Abstract: As sellers increasingly turn to multi-channel retailing, the opportunity to implement different pricing policies has grown. With the advent of the internet, many traditionally bargained products such as automobiles, jewelry, watches, appliances and furniture are now being offered online at a fixed predetermined price. We explore the strategy of simultaneously offering two pricing formats (fixed and bargained) via two different channels (online and brick and mortar) and find that in a market where there are two types of consumers—those with a high cost of haggling and others with a lower cost—a dual-pricing strategy is optimal only when there are enough high haggling-cost consumers, but not too many, and when the haggling costs between the two types of consumers are sufficiently different. We also find that it is optimal for the seller to specify a higher-than-cost minimum acceptable price as the price floor of bargaining. By doing so, the seller increases the bargained price by complementing the salesperson's bargaining ability, and also softens the internal competition between the two channels. Finally, we find that, surprisingly, the dual-pricing strategy may serve fewer customers while still being more profitable than a single price structure. The implications for consumer surplus are also explored.
THE EFFECTS OF A “NO-HAGGLE” CHANNEL ON MARKETING STRATEGIES

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Abstract

As sellers increasingly turn to multi-channel retailing, the opportunity to implement different pricing policies has grown. With the advent of the internet, many traditionally bargained products such as automobiles, jewelry, watches, appliances and furniture are now being offered online at a fixed pre-determined price. We explore the strategy of simultaneously offering two pricing formats (fixed and bargained) via two different channels (online and brick and mortar) and find that in a market where there are two types of consumers—those with a high cost of haggling and others with a lower cost—a dual-pricing strategy is optimal only when there are enough high haggling-cost consumers, but not too many, and when the haggling costs between the two types of consumers are sufficiently different. We also find that it is optimal for the seller to specify a higher-than-cost minimum acceptable price as the price floor of bargaining. By doing so, the seller increases the bargained price by complementing the salesperson’s bargaining ability, and also softens the internal competition between the two channels. Finally, we find that, surprisingly, the dual-pricing strategy may serve fewer customers while still being more profitable than a single price structure. The implications for consumer surplus are also explored.

Keywords: channel relationships, pricing, bargaining
JEL classification: M31, L11
1. Introduction

In many markets, bargaining is the norm. In the automobile market, consumers only infrequently pay the sticker price for a car. For products such as electronics, jewelry and furniture, while bargaining is not as overt as in the car market, consumers still expect to be able to haggle with salespeople, either directly on the sales price of the product or on service-related costs: chain retailers such as Best Buy and Sleep Country routinely bargain with in-store customers by offering them in-store discounts as well as additional services such as free delivery and extended warranties.

With the advent of the internet and the growing popularity of online buying, however, many manufacturers and retailers are now offering their products at fixed prices either through their own websites or third party sites, ostensibly addressing some consumers’ dissatisfaction with bargaining and time spent visiting the physical store (Business Week 2007). In the automobile market, third-party websites such as www.CarsDirect.com, www.Autobytel.com and the Canadian website www.unhaggle.com allow consumers to obtain price quotes (typically provided by several competing dealers) for the car of their choice. Consumers simply review the price and, if acceptable, the car is shipped to them directly. Best Buy and other large retailers continue to allow bargaining on the shop floor even though the prices on their websites are fixed.1 High end stores, such as Cartier and Zales for jewelry and Ethan Allen for furniture, have recently introduced online shopping that, like the online auto-buying websites, allow consumers to avoid haggling and visiting the physical store. In some cultures, such as in Asia, where haggling is traditional even for small-ticket items including clothing, food and home appliances, the growing use of the internet has led to many retailers launching their own web-stores or

1 According to www.slybaldguys.com, “…managers (of Best Buy) have goals that their teams have to meet and managers that manage the slower times have a harder time of meeting these goals, thus they are more willing to negotiate.”
joining online aggregators such as Taobao (China’s leader in e-commerce), where typically prices are fixed and cannot be bargained over.

Despite the growing opportunity for sellers to use multi-channel settings to simultaneously implement different pricing policies, there is significant variation across and within industries in the extent to which this strategy has been adopted, for which the extant literature does not provide a satisfactory explanation. There have been numerous studies examining a seller’s choice between a fixed-price format and a bargaining format (e.g., Riley and Zeckhauser 1983, Wang 1995, Arnold and Lippman 1998), all of which focus on a seller’s choice of one pricing format over another and do not consider the possibility that the seller may want to offer both simultaneously. In all of these studies, in choosing a fixed, no-bargain price, a seller must weigh the cost of giving up the ability to discriminate through bargaining in favor of the higher prices it is able to charge consumers who can no longer haggle. In these studies, offering a fixed price is an equilibrium strategy under such conditions as the seller being able to make a credible commitment to a fixed price strategy (Riley and Zeckhauser 1983), or the buyers’ bargaining abilities being, on average, sufficiently high (Arnold and Lippman 1998), or the operating cost of implementing a bargaining strategy being too high (Wang 1995). While these findings give us some insights into the benefits of fixed pricing over bargaining, this is different from a situation where consumers have the option to choose between the two different pricing formats. As a result, we do not have a clear understanding of why and when a strategy of simultaneously offering bargained and fixed prices is optimal.

Our objective is therefore to answer the following questions. When is it optimal for a seller to bargain, offer a fixed price, or to use a mix of the two via two different channels and given the optimal choice, what prices should the seller set in each channel? To answer these questions, we
develop a model where we diverge from the existing literature to allow both pricing formats (bargained and fixed prices) to be offered simultaneously via a dual distribution system so that consumers can self-select into a channel that maximizes their utility. We model the interaction of three parties: (1) a seller that can sell via bargaining in a brick and mortar store, or at a fixed-price online, or both, (2) a salesperson who bargains over price in the physical, brick and mortar channel on behalf of the seller, and (3) the consumer who incurs a “haggling cost” if she decides to bargain. Thus, we consider three potential channel structures: the conventional bargaining channel that allows for face-to-face haggling with the consumer (Fig. 1(a)), a “dual channel” that offers consumers a choice between a fixed price and a bargained one (Fig. 1(b)), and a fixed-price-only channel (Fig. 1(c)).

One distinct feature of our model is that it allows the salesperson’s commission to be based on the difference between the sales price and a seller determined “minimum acceptable price”. This is in contrast to the existing literature (Basu et al. 1985, Misra et al. 2005) where the commission is based on the difference between the sales price and the marginal cost of the product. Thus, rather than imposing the constraint that the marginal cost of the product represent the lowest price the seller is willing to accept, we treat the bottom line of bargaining as a strategic variable that may be equal to or higher than marginal cost. This flexibility that the seller now has in setting the lowest bargaining point for the salesperson serves two purposes: first, it raises the salesperson’s threat point and allows the sales representative to commit to a higher

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2 Empirical evidence of a minimum acceptable price can be found in the automobile industry, where the invoice price for vehicles effectively plays the role of a minimum acceptable price because consumers typically observe a vehicle’s invoice price through websites such as www.edmunds.com, www.autobytel.com and the Kelly Blue Book, and they view this as the dealer’s true cost. In reality, the invoice price is different from the actual cost the dealer incurs. This is because of hidden incentives offered to the dealer by the manufacturer that are not reflected in the invoice price. This includes incentives such as special allowances, dealer cash, dealer holdback and discounts, all of which the dealer may choose not to pass on to the consumer (Besanko et al. 2005).
price during bargaining (Cai and Cont 2004, Gatehouse 2007), and second, it controls the cost information on which the bargaining is based and helps the seller reach a more favorable bargaining outcome (Wilken et al. 2010).

Our model yields several interesting findings. First, a dual channel is optimal if there are (i) two types of consumers in the market—those with a high cost of haggling and those with a lower cost— and (ii) a high enough proportion of high haggling cost consumers whose cost of haggling is sufficiently different from the low haggling cost customers. Second, we find that it is optimal for the seller to specify a higher-than-cost minimum acceptable price above which it pays the salesperson a commission. While a higher price floor means that the salesperson fails to reach agreements with more buyers (e.g., those with valuations above marginal cost but below minimum acceptable price), the seller still finds it optimal to do so. The lower the salesperson’s bargaining ability, the greater the seller’s incentive to set a higher minimum acceptable price. The minimum acceptable price also serves to soften the internal competition between the two channels. Third, surprisingly, under certain conditions a dual-channel seller may serve fewer customers while still making a higher profit than under a single-channel structure, i.e., either a bargaining-only or fixed-price-only channel. This is because the minimum acceptable price set in a dual channel is higher, allowing the seller to charge a higher fixed price, which in turn helps the salesperson achieve a higher price in the bargaining channel. Finally, we find that no one channel structure is ideal for every customer: the bargaining-only channel generates the greatest surplus for low haggling-cost and low-valuation consumers, while the fixed-price-only channel generates the greatest surplus for high haggling-cost consumers. Overall, the fixed-price-only channel generates the highest surplus, the bargaining-only channel the lowest, while the dual channel stands between the two.
The contribution of our study lies in two domains. First, we contribute to the channels literature by identifying the conditions under which we would observe a dual channel structure in a market where bargaining is the norm. This is distinct from the existing dual-distribution literature where the addition of a channel does not involve implementing a different pricing format from the original channel (e.g., Moriarty and Moran 1990, Chiang et al. 2003, Kumar and Ruan 2006).

A second contribution of our research is to the pricing and bargaining literature, where we explore a means by which the seller can limit the freedom of the salesperson in order to influence the outcome of the bargaining process and consequently soften competition between the two channels. In this, our model is similar to that of Thanassoulis and Gill (2010) who explore how limiting the sales person’s ability to offer discounts to matching a rival’s posted price can soften competition between sellers leading to higher prices. Instead of price matching, however, our model uses a different mechanism that is internal to the seller, namely the imposition of a price floor, to manipulate the outcome of the bargaining between the consumer and the salesperson.

Finally, it is important to note that the role that the salesperson plays in our model is that of a price delegate in that he simply performs the bargaining on behalf of the seller. It is necessary to have the salesperson in our model for the following reason: the salesperson acts as a commitment device – by appropriately designing the delegation contract (i.e., specifying the minimum acceptable price), the seller commits his delegate (the salesperson) to tougher negotiations with the buyer. Thus, our study is also related to the price delegation literature, which examines delegation contracts ranging from decisions to give full pricing authority, limited pricing authority (i.e., pricing latitude was limited to pre-specified ranges), or no pricing authority (i.e., salesperson is not allowed to deviate from list prices). While most of the studies are concerned
with designing delegation contracts that influence the amount of effort the delegate or salesperson makes (Lal 1986, Joseph 2001), our focus is on understanding the role that the minimum acceptable price plays in influencing the final bargaining outcome in a dual channel context. In order to do this and to make the analysis tractable we make two simplifying assumptions. First, we assume that the salesperson is risk neutral and second, we assume that the seller has complete information about the salesperson’s capabilities and effort level so that moral hazard and adverse selection problems are abstracted away from. These assumptions allow us to focus on the issue of alternative pricing strategies and the role of the new instrument, namely the minimum acceptable price, in a multi-channel context. We discuss the limitations of making these assumptions in section 4.

The rest of the paper is organized as follows. In section 2, we develop a model of dual channels for a monopolist seller. This is followed by analyses of the model in section 3. The overall conclusion of our study and directions for future research are outlined in section 4.

2. A Model of Dual Channels

In this section, we discuss the basic setup of a dual-channel model as shown in Fig. 1(b). Due to space limitations, we omit the discussion of the bargaining-only and fixed-price-only channels, as they can be easily derived from the dual-channel model. For clarity, Table 1 provides a list of the notations that we use in the model.

-[Insert Table 1 here]-
2.1. Consumers

Let $V$ be consumers’ valuation of a product (e.g., electronics, car, furniture), which we assume follows a uniform distribution, $U(0,1)$. Consumers can either buy the product at a fixed price online, $p^f$, or they can bargain with the salesperson (in the physical store) to reach a price, $p^b$, and by doing so, incur a haggling cost, $hc$, that is incurred from the time and effort spent in (and the inherent aversion to) negotiation, as well as the time spent visiting the physical store. The notion of a haggling cost has been reported in the press (Business Week 2007) and considered in several theoretical studies of bargaining (Desai and Purohit 2004, Terwiesch et al. 2005, Gill and Thanassoulis 2009). Surveys of automobile buyers and buyers of other consumer products indicate that as many as two thirds of them have a strong aversion to the negotiation process, not only because of the time and effort required, but also because of a fear of being taken advantage of by the salesperson. For simplicity, we assume that $\beta$ proportion of consumers have a high cost of haggling, $hc_h$, while the remaining $1-\beta$ consumers incur a lower cost, $hc_l$.

We assume that consumers make decisions using the following steps: first, they obtain the fixed price, $p^f$, from the seller’s website or a third-party website. Then, based on $p^f$ and other information, the consumer estimates the price she expects to pay if she bargains with the salesperson. If buying the product through either channel does not generate sufficiently high utility, the consumer opts for an outside option, $U_c \geq 0$. The outside option can be thought of as the consumer’s status quo, i.e., not buying a new product. Once the consumer has determined $p^f$ and $p^b$, she computes her utility from the three options and chooses the one that maximizes her utility. We define the consumer’s utility as:
Note that the presence of the outside option, $U_c$, allows us to focus on a single brand while still ensuring reasonable pricing behavior by the seller. Because our research focuses on the vertical relationship among the seller, salesperson and consumer, this simplification seems reasonable.

2.2. The Salesperson

Consumers who buy from the bargaining channel bargain over the price with a salesperson employed by the seller. As discussed earlier, the salesperson's role is that of a delegate who can credibly commit to a mutually agreed price. Since our objective is to understand how the seller can best design a contract that can influence the final bargaining price, we abstract away from issues such as moral hazard and adverse selection by assuming the salesperson to be risk neutral and that the seller has full information. This assumption also maintains analytical tractability in our multichannel pricing strategy setting. The salesperson receives a commission from the seller (Srinivasan 1981), which we assume follows a linear form: 

$$
\pi^s = B \left[ \beta \int_{V \in F_1} (p^b(V, hc_h) - M) dV + (1 - \beta) \int_{V \in F_2} (p^b(V, hc_i) - M) dV \right].
$$

The commission rate is denoted by $B$, and the minimum acceptable price is denoted by $M$. We allow the seller to specify an $M \geq C$ instead of restricting $M = C$. We also assume that consumers have information about $M$ but not about $C$. As equation (5) below shows, the

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3 We restrict our attention to a commission-only plan. A more general compensation plan contains a fixed salary and a commission (e.g., Basu et al. 1985). Interestingly, compensation schemes in the automobile industry tend to be heavily dependent on commissions, the salary component being very small (Compensation and Benefits Review, 2004).
bargaining price, \( p^b \), turns out to be a function of both consumers’ valuation and haggling cost. \( F_{v_1} \) (\( F_{v_2} \)) are the set of valuations of high haggling-cost consumers (low haggling-cost consumers) who buy from the bargaining channel. As Appendix I shows, \( F_{v_1} = \emptyset \) and \( F_{v_2} = [hc_i + M + U_c, 1] \), that is, only some low haggling-cost consumers buy from the bargaining channel under a dual-channel and none of the high haggling-cost consumers do so. \( \beta \) is the proportion of high haggling-cost consumers. Let \( U_s \) be the salesperson’s reservation utility that he can obtain from alternative employment. The salesperson receives a commission if and only if there is a sale. Thus, for the salesperson to work, we require that \( \pi^s \geq U_s \).

2.3. Determination of the Bargaining Price

Next we outline the way in which the bargaining price, \( p^b \), is determined. We follow the Nash axiomatic approach (Nash 1950, Roth 1979), a bargaining mechanism by which each party receives its reservation utility while any remaining surplus is split depending on the relative bargaining power of the two parties. Thus, the party with either the higher bargaining power or a more appealing outside option, i.e., reservation utility, is able to extract a larger proportion of the total surplus. Besides being widely used by previous researchers (Dukes and Gal-Or 2003, Desai and Purohit 2004, Guo and Iyer 2013) and being a general and intuitive method by which to capture the bargaining process, the Nash axiomatic approach also allows us to incorporate competition between the two channels in a straightforward manner, something that could become quite intractable with an alternative approach (such as Rubinstein’s (1982) sequential bargaining model).

Let \( \alpha \) be the salesperson’s bargaining power relative to the consumer, where \( \alpha \in (0,1) \). The Nash solution to the bargaining process maximizes the following expression:
\[
Max[V - p^b - hc - D_c]^{1-\alpha} \times [B(p^b - M) - D_s]^\alpha.
\]

\(V - p^b - hc\) and \(B(p^b - M)\) represent the consumer’s and salesperson’s respective gains from the transaction. \(D_c\) and \(D_s\) are the utilities for the consumer and the salesperson, respectively, from their best alternative in case of a disagreement.

The bargainers will reach an agreement if and only if it makes both parties better off, i.e., \(V - p^b - hc \geq D_c\) and \(B(p^b - M) \geq D_s\). For the salesperson, we assume that \(D_s = 0\), as he makes no money if no agreement is reached in the bargaining. Note that \(M\) determines the disagreement point of bargaining because once the price is below \(M\), bargaining breaks down. The consumer, however, can either buy from the fixed-price channel at \(p^f\) or resort to her outside option, \(U_c\), depending on which alternative generates a higher surplus, i.e.,

\[
D_c = \max \{V - p^f, U_c\}.
\]

Intuitively, if negotiations are unsuccessful, equation (4) implies that consumers with a high valuation would prefer to buy from the fixed-price channel, while low-valuation consumers would choose their outside option, \(U_c\).

We assume that consumer characteristics \(\{V, hc\}\) are known to the salesperson. Then, depending on the consumer’s best alternative, the bargaining price takes the following form:

\[
p^b = \begin{cases} 
\alpha(p^f - hc) + (1 - \alpha)M & \text{if } p^f + U_c \leq V \leq 1 \\
\alpha(V - hc - U_c) + (1 - \alpha)M & \text{if } hc + U_c + M \leq V < p^f + U_c 
\end{cases}.
\]

2.4. The Seller

The objective of a dual-channel seller is to maximize the joint profit from the two channels by setting (i) the no-haggle fixed price, \(p^f\), and (ii) the salesperson’s commission rate \(B\) and
minimum acceptable price $M$, which determine the price bargained in the bargaining channel, $p^b$. Formally, the seller’s optimal decision will be a solution to the following problem:

$$\max_{(p^b, \beta, M)} \pi^D = (p^f - C)q^f + \left[ \beta \int_{V \in F_1} \left( p^b(V, hc) - C \right) dV + (1 - \beta) \int_{V \in F_2} \left( p^b(V, hc) - C \right) dV \right] - \pi^S \quad \text{s.t. } \pi^S \geq U_S. \quad (6)$$

where $C$ is the seller’s marginal cost, $q^f$ is the number of units sold in the fixed-price channel (as a function of $p^f$ and $M$), and the constraint represents the fact that the seller must guarantee the salesperson his minimum payoff, $U_S$.

3. Analyses and Results

We begin the analysis by solving for the conditions under which a dual channel has positive sales in both channels. If both channels are available but one of them has zero sales, we consider it to be a single-channel structure. We then derive the optimal minimum acceptable price for the salesperson and follow this with a series of results related to the seller’s pricing strategy, including a comparison of bargaining and fixed prices, both within and across channel structures. Finally, we present results for demand, channel profitability and consumer surplus.

For clarity, we identify the decisions under different channel structures by adding a corresponding subscript, such as $M_{\text{dual}}$, $M_{\text{bargaining-only}}$, etc. Without loss of generality, we set consumers’ outside option, $U_C$, and the low haggling cost, $hc_l$, to be zero. These assumptions simply scale the solutions but do not change our conclusions. We also confine our analysis to the case where $hc_h < 1 - C$ because, if $hc_h \geq 1 - C$, none of the high haggling-cost consumers will buy the product in the bargaining channel even at its cost, $C$, which is an uninteresting case. The complete analytical solutions for each channel structure are provided in Appendix II.
3.1. Case where Dual Channel Has Positive Sales in Both Channels

As shown in Appendix I, for both the fixed-price channel and bargaining channel to have positive sales, two conditions must be satisfied: (a) two types of consumers exist, i.e., \( 0 < \beta < 1 \), and (b) the difference in haggling costs needs to be sufficiently high, \( hc_f \leq p_{\text{dual}} - M_{\text{dual}} \leq hc_h \).

Table 2 illustrates the market segments for each channel, conditional on a given fixed price and minimum acceptable price.

- [Insert Table 2 here]-

3.2. Optimal Minimum Acceptable Price for the Salesperson

Equation (2) describes the salesperson’s problem, which is a function of a commission rate, \( B \), and the minimum acceptable price, \( M \). Since the role of \( B \) has been studied extensively in the salesforce literature (e.g., Basu et al. 1985, Lal and Srinivasan 1993, Chen 2005), our major emphasis is on understanding how the seller sets \( M \). Unlike the previous literature which assumes that the salesperson’s commission pay is contracted on the seller’s true marginal cost, \( C \), in our model (consistent with certain features of the auto market) \( M \) does not necessarily have to be equal to \( C \), and therefore serves as an additional instrument for the seller over \( B \).

The optimal minimum acceptable price for the salesperson is described in the following proposition (see proof in Appendix III):

PROPOSITION 1(a). Under both the bargaining-only channel and the dual channel, it is optimal for the seller to specify a minimum acceptable price that is greater than the marginal cost, i.e., \( M > C \).

The intuition behind this is as follows: The minimum acceptable price, \( M \), serves as the salesperson’s threat point or the price floor for bargaining, so that a higher \( M \), according to equation (5), achieves a higher bargained price, \( p^b \). In this way, a higher \( M \) complements the
salesperson’s bargaining skill by resulting in a higher bargaining price. This can be seen from the expressions \( \frac{\partial (M_{\text{bargaining-only}} - C)}{\partial \alpha} < 0 \) and \( \frac{\partial (M_{\text{dual}} - C)}{\partial \alpha} < 0 \). Thus, the lower the salesperson’s bargaining power, the greater the seller’s incentive to set a higher \( M \) to achieve a higher bargaining price.

In a dual channel, the minimum acceptable price has a further strategic role. To see this we first state the following proposition:

**PROPOSITION 1(b).** The minimum acceptable price in a dual channel is higher than that in a bargaining-only channel.

When the seller offers two channels, there is internal competition between them, as all consumers will be aware of the price in the fixed price channel. To accommodate the no-haggle fixed-price channel, the seller needs to prevent the price in the bargaining channel from being too low and does so by specifying an \( M \) that is higher than that under a bargaining-only channel. A higher \( M \) effectively increases the bargaining price, so as to lessen the price pressure on the fixed-price channel. In other words, \( M \) serves to soften the internal competition between the two channels.

**3.3. Bargaining and Fixed Prices**

In this subsection, we derive the optimal fixed and bargaining prices in the dual channel and then compare them to the prices set in the bargaining-only and fixed-price-only channel structures.

We begin by asking whether, in a dual channel, the fixed price is higher or lower than the bargaining prices. We answer this with the following proposition:

**PROPOSITION 2.** Under a dual-channel strategy, the no-haggle fixed price is higher than the price bargained in the bargaining channel.
The intuition for this is fairly straightforward and can be derived directly from the consumer’s utility function in equation (1): Since consumers incur a haggling cost when they bargain, for them to buy in the bargaining channel instead of the fixed-price channel, the bargained price must be lower than the fixed price. In other words, since the fixed price saves consumers’ time and effort, they are willing to pay a premium for this.

Next, we compare the dispersion of bargained prices under the dual channel to that in the bargaining-only channel. We measure dispersion as being the difference between the lowest and highest bargained prices. The dispersion therefore reflects the extent to which sellers are price-discriminating amongst consumers. We present the following proposition (see Appendix IV for proof):

**PROPOSITION 3.** The dispersion of bargaining prices under a dual channel is lower than that in a bargaining-only channel.

There are two reasons for this. First, the lowest bargaining price in a dual channel is higher than that in a bargaining-only channel, as the dual-channel seller sets a higher minimum acceptable price (Proposition 1(b)). Second, the highest bargaining price in a dual channel is lower than that in a bargaining-only channel because in a bargaining-only channel, consumers with different valuations are charged different prices, while in the dual channel consumers whose valuation exceeds the no-haggle fixed price can cite that price when bargaining with the salesperson to obtain a lower price. As a result, they pay less than they would have had the fixed-price alternative not existed. Empirical evidence supporting this has been found in the auto industry by Zettelmeyer, Scott Morton and Silva-risso (2006), who show that buyers who used the fixed-price option (e.g., price quote from internet referral services) tended to pay lower prices for their cars than those who did not use it.
Finally, we compare the no-haggle fixed price in a dual channel with that in a fixed-price-only channel. We present the following proposition:

**PROPOSITION 4.** *The fixed price in the dual channel is higher than that in the fixed-price-only channel.*

The intuition for this is as follows: As low haggling-cost consumers do not benefit as much from the fixed price as do high haggling-cost consumers, the fixed-price-only channel charges a price that is low enough to attract both types of consumers. In contrast, the dual channel serves the segments via different channels and can price more efficiently. That is, as only the high haggling-cost consumers will buy at the fixed price, the dual-channel seller is able to charge a higher price than the fixed-price-only seller.

Furthermore, the dual-channel seller has an additional incentive to set a higher fixed price because the higher fixed price also increases bargained prices in the bargaining channel. To see why, consider equation (5): the bargained price, $p^b$, is non-decreasing in $p^f$. This is because as $p^f$ increases, the outside opportunity for certain consumers becomes less attractive, making them more dependent on the bargained outcome. The salesperson can take advantage of them and achieve a higher price.

### 3.4. Demand

Next we compare the optimal demand levels across all three channel structures. We put forward the following proposition (see Appendix VI for proof):

**PROPOSITION 5.** *When $M > C$ and when each channel operates optimally, the dual channel does not necessarily generate higher demand than a single-channel structure.*

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4 In some cases, despite the lower demand, the dual channel will earn a higher profit than the single channel. We discuss this in subsection 3.5.
Specifically, when the high haggling cost is below a certain level, i.e., \( hc_h < \frac{\alpha(1-C)}{\alpha(1-\beta)+2\beta} \), and \( M \) is a decision variable so that the seller will choose \( M > C \) at the optimum, then the demand in the dual channel is lower than in the bargaining-only channel.

To illustrate this proposition more clearly, we present the following numerical examples. In Table 3(a) and 3(b), we compute the demand levels in each of the three channel structures while we vary \( \beta \) and \( hc_h \).

-[Insert Table 3 here]-

For other variables in this and all subsequent numerical analysis for profitability and consumer surplus, we set \( \alpha = 0.5 \) (i.e., the consumer and salesperson have equal bargaining power), \( C = 0.8 \) and \( U_s = 0.0001 \). To make the numerical analysis easy to understand, we multiply all monetary amounts by $20,000.

*The dual channel versus the bargaining-only channel (\( M > C \)).* As shown in Table 3(a), when \( \beta = 0.55 \), the total demand in the bargaining-only channel (0.110) is greater than that in the dual channel (0.106). Although generating higher demand is one rationale for why a seller may sell its products through multiple channels (Geyskens et al. 2002), for a certain mix of the two types of consumers (\( \beta \leq 0.55 \) in our numerical example), demand in the dual channel is actually lower than that in the bargaining-only channel. This can be explained if we understand how demand from the two types of consumers is generated. First, the dual-channel seller will always sell to fewer low haggling-cost consumers than the bargaining-only seller. This is because, according to Proposition 1(b), a dual-channel seller will specify a higher \( M \) than will a bargaining-only channel seller. Second, the dual-channel seller may or may not sell to more high haggling-cost consumers than its bargaining-only counterpart, depending on the proportion of
high haggling-cost consumers, $\beta$. When $\beta$ is low (i.e., the proportion of low haggling-cost consumers is high), the dual-channel seller will have an incentive to charge a higher fixed price, even if it entails sacrificing some demand, as it allows the seller to charge a higher price in the bargaining channel.

Another factor that contributes to the differences in demand between the bargaining-only and dual channel is the high haggling cost, $hc_h$. As shown in Table 3(b), when $hc_h \leq 0.05$, the total demand in the dual channel is lower than that in the bargaining-only channel. This is because as $hc_h$ decreases, the bargaining-only channel seller has a greater incentive to serve high haggling-cost customers, as it requires less to compensate them for their haggling costs.

However, if $hc_h$ or $\beta$ is not too low—i.e., as shown in Table 3(a), when $hc_h = 0.065$ and $\beta = 0.35$ or $0.55$, or when, as shown in Table 3(b), $hc_h = 0.035$ or $0.05$ and $\beta = 0.75$—then despite the lower demand, the profit in the dual channel is higher than that in the bargaining-only channel. This is because the dual-channel seller is able to raise the fixed price, which in turn increases prices in the bargaining channel, thus compensating for the lower demand.

The dual channel versus the bargaining-only channel ($M = C$). Allowing the seller to set $M > C$ is important for deriving Proposition 5. When $M$ is fixed, i.e., $M = C$, then the total demand in the dual channel is never lower than demand in the bargaining-only channel (see proof in Appendix VI).

The dual channel versus the fixed-price-only channel. We start by noting that demand in the fixed-price-only channel is independent of the values of either $\beta$ or $hc_h$. This is because consumers do not haggle, so that haggling costs do not influence the seller’s decision and consumers’ choices. According to Tables 3(a) and 3(b), demand in the dual channel is higher
than that in the fixed-price-only channel in most cases, except for a very low value of high haggling costs, $hc_h = 0.02$.

### 3.5. Profitability

In this subsection, we compare profits across the three different channel structures in order to determine the optimal conditions for a particular channel structure. We find that, as in the case of demand, haggling costs are critical in determining the relative profitability of each channel.

The expressions for profits from each channel structure are derived in Appendix II. However, due to the complexity of these expressions, we are unable to directly compare profits in closed form. Instead, we do so using a numerical procedure. Specifically, we vary the values of $\beta, hc_h$ and $hc_l$ in order to capture the mix of high and low haggling-cost consumers and the differences in their haggling costs. For the other parameters, we kept the same set of values as in the demand analyses (i.e., $\alpha = 0.5$, $C = 0.8$ and $U_s = 0.0001$; changing these values will shift the profit numbers but the comparison across the three channel structures follows the same pattern.)

We start by varying the proportion of high haggling-cost consumers, $\beta$, the effect of which is shown in Fig. 2(a). We follow this with an analysis of the impact of heterogeneity in haggling costs, $hc_h - hc_l$, which is shown in Fig. 2(b). It is important to note that we vary $hc_h - hc_l$, while maintaining the same average haggling cost, i.e., $(hc_h + hc_l)/2$, throughout. This allows us to capture variation in heterogeneity alone and prevents it from being confounded with any changes in the average haggling cost in the market. To facilitate the interpretation, we represent the heterogeneity as a fraction of the average haggling cost, i.e., $(hc_h - hc_l)/[(hc_h + hc_l)/2]$.

The findings from our numerical analysis lead to the following proposition:
PROPOSITION 6. The dual channel is the most profitable structure when (a) there are enough high haggling-cost consumers but not too many, and (b) when the difference in haggling costs between the two types of consumers is sufficiently high.

According to Proposition 6, two factors are critical in determining the profitability of the dual channel. First, for the dual channel to be optimal, a certain mix of the two types of consumers is required. For example, if all or nearly all the consumers are high haggling-cost consumers, it is best for the seller to serve consumers only with a fixed price, as the benefits from price discrimination through bargaining are outweighed by the costs of compensating consumers for their haggling costs. In the context of our numerical example, this need for some but not too many high haggling-cost consumers implies that $0.22 \leq \beta \leq 0.87$.

Second, for the dual-channel to be optimal it is also required that there be sufficient heterogeneity in haggling costs. Our numerical analysis shows that when the heterogeneity in haggling costs $\geq 143\%$, a dual-channel strategy is optimal. Alternatively, when there is insufficient heterogeneity (i.e., $< 143\%$), the dual channel is never optimal. In other words, the fact that consumers are differentiated ($\beta > 0$) does not ensure the optimality of using dual channels because, first, although this dual-channel structure allows the seller to discriminate consumers based on their haggling costs, the fixed-price channel eliminates the seller’s ability to discriminate based on consumer valuations, something that is possible in a bargaining-only channel structure. Second, the presence of the fixed-price channel impacts the price bargained in the bargaining channel because it serves as an outside option, resulting in a lower price to some high-valuation consumers than would have been offered if the no-haggle option were absent.

These two disadvantages of the fixed-price channel can be mitigated, however, if the fixed price
is sufficiently high, which is possible only if some consumers have sufficiently higher haggling costs than others.

3.6. Consumer Surplus

We conclude this section with an examination of consumer surplus under the three channel structures, which we also analyze using a numerical approach. We first analyze the surplus at individual consumer level because each consumer’s surplus depends on her valuation and haggling cost. Figs. 3(a) and 3(b) demonstrate how the surplus is distributed among different consumers.

We find that no single channel structure generates the highest level of consumer surplus for all consumers. Specifically, for low haggling-cost consumers with relatively low valuations (ranging from $17,100 to $18,580 in Fig. 3(a)), the bargaining-only channel generates the highest surplus. This is because in the dual channel, due to a higher minimum acceptable price (Proposition 1(b)), bargained prices for these consumers are higher. For low haggling-cost consumers with high valuations (> $18,580), the dual channel offers the highest consumer surplus, as the presence of the fixed price allows these consumers to bargain a better price. For high haggling-cost consumers, the fixed-price-only channel generates the highest surplus (Fig. 3(b)), as its use of a fixed price format allows these consumers to skip the costly bargaining process. While this is also true for the dual channel, the price paid by these consumers is higher due to the seller’s need to soften the internal competition between the two channels (Proposition 4).

Fig. 3(c) summarizes the overall consumer surplus from the three channels. The fixed-price-only channel generates the highest surplus; the bargaining-only channel, while most commonly
used in practice, generates the lowest surplus in most cases; and the dual channel stands in between. The fixed-price-only channel benefits consumers in two ways. First, the fixed price prevents the seller from engaging in price discrimination among consumers, which benefits, in particular, high-valuation consumers. Second and more importantly, the fixed-price-only channel eliminates the haggling costs that consumers incur when bargaining in the bargaining channel.

The fact that the fixed-price-only channel generates the highest surplus among all channel structures is a somewhat surprising finding, as it seems to contradict the fact that a number of regulatory agencies and consumer groups have argued that a fixed-price policy works against consumer interests, at least in the auto industry (e.g., Competition Bureau of Canada 2003, Automobile Consumer Coalition of Canada 2006). However, it is important to note that our results do not imply that all consumers will be better off when prices are fixed. Instead, we claim that only consumers with certain characteristics benefit from it, i.e., low haggling-cost consumers are still better off if they bargain over prices, whether it is the bargaining-only structure or the dual channel. Nevertheless, our results suggest that a fixed-price policy is valuable as a whole, as it eliminates consumer haggling costs and limits the ability of sellers to price-discriminate among consumers.

4. Summary and Conclusions

The conventional wisdom in setting prices is that a seller is better off if it is able to price-discriminate among consumers, using mechanisms such as bargaining. Offering a fixed price at the same time appears to reduce the advantage of price discrimination because buyers know the maximum price that can be charged. As a result, the recent emergence of a no-haggle, fixed price
in markets that have traditionally relied on bargaining cannot be satisfactorily explained. Our research attempts to explain this phenomenon.

In particular, we explore the strategic implications of offering consumers the choice between bargaining a price and accepting a fixed, no-haggle price through such channels as the internet. We compare the profitability of three channel structures (bargaining only, fixed-price only and a dual-channel structure). Our findings suggest that consumer haggling cost plays a critical role in determining when a particular channel structure is optimal. We find that a dual channel is not always optimal: when either high or low haggling-cost consumers account for a large proportion of the population, or when they do not have very different haggling costs, a single channel is optimal. Our conclusions provide guidance to sellers: no one strategy is always the best, as optimization depends upon the magnitude and dispersion of haggling costs, which in turn may be related to such factors as customer bargaining experience, income and time constraints.

More broadly, we find that when individual-level price discrimination imposes a cost on consumers, as does haggling, it is not always optimal to use that strategy, as consumers attempt to offset that cost by seeking to pay a lower monetary price to the seller. Airlines and other industries that use yield-maximization strategies to change prices dynamically may find that customers, in turn, seek compensation for the time they spend searching for the “best price” by demanding a lower price than if prices were fixed over time.

As the development of new technologies enables sellers to more easily reach customers via multiple channels, allowing different pricing policies across channels, the choice of pricing formats emerges as a strategic consideration for sellers. Our findings generate implications for sellers deciding what pricing format(s) to implement.
Further, we examine the impact of a rarely considered strategic variable, namely the minimum acceptable price, to the pricing and channels literature. We show that the seller may not find it optimal to set the commission based on the true marginal cost of the product. Instead, the seller may be better off by specifying a higher-than-cost minimum acceptable price as the price floor of bargaining. The minimum acceptable price has important implications for both the bargained and no-haggle price in that it affects the outcome of the bargaining. It also leads to cases where the dual channel is more profitable but does not generate higher demand than a single-channel structure.

A limitation of our analyses is that, we have not considered the cases in which the salesperson is risk averse and the seller has incomplete information. These factors can play a role in determining the conditions under which different pricing strategies are optimal and the optimal minimum acceptable price. First, increasing risk aversion may reduce a participant's share in the bargaining outcome and increases that of his opponent (Kihlstrom et al. 1981, Osborne 1985, Roth 1989). This is because the more risk-averse participant is relatively more eager to minimize the risk of breakdown. This is exploited by the less risk-averse participant and he or she demands a larger share of the net surplus. Therefore, when the salesperson is more risk averse, we predict that the seller will set a higher price floor to raise the salesperson’s threat point. Second, if the seller does not observe the salesperson’s efforts and the cost of effort, the contract needs to provide incentives for the salesperson to exert the proper level of effort and to reveal his true type. If a salesperson has high cost of effort, he has a disadvantage in bargaining and thus the seller can set a higher minimum acceptable price. In contrast, for a salesperson with lower cost of effort, higher minimum acceptable is less necessary; rather, a higher commission rate can motivate him to exercise his greater bargaining power (Cai and Cont 2004). Therefore,
the seller should provide a menu of contracts, such that the higher cost of effort the salesperson has, the higher the minimum acceptable price and the lower the commission rate. In short, in the presence of risk aversion and information asymmetry, we predict that the seller still sets a higher-than-cost minimum acceptable price in most cases but the optimal level may vary. With respect to the optimal channel structure, we believe that our main results remain qualitatively the same, that is, the optimal condition for the dual-channel is that consumers are sufficiently heterogeneous in their haggling costs. However, as risk aversion of the salesperson and the seller’s information disadvantage imply a higher operating cost in the haggling channel, the cutoff of consumer heterogeneity may shift. Future research should examine these issues in more details.
Fig. 1 Three Channel Structures

(a) Bargaining-only

(b) Dual-channel

(c) Fixed-price-only
Fig. 2 Profit Comparison across Three Channels

(a) $\beta$ varies, $hc_h = 0.07$, $hc_i = 0$

(b) $\beta = 0.5$, both $hc_h$ and $hc_i$ vary while $hc_h + hc_i = 0.07$
Fig. 3 Consumer Surplus

(a) Low Haggling-cost Consumers

(b) High Haggling-cost Consumers

( $\beta = 0.5, hc_h = 0.07, hc_i = 0$ )

(c) Total Consumer Surplus

( $\beta$ varies, $hc_h = 0.07, hc_i = 0$ )
### Table 1. Model Notation

<table>
<thead>
<tr>
<th>Notation</th>
<th>Explanation</th>
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<tr>
<td>$p^f$</td>
<td>No-haggle fixed price</td>
</tr>
<tr>
<td>$p^b$</td>
<td>Bargained price</td>
</tr>
<tr>
<td>$M$</td>
<td>Minimum acceptable price</td>
</tr>
<tr>
<td>$B$</td>
<td>Salesperson’s commission rate, $0 \leq B \leq 1$</td>
</tr>
<tr>
<td>$C$</td>
<td>The seller’s true cost of the vehicle</td>
</tr>
<tr>
<td>$q^f$</td>
<td>Unit sales in the fixed-price channel</td>
</tr>
<tr>
<td>$U_S$</td>
<td>Salesperson’s outside option, $U_S \geq 0$</td>
</tr>
<tr>
<td>$\alpha$</td>
<td>Salesperson’s bargaining power, $\alpha \in (0,1)$</td>
</tr>
<tr>
<td>$V$</td>
<td>Consumer’s valuation of the product, $V \sim U(0,1)$</td>
</tr>
<tr>
<td>$hc$</td>
<td>Consumer’s haggling cost, $hc \in {hc_i, hc_h}$, where $hc_i &lt; hc_h &lt; 1-C$</td>
</tr>
<tr>
<td>$\beta$</td>
<td>The proportion of high haggling-cost consumers, where $0 \leq \beta \leq 1$</td>
</tr>
<tr>
<td>$U_C$</td>
<td>Consumer’s outside option, $U_C \geq 0$</td>
</tr>
</tbody>
</table>
Table 2. Market Segmentation for the Three Channel Structures

<table>
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<tr>
<th>Dual channel ( (hc_j + M \leq p' \leq hc_h + M) )</th>
<th>Consumer Characteristics ( {V, hc} )</th>
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</thead>
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<tr>
<td>( hc = hc_h )</td>
<td>( V \in [p' + U_c, 1] )</td>
<td>Buy in the fixed-price channel</td>
</tr>
<tr>
<td></td>
<td>( V \in [0, p' + U_c) )</td>
<td>Outside option</td>
</tr>
<tr>
<td>( hc = hc_i )</td>
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<td>Buy in the bargaining channel</td>
</tr>
<tr>
<td></td>
<td>( V \in [0, hc_i + M + U_c) )</td>
<td>Outside option</td>
</tr>
<tr>
<td>If ( p' &gt; hc_h + M ), the channel structure becomes a bargaining-only channel</td>
<td>Consumer Characteristics ( {V, hc} )</td>
<td>Choice</td>
</tr>
<tr>
<td>( hc = hc_h )</td>
<td>( V \in [hc_h + M + U_c, 1] )</td>
<td>Buy in the bargaining channel</td>
</tr>
<tr>
<td></td>
<td>( V \in [0, hc_h + M + U_c) )</td>
<td>Outside option</td>
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<td>( V \in [hc_i + M + U_c, 1] )</td>
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<td>Outside option</td>
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<td>Consumer Characteristics ( {V, hc} )</td>
<td>Choice</td>
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<tr>
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<td>Outside option</td>
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Table 3. Demand Comparison

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<td></td>
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<td></td>
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<td>0.111</td>
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<tr>
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<td>0.118</td>
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<tr>
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(a) $\beta$ varies, $hc_h = 0.065$

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</tbody>
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(b) $hc_h$ varies, $\beta = 0.75$
References


Competition Bureau of Canada (2003). "Competition bureau settles price maintenance and misleading advertising case regarding the Access Toyota Program."


Appendix (To be available online.)

I. Case where Dual Channel Has Positive Sales in Both Channels:

For a bargaining channel to have positive sales, at least one consumer should reach an agreement in bargaining with the salesperson, which requires, according to the Nash bargaining model, a nonnegative gain for both bargainers. Formally, it requires that there exist a pair \( \{V, hc\} \), where \( V \in [0,1] \) and \( hc \in \{hc_i, hc_h\} \), such that \( V - p^b - hc - D_c \geq 0 \) and \( B(p^b - M) \geq 0 \).

Substituting equation (5) to \( p^b \), the following must hold: (1) there exists a \( hc \), where \( hc \in \{hc_i, hc_h\} \), such that \( p^f - hc - M \geq 0 \), or (2) there exists a pair \( \{V, hc\} \), where \( V \in [hc + U_c, p^f + U_c] \) and \( hc \in \{hc_i, hc_h\} \), such that \( V - hc - U_c - M \geq 0 \). Simplifying the above, it requires that there exists a \( hc \), where \( hc \in \{hc_i, hc_h\} \), such that \( p^f - M \geq hc \). In this case, consumers with sufficiently high valuation, \( V \in [hc + U_c + M, 1] \), will buy in the bargaining channel, and other consumers will choose the outside option. However, no one buys at the fixed price.

Then, for the fixed-price channel to have positive sales, there should be a \( hc \) such that \( p^f \leq hc + M \). In this case, consumers with sufficiently high valuation, \( V \in [p^f + U_c, 1] \), will buy in the fixed-price channel, while others will choose the outside option, and no one reaches an agreement in the bargaining channel.

In summary, receiving positive sales in the bargaining channel requires \( p^f - M \geq hc \), and in the fixed-price channel it requires \( p^f \leq hc + M \). Obviously they can’t hold together if \( hc_i = hc_h \). Therefore, for both the fixed-price channel and bargaining channel to have positive sales, two
conditions must be satisfied: (a) $0 < \beta < 1$ so that $hc \in \{hc_i, hc_h\}$, and (b) the prices should satisfy the following condition: $hc_i \leq pf - M \leq hc_h$. Condition (a) states that, for the dual channel to have positive sales in both channels, there must be two types of consumers, each with different haggling costs. The bargaining channel gets low haggling-cost consumers with valuation satisfying $V \in [hc_i + U_c + M, 1]$, and the fixed-price channel gets high haggling-cost consumers with valuation satisfying $V \in [pf + U_c, 1]$. Condition (b) suggests that, for both channels to generate demand, the difference between the no-haggle fixed price, $pf_d$, and the minimum acceptable price, $M_d$, should be within a certain range. This means that not only must $M_d$ be lower than the fixed price, $pf_d$, to compensate for consumers’ haggling cost in the bargaining channel, it also requires that $M_d$ be low enough but not too low such that it compensates only for low haggling-cost consumers, forcing those with the higher cost to buy from the no-haggle channel, thereby ensuring that both channels generate positive sales.

II. Optimization Problems and Solutions under the Three Channel Structures

We derive below the optimization problems and solutions under the three channel structures. All notation is the same as defined in the text. Without the loss of generality, we assume that $U_c = 0$, $hc_i = 0$ and $hc_h < 1 - C$.

(1) The Bargaining-Only Channel

Consumers can either buy a product, at a bargained price, or use an outside option, with the utility function defined as below:

$$U = \begin{cases} V - pf - hc & \text{if the product is bought at the negotiated price; } hc \in \{0, hc_i\} \\ 0 & \text{if the outside option is exercised} \end{cases}$$ (A1)
where \( p^b \) maximizes the following expression, according to the Nash axiomatic approach

\[
\max_{p^b} \left[ V - p^b - hc - D_C \right]^{1-\alpha} \times \left[ B(p^b - M) - D_S \right]^\alpha
\]  

(A2)

where \( D_C = 0 \), \( D_S = 0 \). This leads to

\[
p^b = M + \alpha \left( V - hc - M \right)
\]

(A3)

It can be easily derived that the high-haggling cost consumers with \( V \in [M + hc_h, 1] \) and the low-haggling cost consumers with \( V \in [M, 1] \) will buy the car at the bargained price. The salesperson receives a payment specified as:

\[
\pi^S = \int_{hc_h + M}^1 \beta \left[ \alpha \left( V - hc_h - M \right) dV + (1 - \beta) \int_M^1 \alpha \left( V - M \right) dV \right]
\]

(A4)

The objective problem for the seller is to maximize the profit, while ensuring that the salesperson is to receive a minimum payoff, \( U_{S^*} \), from the job.

\[
\max_{(B,M)} \pi^D = \pi^b - \pi^S
\]

\[
= \beta \int_{hc_h + M}^1 \left[ (1 - B) \alpha \left( V - hc_h - M \right) + M - C \right] dV + (1 - \beta) \int_M^1 \left[ (1 - B) \alpha \left( V - M \right) + M - C \right] dV
\]

\[
= (M - C)(1 - M - \beta hc_h) + \frac{(1 - B)\alpha}{2} \left[ (1 - M)^2 - 2\beta hc_h (1 - M) + \beta hc_h^2 \right]
\]

(A5)

Subject to

\[
\pi^S \geq U_s
\]

(A6)

Let \( \lambda \) be the Lagrange multiplier corresponding to (A6). The Lagrangian \( L \) for the problem (A5) - (A6) is:

\[
L(B,M,\lambda) = \pi^b - \pi^S
\]

As there is complete information, the seller shall extract all the economic rent from the salesperson, which suggests that \( \pi^S = U_s \).
Solving the first-order condition $\frac{\partial L}{\partial M} = 0$ gives

$$M^* = \frac{1}{2-\alpha} \left[ C + (1-\alpha)(1-\beta h_c) \right]$$ \hspace{1cm} (A8)

Then, the optimal quantity and profit are

$$Q^* = \frac{1}{2-\alpha} \left[ 1-C - \beta h_c \right]$$ \hspace{1cm} (A9)

$$\pi^* = \frac{1}{2(2-\alpha)} \left[ (1-C)^2 - 2\beta h_c (1-C) + \beta h_c^2 \left( 2\alpha(1-\beta) - \alpha^2(1-\beta) + \beta \right) \right] U_s$$ \hspace{1cm} (A10)

The consumer surplus can be written as follows

$$W^* = \beta \int_{h_c + M}^{1} (1-\alpha)(V-M^*-h_c) dV + (1-\beta) \int_{M^*}^{1} (1-\alpha)(V-M^*) dV$$

$$= \frac{1-\alpha}{2(2-\alpha)^2} \left[ (1-C)^2 - 2(1-C)\beta h_c + \beta h_c^2 \left( 4-\alpha(1-\beta)(4-\alpha)-3\beta \right) \right]$$ \hspace{1cm} (A11)

(2) The Dual Channel

As Appendix I shows, high haggling cost consumers with valuation $V \in [p^f,1]$ buy at the fixed price, while low haggling cost consumers with valuation $V \in [M,1]$ buy at the bargaining price. Following the model description in the text, we rewrite the maximization problem for the seller. Note that the price constraints $h_c \leq p^f - M \leq h_c$ need to be satisfied:

$$\text{Max}_{(p^f,B,M)} \pi^b = \pi^f + \pi^b - \pi^s$$

$$= \beta(p^f - C)(1-p^f) + (1-\beta) \left[ \int_{p^f}^1 (M-C+\alpha(p^f-M)(1-B)) dV + \int_{M}^{p^f} (M-C+\alpha(V-M)(1-B)) dV \right]$$

$$= \beta(p^f - C)(1-p^f) + (1-\beta) \left[ \frac{(1-B)\alpha}{2} \left( M^2 - p^f^2 + 2p^f - 2M \right) + (M-C)(1-M) \right]$$ \hspace{1cm} (A12)

Subject to
\[ \pi^s \geq U_s \quad (A13) \]
\[ 0 \leq p^f - M \quad (A14) \]
\[ p^f - M \leq h_{c_h} \quad (A15) \]

Let \( \lambda_1, \lambda_2, \lambda_3 \) be the Lagrange multipliers corresponding to (A13)-(A15), respectively. The Lagrangian \( L \) for the problem (A12)-(A15) is:

\[
L(p^f, B, M, \lambda_1, \lambda_2, \lambda_3) = \pi^D + \lambda_1 (-U_s + \pi^s) + \lambda_2 (p^f - M) + \lambda_3 (h_{c_h} - p^f + M) \quad (A16)
\]

Also, complete information assumption suggests \( \pi^s = U_s \). The Lagrangian \( L \) can be rewritten as

\[
L'(p^f, M, \lambda_2, \lambda_3) = \pi^D + \lambda_2 (p^f - M) + \lambda_3 (h_{c_h} - p^f + M) \quad (A17)
\]

The first-order conditions are

\[
\frac{\partial L}{\partial p^f} = 0 \Rightarrow p^f = \frac{\alpha + (1-\alpha) \beta + \beta C + \lambda_2 - \lambda_3}{\alpha (1-\beta) + 2\beta} \quad (A18)
\]
\[
\frac{\partial L}{\partial M} = 0 \Rightarrow M = \frac{(1-\alpha + C)(1-\beta) - \lambda_2 + \lambda_3}{(1-\beta)(2-\alpha)} \quad (A19)
\]

\[ p^f - M \geq 0, \quad \lambda_2 \geq 0, \quad \text{with complementary slackness} \quad (A20) \]
\[ h_{c_h} - p^f + M \geq 0, \quad \lambda_3 \geq 0, \quad \text{with complementary slackness} \quad (A21) \]

The above conditions suggest four possible patterns of equations and inequalities. First, we can immediately eliminate the combination that \( p^f - M = 0 \) and \( h_{c_h} - p^f + M = 0 \), as \( h_{c_h} > 0 \).

Second, we consider \( p^f - M = 0, \lambda_2 > 0, h_{c_h} - p^f + M > 0, \lambda_3 = 0 \). However, this is also ruled out as

\[
p^f - M = \frac{\alpha (1-C)(1-\beta) + 2\lambda_2}{(2-\alpha)(1-\beta)[\alpha (1-\beta) + 2\beta]} \neq 0.
\]

Third, we consider \( p^f - M > 0, \lambda_2 = 0, h_{c_h} - p^f + M > 0, \lambda_3 = 0 \). It gives the solutions below
\[ p^{*} = \frac{\alpha + \beta - \alpha \beta + \beta C}{\alpha (1 - \beta) + 2 \beta} \]  
(A22)

\[ M^{*} = \frac{1 - \alpha + C}{2 - \alpha} \]  
(A23)

\[ Q^{*} = \frac{(1 - C)(2\beta + \alpha (1 - 2\beta))}{(2 - \alpha)(\alpha (1 - \beta) + 2\beta)} \]  
(A24)

\[ \pi^{*} = \frac{(1 - C)^2 (\alpha - 2\alpha \beta + 2\beta)}{2(2 - \alpha)(\alpha - \beta \alpha + 2\beta)} - U_s \]  
(A25)

Note that \( h_c - p^f + M > 0 \) suggests that \( h_c > \frac{\alpha (1 - C)}{(2 - \alpha)(\alpha (1 - \beta) + 2\beta)} \).

The consumer surplus in this case is

\[
W^{*} = (1 - \beta) \left( \int_{p^f}^{\alpha} (V - \alpha p^{f*} - (1 - \alpha)M) \, dV + \int_{M}^{V^{*}} (1 - \alpha)(V - M^{*}) \, dV \right) \\
+ \beta \int_{p^f}^{\alpha} (V - p^{f*}) \, dV \\
= \frac{(1 - C)^2 \left[ 4\beta^2 + 4\alpha \beta (1 - 2\beta) + \alpha^2 \left( 1 - 7\beta + 7\beta^2 \right) - \alpha^3 (1 - 2\beta)(1 - \beta) \right]}{2(2 - \alpha)^2 (\alpha (1 - \beta) + 2\beta)^2} 
\]  
(A26)

Last, we consider \( p^f - M > 0, \lambda_2 = 0, h_c - p^f + M = 0, \lambda_3 > 0 \). It gives the solutions below

\[ p^{f*} = \frac{1}{2} \left[ 1 + C - (\alpha - 2)(1 - \beta)h_c \right] \]  
(A27)

\[ M^{*} = \frac{1}{2} \left[ 1 + C - (\alpha + 2\beta - \alpha \beta)h_c \right] \]  
(A28)

\[ Q^{*} = \frac{1}{2} \left( 1 - C + \alpha (1 - \beta)h_c \right) \]  
(A29)

\[ \pi^{*} = \frac{1}{4} \left[ (1 - C)^2 + 2\alpha (1 - C)(1 - \beta)h_c - (2 - \alpha)(\alpha - \alpha \beta + 2\beta)(1 - \beta)h_c^2 \right] - U_s \]  
(A30)
Comparing (A25) and (A30), it can be shown that the profit as expressed in (A25) is always higher. Therefore, the solutions (A27)–(A30) hold only when \( h_{c_h} \leq \frac{\alpha (1-C)}{(2-\alpha)(\alpha (1-\beta) + 2\beta)} \).

The consumer surplus in this case is

\[
W^* = (1-\beta) \left[ \int_{p^f}^{v_f} (V - \alpha p^f - (1-\alpha)M^*) dV + \int_{M^*}^{p^f} (1-\alpha) (V - M^*) dV \right] + \beta \int_{p^f}^{v_f} (V - p^f^*) dV \\
= \frac{1}{8} \left[ (1-C)^2 - 2(1-C)\alpha (1-\beta) h_{c_h} + (1-\beta) (4\alpha (1-2\beta) - 3\alpha^2 (1-\beta) + 4\beta) h_{c_h}^2 \right]
\]

(3) The Fixed-Price-Only Channel

Consumers can either buy a product at the fixed price or use an outside option, with the utility function defined as below:

\[
U = \begin{cases} 
V - p^f & \text{if the product is bought at the no-haggle fixed price} \\
0 & \text{if the outside option is exercised} 
\end{cases}
\]

Consumers with sufficiently high valuation, i.e., \( V \in [p^f, 1] \), will buy the product; otherwise they will choose the outside option. Note that consumers’ haggling cost is irrelevant in this case, since buying at the fixed price incurs no haggling cost.

The objective problem for the seller is

\[
\max_{p^f} \pi = \left( p^f - C \right) \left( 1 - p^f \right)
\]

which yields the optimal price, quantity and profit as follows:

\[
p^f^* = \frac{1+C}{2}
\]

\[
Q^* = \frac{1-C}{2}
\]

\[
\pi = \frac{(1-C)^2}{4}
\]
The consumer surplus is

\[ W^* = \int_{p^*}^1 (V - p^{fs})dV = \frac{1}{8}(1-C)^2 \] (A37)

III. Proof of Proposition 1:

Proof of Proposition 1(a). The optimal minimum acceptable prices in the dual channel and bargaining-only channel are listed in Appendix II. We compare them with the seller’s cost.

In the bargaining-only channel, \( M_{\text{bargaining-only}} - C = \frac{(1-\alpha)(1-C - \beta h_c)}{2-\alpha} > 0 \). In the dual channel, when \( h_c > \frac{\alpha(1-C)}{(2-\alpha)(\alpha - 2\beta)} \), \( M_{\text{dual}} - C = \frac{(1-\alpha)(1-C)}{2-\alpha} > 0 \); otherwise

\[ M_{\text{dual}} - C = \frac{1}{2}[1-C-(\alpha-\alpha\beta+2\beta)h_c] \geq \frac{(1-\alpha)(1-C)}{2-\alpha} > 0 . \]

In both cases, we have \( \frac{\partial(M - C)}{\partial\alpha} = \frac{\partial((1-\alpha)/(2-\alpha))}{\partial\alpha} = -\frac{1}{(2-\alpha)^2} < 0 \).

Proof of Proposition 1(b). When \( h_c > \frac{\alpha(1-C)}{(2-\alpha)(\alpha - 2\beta)} \),

\[ M_{\text{dual}} - M_{\text{bargaining-only}} = \frac{(1-\alpha)\beta h_c}{2-\alpha} > 0 . \] When \( h_c \leq \frac{\alpha(1-C)}{(2-\alpha)(\alpha - 2\beta)} \),

\[ M_{\text{dual}} - M_{\text{bargaining-only}} = \frac{(1-C)\alpha - [2\alpha(1-\beta) + 2\beta - \alpha^2(1-\beta)]h_c}{2(2-\alpha)} \geq \frac{\alpha\beta(1-C)(1-\alpha)}{(2-\alpha)^2(\alpha - 2\beta)} > 0 . \]

IV. Proof of Proposition 3:

Under the dual-channel strategy, consumers who buy in the bargaining channel all have low haggling cost and their valuation is in the range \( V \in [M_{\text{dual}}, 1] \) (see Table 2). Given that the bargained price is a non-decreasing function with respect to \( V \) (equation (5)), the dispersion of
bargained prices $\text{Disp}_{\text{dual}} = \alpha \left( p_{\text{dual}}^f - M_{\text{dual}} \right)$. Under the bargaining-only channel, consumers who buy here include both the high haggling-cost consumers, with $V \in \left[ h_{c_h} + M_{\text{bargaining-only}}, 1 \right]$, and the low haggling-cost consumers, with $V \in \left[ M_{\text{bargaining-only}}, 1 \right]$. Given that the bargained price is a non-decreasing function in $V$ (equation (A3)), the dispersion of bargained prices $\text{Disp}_{\text{bargaining-only}} = \alpha \left( 1 - M_{\text{bargaining-only}} \right)$. We then compare the dispersions under the two channel structures,

$$\Delta \text{Disp} = \text{Disp}_{\text{dual}} - \text{Disp}_{\text{bargaining-only}} = \alpha \left( p_{\text{dual}}^f - M_{\text{dual}} - 1 + M_{\text{bargaining-only}} \right)$$  \hspace{1cm} (A38)

Consider two situations: (1) when $h_{c_h} > \frac{\alpha (1 - C)}{(2 - \alpha)(\alpha (1 - \beta) + 2\beta)}$, equations (A8), (A22) and (A23) give

$$\Delta \text{Disp} = -\alpha \beta \left[ (1 - C)(2 - \alpha) + (1 - \alpha)(\alpha (1 - \beta) + 2\beta) h_{c_h} \right] \left(2 - \alpha)(\alpha (1 - \beta) + 2\beta) \right) \times 0, \quad (A39)$$

(2) when $h_{c_h} < \frac{\alpha (1 - C)}{(2 - \alpha)(\alpha (1 - \beta) + 2\beta)}$, equations (A8), (A27) and (A28) give

$$\Delta \text{Disp} = \frac{\alpha}{(2 - \alpha)} \left[ - (1 - C) + (2 - \alpha - \beta + \alpha \beta) h_{c_h} \right]$$  \hspace{1cm} (A40)

As $h_{c_h} < \frac{\alpha (1 - C)}{(2 - \alpha)(\alpha (1 - \beta) + 2\beta)} < \frac{1 - C}{2 - \alpha - \beta + \alpha \beta}$, $\Delta \text{Disp} < 0$.

V. Proof of Proposition 4:

When $h_{c_h} > \frac{\alpha (1 - C)}{(2 - \alpha)(\alpha (1 - \beta) + 2\beta)}$, equations (A22) and (A34) give that
\[ \Delta p^f = p^f_{\text{dual}} - p^f_{\text{fixed-price-only}} = \frac{\alpha (1-C)(1-\beta)}{2\alpha (1-\beta) + 4\beta} > 0. \]

When \( h_{\text{c}} \leq \frac{\alpha (1-C)}{(2-\alpha)(\alpha (1-\beta) + 2\beta)} \), equations (A27) and (A34) give that

\[ \Delta p^f = p^f_{\text{dual}} - p^f_{\text{fixed-price-only}} = \frac{1}{2}(1-\beta)(2-\alpha)h_{\text{c}} > 0. \]

VI. Demand Comparison:

The demand under the three channel structures is detailed in Appendix II.

Dual channel vs. bargaining-only channel (\( M > C \)). (1) When \( h_{\text{c}} > \frac{\alpha (1-C)}{(2-\alpha)(\alpha (1-\beta) + 2\beta)} \),

\[ Q_{\text{bargaining-only}} - Q_{\text{dual}} = \frac{\beta \left[ \alpha (1-C) - (\alpha (1-\beta) + 2\beta)h_{\text{c}} \right]}{(2-\alpha)(\alpha (1-\beta) + 2\beta)}. \] Therefore, \( Q_{\text{dual}} < Q_{\text{bargaining-only}} \) if

\[ h_{\text{c}} < \frac{\alpha (1-C)}{\alpha (1-\beta) + 2\beta} (\text{or} \ \beta < \frac{\alpha (1-C - h_{\text{c}})}{h_{\text{c}}(2-\alpha)}). \] (2) When \( h_{\text{c}} \leq \frac{\alpha (1-C)}{(2-\alpha)(\alpha (1-\beta) + 2\beta)} \),

\[ Q_{\text{bargaining-only}} - Q_{\text{dual}} = \frac{\alpha (1-C) - \left[ \alpha (1-\beta)(2-\alpha) + 2\beta \right]h_{\text{c}}}{(2-\alpha)(\alpha (1-\beta) + 2\beta)}. \] Suppose \( Q_{\text{dual}} \geq Q_{\text{bargaining-only}} \), then

\[ h_{\text{c}} \geq \frac{\alpha (1-C)}{\alpha (1-\beta)(2-\alpha) + 2\beta}. \] However, this is impossible given the range of \( h_{\text{c}} \). Therefore,

\( Q_{\text{dual}} < Q_{\text{bargaining-only}} \) must hold. In summary, the demand in the dual channel is lower than that in

the bargaining-only channel if \( h_{\text{c}} < \frac{\alpha (1-C)}{\alpha (1-\beta) + 2\beta} (\text{or} \ \beta < \frac{\alpha (1-C - h_{\text{c}})}{h_{\text{c}}(2-\alpha)}). \)

Dual channel vs. bargaining-only channel (\( M = C \)). \( Q_{\text{bargaining-only}} = 1 - C - \beta h_{\text{c}} \),

\[ Q_{\text{dual}} = 1 - C - \beta \left( p^f_{\text{dual}} + C \right). \] Recall Lemma 1, \( p^f_{\text{dual}} \leq h_{\text{c}} + M = h_{\text{c}} + C \). Therefore,
In other words, when $M = C$, the total demand in the dual channel is never lower than that in the bargaining-only channel.

**Dual channel vs. fixed-price-only channel.**

\[
Q_{\text{bargaining-only}} \leq Q_{\text{dual}}.
\]

In other words, when $M = C$, the total demand in the dual channel is never lower than that in the bargaining-only channel.

\[
Q_{\text{fixed-price-only}} - Q_{\text{dual}} = \frac{(1-C)\alpha^2 (1-\beta)}{2(2-\alpha)(\alpha (1-\beta)+2\beta)} < 0.
\]

In other words, the demand in the dual channel is always higher than that in the fixed-price-only channel.
Dear Professor Muller,

We would like to submit the revised manuscript, “The Effects of a ‘No-Haggle’ Channel on Marketing Strategies, reference number IJRM-D-12-00258R2”, for your further consideration for the publication at the IJRM.

Thank you very much for your last letter about our paper and the very strong direction that you provide. Specifically, we very much appreciate your advice that the risk neutrality assumption is not a “fatal” flaw, but has to be acknowledged. We have followed this recommendation in our revision. In reviewing your and the review team’s comments, we realized that we overemphasized the contribution to the sales force literature and should focus on the contribution to the pricing and distribution literatures. Thus, in the revised version, we acknowledge that the risk neutrality is a limiting assumption made to advance our knowledge about pricing issues, and in the discussion section comment on what the challenges would be if the assumption of risk neutrality is relaxed. In doing this, we have been able to reduce the length by about five pages.

We have also carefully gone through other comments of the review team and made the corresponding changes.

Thank you for reviewing our manuscript. We are looking forward to hearing from you.

Best regards,
Xiaohua, Srabana and Chuck
Editor’s Report

Ms. Ref. No.: IJRM-D-12-00258R1
Title: THE EFFECTS OF A "NO-HAGGLE" CHANNEL ON MARKETING STRATEGIES
International Journal of Research in Marketing

Thank you again for your submission to IJRM. We now have two reviews as well as an AE report on your paper ("THE EFFECTS OF A "NO-HAGGLE" CHANNEL ON MARKETING STRATEGIES", reference number IJRM-D-12-00258R1) from the same team who reviewed your paper in the first round. While one reviewer recommends conditionally accepting your paper, the other reviewer and the AE are consistent in their views and recommend a major and risky revision. I therefore would like you to submit a new version of the paper that answers my remaining concerns.

It is time now for an editorial decision with respect to the one main sticking point - the simplifying assumptions that you have made about the salesperson and in particular his or her risk neutrality. The way I see it, while this is a restrictive assumption, it is not fatal. Thus what you should do is to acknowledge this in the paper and attend to the rest of the review team’s comments. There are several such comments, all technical in nature, that you should follow. Once I receive your next version, I will send the paper to the AE for a final review.

Thank you for your advice that the risk neutrality assumption is not a fatal flaw for our paper but has to be acknowledged. In reviewing your and the review team’s comments, we realized that we overemphasized our contribution to the sales force literature and should focus on our contribution to the pricing and channels literatures. Thus, in the revised manuscript, we make the following changes:

(a) In the introduction, we clarify that we make simplifying assumptions when modeling the salesperson and that our contribution lies in the pricing and channels literature instead of the sales force literature (pages 5-6);
(b) We remove the discussion on risk aversion (section 4 in the previous manuscript) as the analysis does not satisfactorily capture all the effects of risk aversion;
(c) In the discussion section, we discuss how risk aversion, as well as moral hazard and adverse selection, may affect our main findings (pages 23-24);
(d) We remove all the claims that we contribute to the sales force literature;
(e) We have shortened our manuscript (main text from 29 pages to 24 pages).

We have made other changes to address the rest of the review team’s comments, as described in detail in our response to the reviewers.

When sending back your revision, please make sure to add a set of reply notes detailing how (with indication of specific page numbers) you dealt with the various issues mentioned by the review team (or if you opted not to address certain issues, why you did not do so).

To submit your revision, please go to: http://ees.elsevier.com/ijrm/, login and click [Author Login], and then click [Submissions Needing Revision].

Finally, note that this manuscript can only be under consideration at IJRM if you own the copyright. If this is not the case, please let me know as it prevents publication in IJRM.

I look forward to receiving your revised manuscript.
Yours sincerely,
Eitan Muller
Editor
International Journal of Research in Marketing

APPENDED: comments from the review team

cc. Jacob Goldenberg, Co-Editor