q^* = 0 \), \( \frac{\partial \pi^D}{\partial P^D} = 1 \). Hence, \( \bar{\pi}^D \) is monotonically increasing in \( P^D \) for \( 0 \leq q^* < 1 \). Consequently, in equilibrium, the monopolist finds it optimal to set the premium product price equal to alert customers’ maximum willingness to pay with advice, by (11), that is \( P^D_{A,EQ} = \Delta_u V(q^*_{A,EQ}) \).

Without further specification of function \( V(q^*) \), we can obtain ranges for \( P^D_{A,EQ} \) and consequently \( q^*_{A,EQ} \). First note that \( P^D_{A,EQ} < \rho \) and \( q^*_{A,EQ} > 0 \), since a price \( P^D \geq \rho > 0 \) leads by (1) to \( q^* = 0 \) and zero willingness to pay, i.e. \( \Delta_u V(0) = 0 \). Second note that \( P^D_{A,EQ} > 0 \) and \( q^*_{A,EQ} < \frac{1}{2} \), since \( P^D = 0 \) is not a possible equilibrium outcome, as this implies \( q^* = \frac{1}{2} \) and \( \Delta_u V \left( \frac{1}{2} \right) > 0 \). Hence \( 0 < P^D_{A,EQ} < \rho \) and \( 0 < q^*_{A,EQ} < \frac{1}{2} \).

For interior \( q^*_{A,EQ} \), we have by (1) that \( P^D_{A,EQ} = \rho \left(1 - 2q^*_{A,EQ}\right) \), or \( \Delta_u V \left(q^*_{A,EQ}\right) = \rho \left(1 - 2q^*_{A,EQ}\right) \) has a (unique) solution. Given the above, it is sufficient to show that \( V'(q^*) > 0 \) for every \( q^* \in \left(0, \frac{1}{2}\right) \). Differentiating under the integral sign, we have \( V'(q^*) = \frac{(1-2q^*)g(q^*)}{1-G(q^*)} + \int_{q^*}^{1} \frac{(2q-1)[g(q)]^2}{1-G(q^*)^2} dq \). As \( g(q^*) > 0 \) and \( \int_{q^*}^{1} \frac{(2q-1)[g(q)]^2}{1-G(q^*)^2} dq > 0 \) for \( q^* \in \left(0, \frac{1}{2}\right) \), \( V'(q^*) > 0 \) for every \( q^* \in \left(0, \frac{1}{2}\right) \). Q.E.D.

A.2 Proof of Proposition 2
It is shown in Section 4.2 that as long as customer participation (16) is satisfied, naïve customers prefer advised sales to non-advised sales, and also follow the advice given in \( t = 6 \). Consequently, profits are \( \pi = N(1-\varepsilon)\bar{\pi}^D \), with \( \bar{\pi}^D \) as in (3). Under the condition that firm participation constraint (14) holds, the financial institution also prefers advised sales to non-advised sales and \( \pi = N\bar{\pi}^D \) in equilibrium. From A.1 we have that \( \bar{\pi}^D \) is strictly increasing in price \( P^D \). Hence, the equilibrium price of product A is equal to naïve customers’ maximum
willingness to pay, i.e. \( P_{N}^{D,EQ} = \Delta_{u}V\left(\frac{1}{2}\right) \). Since \( V'(q^*) > 0 \) for \( q^* \in (0, \frac{1}{2}) \), we conclude that 
\[ P_{N}^{D,EQ} > P_{A}^{D,EQ}, \] 
as \( q_{A}^{*} \) \( < \frac{1}{2} \).

Now, for \( P_{N}^{D,EQ} < \rho \), the equilibrium cutoff is, by (1), 
\[ q_{N}^{*,EQ} = \frac{1}{2} \left( 1 - \frac{P_{N}^{D,EQ}}{2\rho} \right) > 0; \] when \( P_{N}^{D,EQ} \geq \rho \), however, \( q^{*} = 0 \) and product \( A \) is always advised. Q.E.D.

A.3 Proof of Proposition 3
With heterogeneous customers, the equilibrium premium product price is either as described in Proposition 1 or as described in Proposition 2. There are \( \mu \) alert customers and \( 1 - \mu \) naïve customers. Total profits with the naïve customer price are \( N(1 - \mu)\pi_{P}^{D,A} \). At the alert customer price, total profits are \( N\pi_{P}^{D,A} \). Recall that the naïve customer price is higher than the alert customer price and that \( \pi^{D} \) is increasing in price \( P^{D} \), thus \( \pi_{P}^{D} > \pi_{P}^{D,A} \). Hence, on condition that \( \pi_{P}^{D} > 0 \), there exists a cutoff \( 0 < \mu^{*} < 1 \) for which \( N(1 - \mu^{*})\pi_{P}^{D} = N\pi_{P}^{D,A} \). When \( \mu \geq \mu^{*} \) all customers pay the alert customer price. If, however, \( \mu < \mu^{*} \), total profits from selling only to naïve customers, i.e. \( N(1 - \mu)\pi_{P}^{D,A} \), are larger than total profits from selling to all customers at the alert customer price, i.e. \( N\pi_{P}^{D,A} \). Q.E.D.

A.4 Proof of Proposition 4
We build this proof on the result in the text that when customers opt for advice, they follow the advice given. This holds both for direct and intermediary advice. When advice is followed, the financial institution has profits 
\[ \pi = N[(1 - \gamma - \varepsilon)\pi^{D} + \gamma\pi^{I}], \] 
with \( \pi^{D} \) and \( \pi^{I} \) in (3) and (4), respectively. The financial institution sets premium product prices \( P^{D} \) and \( P^{I} \) to maximize \( \pi \). Since Proposition 4 is on condition that providing advice is profitable, that is, (14) and (23) are satisfied and \( P^{I} \geq 0 \), profit maximization excludes non-advised sales in equilibrium (\( \varepsilon = 0 \)).

The financial institution sets \( P^{I} \) as a take-it-or-leave-it offer to the intermediary in \( t = 1 \). Provided that a non-negative intermediary sales price of product \( A \) is possible, \( P^{I} \) will be set at a level that leaves the intermediary with zero profits, or, \( \bar{F} = 0 \). By (5) this implies \( f = \rho UC\left(\frac{1}{2}\right) \).

Combining \( f = \rho UC\left(\frac{1}{2}\right) \) and (19) we have 
\[ P^{I} = \Delta_{u}V\left(\frac{1}{2}\right) - \frac{\rho UC\left(1/2\right)}{[1 - G(1/2)]}. \] 
Substituting \( P^{I} \) for \( P^{I} \) in (4), we derive 
\[ \bar{\pi}^{I} = \Delta_{u}\int_{1/2}^{1/2} (2q - 1)dG(q) - \rho UC\left(\frac{1}{2}\right). \] 
Noting that 
\[ UC\left(\frac{1}{2}\right) = \int_{0}^{1/2} qdG(q) + \int_{1/2}^{1} (1 - q)dG(q) = \frac{1}{2} - \int_{1/2}^{1} (2q - 1)dG(q), \] 
we obtain 
\[ \bar{\pi}^{I} = \Delta_{u}\left[\frac{1}{2} - UC\left(\frac{1}{2}\right)\right] - \rho UC\left(\frac{1}{2}\right). \]

When deciding between direct and intermediated sales, the institution compares per customer profits \( \bar{\pi}^{D} \) and \( \bar{\pi}^{I} \). From A.3 we have that \( \bar{\pi}^{D} \) is either \( \pi_{P}^{D,N} \) or \( \pi_{P}^{D,A} \). Substituting \( P_{A}^{D,EQ} \) and \( q_{A}^{*,EQ} \) from A.1 into (3) gives 
\[ \bar{\pi}_{P}^{D,A} = \Delta_{u}\int_{q_{A}^{*,EQ}}^{1} (2q - 1)dG(q) - \rho UC\left(\frac{1}{2}\right). \]
Accordingly, we know from Proposition 2 that naïve customers prefer direct advice to no advice.

Define the function \( h(a) = \Delta_u V(\frac{1}{2}) [1 - G(q^*_{N, EQ})] - \rho UC(q^*_{N, EQ}) \). Comparing \( \tilde{\pi}_N^D \) to \( \tilde{\pi}_N^I \), the financial institution prefers to sell to naïve customers directly if \( \Delta_u V(\frac{1}{2}) [1 - G(\frac{1}{2})] - \rho UC(\frac{1}{2}) < \Delta_u V(\frac{1}{2}) [1 - G(q^*_{N, EQ})] - \rho UC(q^*_{N, EQ}) \) with \( 0 \leq q^*_{N, EQ} < \frac{1}{2} \). Define the function \( h(a) = \Delta_u V(\frac{1}{2}) [1 - G(a)] - \rho UC(a) \). Differentiating with respect to \( a \) gives, by Leibniz's rule, \( h'(a) = g(a) \rho (2a - 1) - \Delta_u V(\frac{1}{2}) \). Since \( g(a) > 0, \rho > 0 \) and \( \Delta_u V(\frac{1}{2}) > 0 \), we know that \( h'(a) < 0 \) for \( a \in [0, \frac{1}{2}] \). Hence, \( \tilde{\pi}_N^I < \tilde{\pi}_N^D \) for \( q^*_{N, EQ} \in [0, \frac{1}{2}] \).

As \( \tilde{\pi}_N^D > \tilde{\pi}_N^I \), the financial institution prefers to set \( P^D = P^D_{N, EQ} \). When \( A \) is priced accordingly, we know from Proposition 2 that naïve customers prefer direct advice to no advice. They prefer direct advice to intermediary advice when \( \Delta_u \int_0^{1/2} (1 - q) dG(q) + \int_{1/2}^1 [\Delta_u q - P^D] dG(q) \geq \Delta_u \int_0^{1/2} (1 - q) dG(q) + \int_{1/2}^1 [\Delta_u q - P^I] dG(q) - f \), which boils down to constraint (21). With \( P^I = P^I \) and \( f = \rho UC(\frac{1}{2}) \), (21) is satisfied for \( P^D = P^D_{N, EQ} \).

As \( P^I \) is derived from (19) and \( f = \rho UC(\frac{1}{2}) \), alert customers prefer intermediary advice to no advice with these prices. They prefer intermediary advice to direct advice when \( \Delta_u \int_0^{1/2} (1 - q) dG(q) + \int_{1/2}^1 [\Delta_u q - P^I] dG(q) - f \geq \Delta_u \int_0^{\alpha^*} (1 - q) dG(q) + \int_{\alpha^*}^1 [\Delta_u q - P^D] dG(q) \). Now this can be simplified by noting that with \( q^* < \frac{1}{2} \), we have that \( \int_0^{1/2} (1 - q) dG(q) - \int_0^{\alpha^*} (1 - q) dG(q) \) and \( \int_{1/2}^1 q dG(q) - \int_{\alpha^*}^1 q dG(q) = - \int_{\alpha^*}^{1/2} q dG(q) \). Using this and rearranging terms gives participation constraint (22). With \( P^I = P^I \), \( P^D = P^D_{N, EQ} \), and \( f = \rho UC(\frac{1}{2}) \), (22) holds, although not with equality.

All in all, on condition that both direct and intermediary advice are profitable, which holds when \( \Delta_u V(\frac{1}{2}) \geq \frac{\rho UC(1/2)}{1 - G(1/2)} \), in equilibrium \( P^D_{N, EQ} = P^D_{N, EQ} = \Delta_u V(\frac{1}{2}) - \frac{\rho UC(1/2)}{1 - G(1/2)} \) and \( f^{EQ} = \rho UC(\frac{1}{2}) \). With these prices, alert customers opt for intermediary advice, and naïve customers choose direct advice. Q.E.D.

A.5 Proof of Proposition 5

We proof this Proposition through backward induction and start in period \( t = 2 \). In this period, the financial institution observes \( f \) and uses this information when it sets prices \( P^D \) and \( P^I \) to maximize profits \( \pi \). From Proposition 3 we have that the financial institution has two main alternatives for \( P^D \). First, it can set \( P^D \) equal to the alert customer price as characterized in Proposition 1, in which case it can directly advise all \( N \) customers. Total profits are then
\( \pi = N \hat{p}_{PA}^{D} \), where \( \hat{p}_{PA}^{D} \) as characterized in (25). Second, it can set \( P^{D} \) equal to the higher naïve customer price as in Proposition 2, and provide direct advice only to the \( N(1 - \mu) \) naïve customers. In this case, the financial institution may transact with alert customers via the intermediary. Profit maximization and customer participation constraint (19) imply that the financial institution sets \( P^{I} = \Delta u V(\hat{q}) - \frac{f}{1 - g(1/2)} \), of course provided that \( \Delta u V(\hat{q}) \geq \frac{f}{1 - g(1/2)} \).

With both direct and intermediary advice, total profits are \( \pi = N[(1 - \mu)\hat{p}_{PN}^{D} + \mu \hat{p}^{I}] \), where \( \hat{p}_{PN}^{D} \) and \( \hat{p}^{I} \) in (26) and (4), respectively.

The financial institution prefers to have both direct and intermediated sales to only direct sales when \( (1 - \mu)\hat{p}_{PN}^{D} + \mu \hat{p}^{I} \geq \hat{p}_{PA}^{D} \). Provided that \( \hat{p}_{PA}^{D} > 0 \), there exists a cutoff \( 0 < \mu^{*} < 1 \) for which \( (1 - \mu^{*})\hat{p}_{PN}^{D} = \hat{p}_{PA}^{D} \). When \( \mu \leq \mu^{*} \), the financial institution prefers to have both direct and intermediated sales, even when \( \hat{p}^{I} = 0 \). However, when the fraction of alert customers is large, i.e. \( \mu > \mu^{*} \), the financial institution opts for direct sales at the alert customer price when \( \hat{p}^{I} = 0 \).

In \( t = 1 \), the intermediary sets fee \( f \) to maximize profits \( F = NYF \), where \( \gamma \) is the fraction of intermediary customers and \( F \) are per customer profits. (5) shows that \( F \) is monotonically increasing in advisory fee \( f \). So, the intermediary sets \( f \) as high as possible, that is, without inducing the financial institution to bypass the intermediary altogether (\( \gamma = 0 \)). When \( \mu \leq \mu^{*} \), \( f \) can be raised until \( \hat{p}^{I} = 0 \). With a binding customer participation constraint (19), the equilibrium advisory fee is then \( f^{EQ} = \Delta u \int_{1/2}^{1} (2q - 1) dG(q) \), intermediary product price \( P^{I,EQ} = 0 \), and direct product price \( P^{D} = P_{N}^{D,EQ} \).

Conversely, when \( \mu > \mu^{*} \) and \( \hat{p}_{PA}^{D} > 0 \), \( \hat{p}^{I} > 0 \) in equilibrium. This implies that with many alert customers, the equilibrium advisory fee is \( f^{EQ} < \Delta u \int_{1/2}^{1} (2q - 1) dG(q) \) and \( P^{I,EQ} > 0 \). With \( f = \rho UC(\hat{q}) \), the financial institution earns the maximal amount per intermediary customer, namely \( \hat{p}^{I} \). The proof of Proposition 4 shows that \( \hat{p}^{I} > \hat{p}_{PA}^{D} \). Since the institution prefers to have an intermediary channel when \( \hat{p}^{I} \geq \hat{p}_{PA}^{D} \), we have \( f^{EQ} > \rho UC(\hat{q}) \).

Note that, irrespective of the fraction of alert customers \( \mu \), the intermediary sets \( f \) in such a way that the financial institution prefers to transact with alert customers via the intermediary and with naïve customers directly, using direct advice cutoff \( q_{N}^{*,EQ} \). Hence, in terms of advice quality and source of advice, the outcome of this variation is identical to the outcome of the baseline model as characterized in Proposition 4. Q.E.D.
Appendix B: Illustration of direct advice model

The results in the paper are general, that is, they hold for any posterior belief distribution $G(q)$ with density $g(q) > 0$ over $q \in [0,1]$. With the aim of illustrating the model without intermediary involvement ($\gamma = 0$), we sacrifice some generality here and postulate a specific posterior belief distribution. That is, we assume that the posterior is uniformly distributed over $[0,1]$, i.e. $G(q) = q$. This implies that the financial institution has information about product suitability, yet this information is imperfect. Indeed, with perfect information, the posterior is either $q = 0$ ($B$ is unquestionably the right product) or $q = 1$ ($A$ is unquestionably the right product), both occurring with 50% probability.

With a uniformly distributed posterior belief and alert customers, $A$’s equilibrium price equals $p_{A}^{D,EQ} = \Delta_u q_{A}^{*,EQ}$. Combining this information with (1) yields possible equilibrium values when all customers are alert:

$$p_{A}^{D,EQ} = \frac{\Delta_u \rho}{\Delta_u + 2\rho}, \quad \text{and}$$

$$q_{A}^{*,EQ} = \frac{\rho}{\Delta_u + 2\rho}.
$$

These price and cutoff values represent market equilibriums if the firm participation constraint holds. Substituting $q_{A}^{*,EQ}$ in constraint (14), we obtain that firm profits are non-negative for $\Delta_u \geq \rho \sqrt{2}$. When the firm participation constraint does not hold, the financial institution does not provide advice and might even withdraw from the market. Customers then buy either randomly product $A$ or $B$, or, when the financial institution leaves the market, always $B$. In both cases consumer surplus and total surplus equal $u_0 = u_t + \frac{1}{2} \Delta_u$.

Using $G(q) = q$ in (17) and (18) gives possible equilibrium values with naïve customers:

$$p_{A}^{D,EQ} = \frac{\Delta_u}{2}, \quad \text{and}$$

$$q_{A}^{*,EQ} = \frac{1}{2} - \frac{\Delta_u}{4\rho} \quad \text{for} \ \Delta_u < 2\rho, \quad \text{and} \quad q_{A}^{*,EQ} = 0 \quad \text{for} \ \Delta_u \geq 2\rho.
$$

The financial institution finds it valuable to provide direct advice to naïve customers if $\Delta_u \geq \rho (2\sqrt{2} - 2)$. Hence, it is more likely to offer advice with naïve customers than with alert customers, as it is profitable to give advice to the former type of customers at lower values of $\Delta_u$ (for given $\rho$). When the constraint is not fulfilled, however, naïve customers either randomize between $A$ and $B$, or always buy $B$. 

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Figure A1 shows total surplus and consumer surplus for different values of $\Delta_u$. For expositional purposes, we have set $\rho = 1$, $u_i = 0$, and customer mass $N = 1$. Note that when $\Delta_u$ increases, match suitability becomes more important to customers, and therewith to the financial institution, as it can charge a higher price for the premium product. The top panel shows that total surplus is monotonically increasing in $\Delta_u$, both with alert and naïve customers. The kinks in the graphs can be traced back to the firm participation constraint. When it is not profitable to provide advice, the monopolist switches to execution only or leaves the market altogether. In both cases total and consumer surplus are $\frac{1}{2} \Delta_u$, and producer surplus is zero.

**Figure A1. Total and consumer surplus with imperfect information**

![Graph showing total and consumer surplus with imperfect information](image)

**Notes:** The following assumptions have been made: posterior belief $q$ follows a uniform distribution, i.e. $G(q) = q$; penalty $\rho = 1$; utility in case of mismatch $u_i = 0$; and customer mass $N = 1$. With $N = 1$, total surplus with direct advice is given by (8), and consumer surplus is given by (6).
The lower panel shows that customers are not necessarily better off when $\Delta_u$ increases. Alert customers benefit from higher $\Delta_u$, even though advice quality deteriorates. This is because their alertness prevents the financial institution from raising product $A$'s price too much. Naïve customers, however, are strictly worse off with advice. In fact, when $\Delta_u \geq 2$, advice becomes completely uninformative and all consumer surplus is extracted by the financial institution.

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