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"No Contract" is on the rise in many consumer markets. Sellers are luring customers with the assurance that no commitment is required—that the consumer can terminate the service freely at any time, without paying a termination penalty. What explains the increasing prevalence of No Contract? Is it welfare enhancing? We examine the costs and benefits of No Contract, as compared to the lock-in alternative, and conclude that the rise of No Contract is generally desirable, a market response to consumers’ growing awareness and understanding of the costs of lock-in. We argue, however, that lock-ins continue to prevail less conspicuously, through loyalty programs that, like termination penalties, punish consumers for switching. Doctrinally, courts scrutinize lock-in contracts as penalty liquidated damages, and reduce these fees when excessive. We show that while courts’ skepticism of lock-in is generally justified, the doctrinal method is fundamentally misguided, resulting in inconsistent and welfare-reducing outcomes. In fact, with informed consumer choice disciplining sellers’ actions, as evidenced by the rise of No Contract, the need to regulated this type of lock-in contracts is diminishing. Consumers, however, are not as alert when joining loyalty programs, and the distortions arising form such lock-ins are heightened, rather than resolved, by competition. Courts and regulators should be focusing their attention on loyalty programs, not early termination fees.

† New York University School of Law and the University of Chicago Law School, respectively. We thank Ian Ayres, Rick Brooks, Clay Gillette, William Hubbard, Florencia Marotta-Wurgler, Ariel Porat and workshop participants at the University of Chicago and Yale Law School for helpful comments.
INTRODUCTION

A striking trend in consumer transactions is the rise of the “No Contract” contract. Businesses lure consumers with the assurance that no commitment is required—that the consumer can terminate the service freely at any time, without paying a termination penalty. Websites, storefront ads, billboards, and various marketing vehicles now carry the increasingly colloquial pledge of “No Contract.”

Initially emerging as a feature designed for consumers with low-incomes and low credit ratings who did not qualify for purchases requiring a long-term enforceable commitment, “No Contract” is quickly expanding to the entire market. Providers of cellphones, internet service, cable TV, security services, alarm systems, health clubs, and even bottled water suppliers now lure new customers by the comfort of “No Contract.”

To be sure, “No Contracts” are contracts. They are legally binding like any other consumer contract. Consumers are obligated—most importantly, to make timely payments as long as they receive the services—and there is plenty of fine print, notwithstanding the oft-used image in No Contract promotions suggesting no pre-printed forms. This fine print binds consumers to many of the standard legal artifacts of present day consumer transactions, such as mandatory arbitration, disclaimers of warranties, subtle fees, and the seller’s right to modify the terms at any time. The service providers are also contractually obligated—most importantly, to provide the promised service at the promised rate. What the No Contract moniker intends to convey, and does so effectively and non-deceptively, is that consumers are not going to be stuck prospectively with a contract they don’t like. If there is no long-term commitment, no required duration (beyond,
usually, month-to-month), no termination fees or penalties, then consumers can enter the relationship with less anxiety. If the service is no longer desired, or its terms turn out to be unpleasant, or if they change unfavorably, or if the consumer can no longer afford it, then the consumer can terminate and exit with no cost and no hassle.

There is much to be said about the choice of term “No Contract”—as a testament to consumers’ growing frustration with fine print, hidden fees, and the social experience that underlies consumer contract law. But our interest in this paper is different. We want to examine whether these No Contracts truly serve the interests of consumers, which consumers benefit from No Contract, and why. We therefore employ economic analysis, bolstered by insights from cognitive psychology, to explain the emergence of this contractual form, to analyze its welfare implications, and to shed light on the legal rules that regulate this practice.

Our basic findings are the following. First, relative to long-term lock-in arrangements, No Contracts protect consumers against price increases. But this freedom to exit and avoid price hikes means that consumers will also receive less upfront discounts and perks. A standard benchmark result in the economic literature on “switching costs” thus applies here: the overall price paid by consumers for the multi-period service is independent of the contract form. No Contract means less price hikes and lower prices down the road, but this price saving—actuarially anticipated by sellers—is exactly offset by higher initial prices. Whether locked-in or free to exit, consumers pay the same average periodic price. And this benchmark result is independent of the market power that the service provider potentially holds, or of the consumer’s time preferences.

This basic invariance theorem holds regardless of how lock-in is achieved. Firms can lock consumers into long-term commitments in two ways: by charging fees for early termination, or by offering rewards for “loyalty.” Both contractual designs introduce an added cost to the consumer’s decision to switch. We show that the invariance result holds for both types of switching costs. Namely, both lead to the

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1 As explained in Section I.A. below, we focus on the arguably common scenario where sellers are unable to perfectly commit not to raise prices (or reduce quality).
same average price and the same consumer welfare as does the free-exit No Contract design.

This, however, is merely a methodological benchmark. As we relax the assumptions underlying the invariance result, we discover various general circumstances under which lock-in makes matters worse for consumers, and reduces market efficiency overall. Some of these distortions occur even if consumers are perfectly rational: The strategic non-uniform pricing portfolio that is associated with lock-ins – that is, low prices in some periods and high prices in others – leads to inefficient quantities purchased by consumers. People buy too much when prices are artificially low (during the promotional phase) and too little when prices are jacked up (during the lock-in phase). Moreover, long-term lock-in reduces flexibility and prevents consumers from adjusting to new market conditions and technologies by switching to better-matched products. Finally, lock-in contracts can deter entry by new sellers and thus stifle competition.

Another important aspect of our analysis explores the distortions that lock-in creates when consumers are imperfectly informed and imperfectly rational. Consumers who are not aware of termination penalties and who fail to anticipate the price increases that a lock-in contract entails may be seduced by low upfront prices. And, sellers, through advertising that highlights immediate perks and discounts, can aggravate consumers’ biased balancing of present versus future payoffs.

The rise of No Contract arrangements can thus be understood as a market response to the inefficiencies of lock-in. Consumers, who were long subject to cognitive biases and oversubscribed to services that locked them in, have learned to anticipate the hardship and regret that comes with a long-term commitment—the “bill shock” (or “quality drop”) that often occurs in the late periods of the lock-in contract. The reality of rapidly progressing technology, in which products become stale before the lock-in period expires, has taught consumers to appreciate the cost of inflexibility that is associated with lock-in contracts. These consumers are the target audience of billboards that trumpet the freedom of No Contracts – the same billboards that, in the not-so-distant past, lured them with sign-up discounts and other front-end perks.

While No Contract responds to the growing savvy of consumers, correcting the various distortions that consumers now associate with long-term lock-ins, does it create its own new set of distortions? One
intuitive conjecture is that No Contract—like any type of short-term contract—would lead to lower investment in product quality. Businesses that can no longer rely on a guaranteed duration of service and income from their customers would be reluctant to make costly investments in service infrastructure. And with the lower investment, the value of the service would likewise be lower. We demonstrate, however, that this concern may be misguided in two ways. First, the incentives to invest may in fact be greater under No Contract, because businesses—under the constant threat of customer exit—have to keep their customers happy all the time, by maintaining high-quality service. Second, even if some types of investment are no longer made under No Contract, it may well be that this reduction is socially desirable, moderating a level of excessive investment that might otherwise persist.

The economic analysis generates predictions about the nature of the markets where No Contract is likely to proliferate. As mentioned, the No Contract arrangement emerged originally in certain sub-prime markets (e.g., prepaid cellphones), to avoid the implicit borrowing that is embedded in long-term service with low upfront prices. But as No Contract proliferated it entered prime markets as an assurance against the hidden fees and surprise price hikes that many consumers learned to expect (and abhor). In fact, rather than a carryover from the sub-prime markets, No Contract can become a signal of quality: the best service providers are the ones who can better afford to offer the free termination option, because their customers are less likely to want to exercise it.

This stock of economic insights, developed in Part I of the article, is then applied in Part II to examine the regulation of No Contract and lock-ins under consumer contract law. The law has most prominently focused on the legality and enforceability of Early Termination Fees ("ETF"), which are the staple of lock-in arrangements. Courts have at

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2 See, e.g., OREN BAR-GILL, SEDUCTION BY CONTRACT, LAW, ECONOMICS AND PSYCHOLOGY IN CONSUMER MARKETS, ch. 4 (2012). In other subprime markets lock-in has been the norm. For example, prepayment penalties were common in the subprime mortgage market. Id, at ch. 3.

times struck these fees as “excessive”—applying the age-old “penalty doctrine” that forbids over-compensatory liquidated damages, or various provisions in states’ consumer protection laws that serve a similar function. Viewing ETFs as a form of liquidated damages for breach of the contract by consumers, courts have responded to consumer claims that ETFs must not be allowed to exceed the seller’s lost profit from early termination. For example, when 2-year cellphone plans came with a fixed ($250) ETF, which would be levied even if termination occurred at the very end of the plan’s duration, courts vacated such provisions, thus moderating the lock-in mechanism.

Our analysis suggests that, in a fundamental way, the question asked by courts—are ETFs over-compensatory?—is the wrong question. ETFs are part of lock-in contracts, in which consumers enjoy upfront discounts and sellers assume upfront losses. There is no a-priori reason to think that higher upfront prices and lower ETFs are better, for consumers, than lower upfront prices and higher ETFs. And it is misguided to argue that back-end ETFs overcompensate sellers, without considering the up-front discounts that cut into sellers’ profits. To be sure, lock-in, and ETFs, can be harmful, as the economic analysis described above shows. But the sources of this harm are subtle and cannot be proven merely by pointing to high ETFs. Importantly, the ability to identify the incidence of harm is likely beyond the institutional competence of courts. Moreover, consumers’ increasing sophistication about ETFs, as evidenced by the rise of No Contract, suggests that legal intervention may not be necessary, and may undermine consumers’ choice among beneficial options.

It is striking, however, that the movement towards No Contract and away from lock-in has encompassed only the type of lock-in achieved though termination penalties. It has not applied to the other type of lock-in, achieved through loyalty rewards. Sellers may loudly advertise “No Termination Fees,” but we don’t see billboards trumpeting “No Loyalty Rewards.” This, despite the fact that—as our analysis clearly shows—loyalty rewards lead to many of the same distortions that penalty-based lock-ins create. We explore the behavioral-psychological explanations for this pattern, why consumers are becoming increasingly sophisticated about ETFs, while failing to fully understand the costs of loyalty programs. We conclude that

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courts and regulators, concerned about the distortions of lock-in, should be focusing their attention on loyalty programs, not ETFs.

I. The Theory of No Contract

We want to examine the effects of consumers’ freedom to switch among sellers. To that end, we set up a simplified scenario—a numerical example—and study how the freedom to switch affects prices, profits, consumer welfare, and efficient product matching. Methodologically, we begin with what we call an “invariance result.” This is a fundamental claim that, under some well-specified assumptions, consumers’ freedom to switch among sellers does not matter. The overall price paid, products bought, and parties’ welfare is invariant to the existence, or absence, of freedom to switch. This insight provides a useful benchmark for the subsequent analysis, which then relaxes the invariance assumptions one by one, and demonstrates the welfare effects of the freedom to switch.

A. A Benchmark Invariance Result

Two sellers, A and B, offer an identical product. There are two periods and in each period a single consumer is seeking to buy one unit. The price of the product can potentially vary across sellers and across time. Assume that there is price competition between sellers, complete information, and no discounting across periods. These assumptions will be relaxed later.

Once the consumer chooses the period-1 seller, there are two possible contractual arrangements:

• *No Contract* – the consumer can switch at the end of period 1 from one seller to the other, at no cost.
• *Lock-in Contract* – the consumer can switch at the end of period 1 only after paying the period-1 seller a termination fee that is specified in the contract.

We begin the analysis by assuming that both sellers can produce each unit at a per-unit cost of $100. We look at No Contract first, and then proceed to examine the alternative Lock-in Contract, assuming a termination fee of $20.
No Contract. In this case, competition between the two sellers will lead them, in each period, to set prices equal to the per-unit cost, $100. Since the consumer can switch at no cost in period 2, no seller can charge more than $100 in this period (and will lose money if they charge less). Expecting to make no profit in period 2, prices in period 1 must cover the period 1 cost, $100, and competition ensures that they will not exceed cost. Accordingly, both sellers will set a price of $100 in period 1 as well. The consumer may buy from a single seller in both periods, or switch sellers after period 1. The total price paid by the consumer over the two periods will be $200.

Lock-in Contract. Begin by considering period 2, after the consumer purchased from, say, Seller A in period 1. If she stays with seller A in period 2, then no termination fee will be paid. But if she switches to Seller B, the consumer will incur a switching cost of $20. Seller B might try to lure the consumer to switch, but it cannot offer the consumer a price lower than $100 (any loss Seller B would incur in period 2 will not be recouped because this is assumed to be the last period). Recognizing this, Seller A can charge the consumer a price of up to $120 in period 2 without risking losing her business, thus earning a profit of up to $20. In period 1 the two sellers will compete to attract the consumer, and capture the opportunity to earn $20 down the road, by setting below-cost prices. Both sellers will set a price of $80—their per-period cost of $100 minus the expected period-2 profit. The consumer will buy from the same seller in both periods—she is indifferent between A or B—and will pay a pair of prices $80 and $120 in periods 1 and 2, respectively, for a total two-period price of $200. Because of the switching cost, the period-1 seller has ex post market power, which it uses to raise its period-2 price and earn a $20 net profit. This profit, however, is perfectly offset by a discounted period-1 price.6

Several comparisons emerge from this simple example. First, note that the total price in the No Contract case and the lock-in case is identical, $200, equal to the two-period production cost, 2×$100. Accordingly, the consumer is indifferent between the two contractual arrangements. This is the benchmark invariance result, and it is due to the fact that the period-2 market power is fully anticipated in period 1. Since the discount in period 1 arises directly from the potential profit

in period 2, its size exactly equals the size of the profit. Every $1 of profit that a seller will be able to extract in period 2 from the locked in consumer raises by $1 the discount that the seller is willing to give in period 1 in order to lure the consumer.

Second, although the total two-period price is invariant across contractual arrangements, the lock-in switching cost has two distinct effects. Under the lock-in arrangement, the consumer buys from only one seller; and the price increases over time. Such escalating prices are commonly observed in markets where lock-ins are used. Sellers appear to compete over consumers more ferociously at the outset, by offering them perks in the form of discounts, "teaser" rates, signup gifts, or free bundled products. Once a consumer is committed, when the proverbial "period 2" arrives, sellers raise prices and increase their per-period profits. The difference between the period-1 and period-2 prices is determined solely by the switching costs.

We will soon turn to examine situations in which the irrelevance result is violated, and in which lock-in makes things worse. The inefficiencies will arise from the two effects just identified—the price distortions and the inability to switch. But it is important to first show the robustness of the invariance result, by identifying some factors that do not lead to inefficiency of lock-in.

First, the invariance result is robust to discounting. It might be conjectured otherwise, that the period-2 effect is not offset by the period-1 effect, because it is discounted. To see why the invariance is preserved even if parties discount period-2 payoffs, consider a discount factor of 10%. The No Contract prices will continue to be $100, $100 across the two periods, but the lock-in prices will now be $82, $120. The anticipated period-2 net profit of $20 is worth, in period 1, only $18 to the seller (it is discounted by 10%), and so the period-1 discount will be smaller. With these prices, the total discounted stream of prices that the consumer pays is again invariant across regimes – $190. Under No Contract, the total discounted price is $100 + 0.9×100 = 190; under lock-in the total discounted price is $82 + 0.9×120 = 190. Every $1 of profit that a seller will be able to extract in period 2 now reduces the price it charges in period 1 by the present discounted value of a future $1—which is $0.90 in the case of a 10% discount. The delayed profit is exactly offset by the present loss.
Second, the invariance result applies if the contract has more than 2 periods. For example, in a 3 period lock-in contract with a $20 termination fee in periods 2 and 3, the prices will be $80, $100 and $120 in the three periods, compared to a fixed price of $100 under No Contract (returning to the no discounting assumption). The total price summed up across periods continues to be invariant to the contractual structure—$300.7

Finally, it may be argued that the invariance result can be strengthened further. We have shown that total price is invariant to the existence of contractual switching costs, but per-period prices do vary from No Contract to lock-in. Specifically, while per-period prices remain unchanged with No Contract, lock-in features price escalation. Couldn’t a lock-in seller commit, contractually, to fixed per-period prices? In our example, couldn’t the seller commit to set a price of $100 in each of the two periods? With such a commitment, the invariance result would extend beyond total price to the per-period prices.8

Commitment is indeed possible, and it is definitely observed in consumer markets. For example, cellular service providers commit to a fixed monthly fee. Yet, the ability of sellers to commit is limited. First, sellers can “invent” new prices and fees in the second period. Indeed, new prices and fees are continuously introduced in many consumer markets. Examples include late-payment fees, over-the-limit-fees, roaming charges, no-sufficient-funds fees, cash-advance fees, etc.9 Second, shifting focus from price to quality, sellers can reduce the quality of their product or service in the second period. Since quality is often less verifiable than price, it may be more difficult to contractually

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7 Assuming the consumer chose Seller A in period 1, in the last period, which is now period 3, Seller A will set a price of $120 (as it did in period 2 in the two-period example). In period 2, Seller B would be willing to offer a below-cost price of $80, anticipating that if the consumer switches, Seller B will be able to recoup the $20 loss in period 3. To ensure that the consumer does not switch, Seller A cannot price above $100. Finally, in period 1, the two sellers anticipate a $20 profit in period 3 (and a break-even price in period 2), if they can attract, and lock-in, the consumer. Therefore, the period 1 price will be competed down to $80.

8 In the basic setup, the seller might commit to any pair of prices that sum-up to $200, e.g., [$100, $100], [$80, $120] or [$120, $80]; when we introduce the distortions that come with deviations from the [$100, $100] price schedule, it will be clear that the seller would want to commit to [$100, $100].

9 See Bar-Gill, supra note 2. On the other hand, there is also a trend towards price simplification and fee-reduction. Id, ch. 2 (discussing Citi’s “Simplicity Card”).
commit in advance to fixed quality. It is, therefore, important to study the implications of imperfect commitment.

Imperfect commitment plays a key role in the analysis of lock-in. At least some of the inefficiencies generated by lock-in, as detailed below, follow from the escalating per-period prices that are a feature of lock-in with imperfect commitment. When perfect commitment is possible, rational consumers would demand that sellers exercise this commitment power to guarantee fixed per-period prices; otherwise they would shun sellers with lock-in contracts. But, again, this efficient rational-expectations equilibrium requires perfect commitment, which, as argued above, will not always be available.

B. Loyalty Programs: Lock-in with Carrots

We have thus far focused on lock-in enforced by termination penalties. The No Contract trend focuses on the removal of such penalties. But termination penalties are not the only contractual mechanism for increasing the cost of switching sellers. Loyalty programs that reward consumers for repeat purchases similarly increase the cost of switching. A consumer who switches from Seller A to Seller B might gain a benefit, e.g., a lower price or better-quality service, but also incur a cost in the form of forgone loyalty rewards – rewards that can take the form of a free flight, a hotel discount, cash back, and more. Loyalty rewards thus constitute an opportunity-cost termination penalty. Yet, the economic analysis of loyalty programs as lock-in mechanisms is different from the economic analysis lock-in enforced by termination penalties. The main difference is that, at least in the basic model, loyalty rewards are paid on the equilibrium path, whereas termination penalties are not.

Consider the basic example above, but assume that Seller A uses a loyalty reward, rather than a termination penalty, to induce repeat business. Specifically, suppose Seller A offers an award of $20 to any loyal customer who buys from this seller both at periods 1 and at period 2. Assume that this award would be redeemable in period 2. A consumer who purchased from Seller A in period 1 faces the following choice: Stay with Seller A in period 2 and redeem the $20 award or

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10 See also Farrell and Klemperer, supra note 6, at Sec. 2.3.2.
switch to Seller B and forfeit the award. As with a termination fee, switching entails a cost – a $20 cost.

But while the termination fee was not paid by the consumer and, correspondingly, not received by the seller, the loyalty reward is paid by the seller and received by the consumer. Seller A must charge for this extra cost of doing business. There are two ways for Seller A to recoup the cost of the loyalty program:

**Loyalty programs with an upfront fee:** Seller A can charge an upfront, period 1 fee for participation in the loyalty program. Indeed, certain credit card issuers charge an upfront fee for enrollment in their loyalty programs. In the basic example, the effective period 1 price, inclusive of the enrollment fee, would be $120. The effective period 2 price, accounting for the $20 loyalty reward, would be $80. Loyalty programs with an upfront fee reverse the price profile obtained when lock-in is enforced using termination penalties.

**Loyalty programs without an upfront fee:** While some loyalty programs entail an upfront enrollment fee, others do not. For example, many airlines allow customers to enroll in their loyalty programs free of charge. How do these sellers cover the extra cost of the loyalty program? If the period 1 price is not used to cover this cost, then the period 2 price must. In the basic example, the nominal period 2 price would be $120, but since the consumer enjoys a loyalty reward in period 2 the effective period 2 price is $100, equal to the per-unit cost of production. Moving back to period 1, since Seller A expects zero profit in period 2, the period 1 price will equal the per-unit cost of $100. In a loyalty program without an upfront fee, price equals $100 in each period, as in the No Contract case; but switching is deterred, as in the Lock-in case with termination fees.

The two options described above – loyalty programs with and without an upfront fee – should be seen as two ends of a continuous range. Seller A need not recoup the cost of the loyalty program only through the period 1 price (upfront fee) or only through the period 2 price (no upfront fee). Seller A can recover part of this cost in period 1 and the remainder in period 2. Nevertheless, for expositional convenience we shall restrict our analysis to the two polar cases.

It should be noted that the benchmark invariance result holds for lock-in that is enforced by loyalty programs, regardless of how the seller chooses to cover the cost of the program. In all cases, the total
effective price paid by the consumer, over the two periods, inclusive of the loyalty reward, is equal to $200.

C. The Cost of Lock-in

Like any invariance result, the useful way to think about it is not as an empirical prediction, but rather as a starting point for further exploration of the underlying reasons why different contractual regimes do matter. That is, if in practice lock-in is going to have differential effects on consumers, then these effects must arise, and should be traced to, not the obvious sources—the magnitude of switching costs, or discounting, or the duration of lock-in—but to some less obvious sources.

The analysis so far was based on several assumptions. When we relax some of these assumptions, the invariance result will vanish. This theoretical approach will allow us to identify the factors that, when interacting with switching costs, affect the welfare of sellers and consumers. Each of the following sections identifies a different factor that leads to the breakdown of the invariance result.

1. Inefficient Quantity

One of the differences between No Contract and Lock-in, even when the price invariance holds, is the per-period prices. Under lock-in, the price is low in period 1 and high in period 2. We will now show that this feature can lead to inefficiency. The intuition is the following: Prices affect the quantity served. When prices fall, more units are bought; and vice versa. A low price in period 1 and a corresponding high price in period 2 lead to inefficient quantities.

The basic model assumed that the consumer seeks exactly one unit per period. Whether the price was $80, $100, or $120, the periodic quantity demanded was fixed at 1. This, of course, is unrealistic. Imagine, instead, that the consumer is seeking up to three units per period, and that the marginal value per unit is declining. Specifically, in each period, the values the consumer attaches per unit are given in Table 1:
Table 1: Per-Unit Values

<table>
<thead>
<tr>
<th>Unit</th>
<th>Value [$]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>125</td>
</tr>
<tr>
<td>2</td>
<td>105</td>
</tr>
<tr>
<td>3</td>
<td>95</td>
</tr>
</tbody>
</table>

As before, we continue to assume that the cost of production per unit is fixed at $100, that there are two periods, and that the termination fee under a lock-in contract is $20. We make two more assumptions: First, there is no penalty for reducing the quantity purchased across periods. Under the lock-in contract, the consumer can choose to buy less in period 2 than she did in period 1. The termination penalty applies only if a consumer buys from another seller. Second, sellers are restricted to linear pricing, i.e., they cannot vary the per-unit price according to the number of units purchased.\(^{11}\)

In this setting, it is efficient to sell two units in each period. The net value for each of the first two units is positive, and the total per-period surplus is 30 (= \(125 - 100\) + \(105 - 100\)). Purchasing a third unit is inefficient: it costs $100 to produce, but generates only a $95 value to the consumer.

No Contract. In this case, the price equals $100 in both periods, and so the consumer will purchase two units in each period. This is the efficient outcome. The total two-period surplus is $60.

Lock-in Contract. If the consumer purchased from Seller A in period 1, the seller can charge up to $120 in period 2. At this price, the seller will sell only one unit, and will earn a profit of $20 (the price of $120 minus the cost of $100). Expecting this $20 profit, in period 1 the seller can offer a discount. However, at a discounted price, more units will be bought. The market-clearing, period-1 price would be $93.33. At this price, the consumer buys three units and the seller loses exactly $20 (per unit loss of $6.67, times 3).

Two types of inefficiency arise under lock-in. First, when the price is high, too few units are purchased. In period 2, a unit that is valued at $105 is not bought because the price is $120. The seller's market power in this period has the effect of monopolistic pricing—inefficiently reducing the quantity sold. Second, when the price is low,

\(^{11}\) See Farrell and Klemperer, supra note 6, Sec. 2.3.2 (noting the linear pricing restriction).
too many units are purchased. In period 1, a unit that is valued at $95 is bought because the price is $93.33. The seller’s below-cost pricing attracts excessive purchases.\(^\text{12}\)

Lock-in reduces efficiency, and it is also harmful to the consumer. Under the No Contract arrangement, the consumer’s per-period net payoff is $30 – she gets two units valued at $230 (= $125 + $105) and pays a total price of $200 – for a two-period total payoff of $60. Under the lock-in arrangement, the consumer’s period-1 payoff is $45 – she gets three units valued at $325 (= $125 + $105 + $95) and pays a total price of $280 (= 3×$93.33); and her period-2 payoff is $5 – she gets one unit valued at $125 and pays a price of $120. The two-period total net payoff is $50. The consumer loses $10, or 16.66%, as compared to the No Contract alternative.

This example can be generalized. Instead of one consumer seeking to buy multiple units, we can introduce the realism of many heterogeneous consumers, each valuing the units differently. Indeed, this is exactly what our example captures: when the price is low in period 1, we march down the demand curve and an inefficiently large quantity is purchased. And when the price is high in period 2, many consumers reduce their demand and an inefficiently low quantity is purchased.

In the heterogeneous demand scenario, there is however another effect—a subtle and often unrecognized cross-subsidy among consumers. Some consumers with relatively low valuations will buy in period 1 and then, when the price spikes up in period 2, reduce their demand within the permissible contractual range, without triggering the termination penalty. These consumers enjoy a below-cost purchase in one period, without incurring the full offsetting subsequent price premium. Their net benefit must be paid for by somebody. Given that sellers compete and break even, the cross-subsidy must come from other consumers. These are the high value consumers who maintain relatively high demand in period 2, paying the high prices that effectively fund the period-1 discount.

The distribution of consumer valuations for the product – the shape of the demand curve – determines the presence and size of the

\(^{12}\) See Farrell and Klemperer, supra note 6, Section 2.3.2.
quantity distortions and the related cross-subsidy. In particular, if the number of consumers in the low valuation group is small, then they will benefit from the lock-in and their low, period-1 price will be cross subsidized by the consumers who make the bulk of the high-priced period-2 purchases. But if the number of consumers with low valuations is large, then the seller will no longer be able to set a low, period-1 price, because there will not be enough high-valuation consumers to fund the period-1 discount with their period-2 purchases. In effect, the demand structure will force a shift to a pricing scheme closer to the one we see in No Contract – $100 in each period – and the distortion will be largely eliminated. Whether lock-in creates a distortion depends, then, on the presence of enough high-valuation demand from which period-2 profits can be reaped.\footnote{To illustrate the cross-subsidy effect, consider the following example: There is one type-H consumer, who values one unit of the product at $125 (and any additional units at zero). There is one type-L consumer, who values one unit at $125 and $95 (and any additional units at zero). Can $p_2 = 120$, the equilibrium period-2 price in our example, be part of a lock-in equilibrium in this more general set-up? Not for large values of $n_L$. A seller’s period-2 profit with $p_2 = 120$ is: $2 \cdot (120 - 100) = 40$. The period-1 price needs to offset the period-2 profit: $(n_L + 1) \cdot (100 - p_1) = 40$. For $n_L > 7$, we would need $p_1 > 95$ to solve this equation. Such a price, however, would not be an equilibrium, as it would lead type-L to buy only a single unit, rather than $n_L$ units. Can we derive an equilibrium, with $p_2 = 120$, where the type-L consumer buys only one unit? Again, the answer is ‘no’. In that case, to dissipate profits we would need: $2 \cdot (100 - p_1) = 40$ or $p_1 = 80$. But such a price is inconsistent with type-L buying only one unit (type-L would buy $n_L$ units when $p_1 = 80$). In sum, there is no equilibrium (in pure strategies) with $p_2 = 120$. This does not mean that there is no equilibrium; only that the equilibrium period-2 price is below $120$. The solution is to reduce the period-2 price such that: $2 \cdot (100 - p_1) = 2 \cdot (p_2 - 100)$, with $p_1 > 95$ (to ensure that type-L buys only a single unit). For example, $p_1 = 96$, $p_2 = 104$ is an equilibrium. As we can see, pricing is closer to the No Contract benchmark.}

Who are these “high valuation” consumers, who end up worse off under lock-in? In some markets—for example, the market for voice and data services for smartphones and tablets or the market for magazine subscriptions—high valuation is associated with commercial, as opposed to private, use or use by more affluent consumers. In these markets the cross subsidy is likely progressive. In other markets—for example, certain consumer credit markets – high valuation may be associated with more urgent needs and absence of meaningful choices, suggesting that the cross subsidy might be regressive.
The quantity effects of lock-in are quite different when lock-in is enforced with loyalty rewards rather than with termination penalties. When the loyalty program entails an up front enrollment fee, the result is the mirror image of what we found with termination penalties. In particular, one break-even pricing scheme entails a period-1 price of $120 (earning the seller a $20 profit) and a loyalty price of $93.33 in period 2 (a net loss to the seller of $20). This would lead to inefficient levels of purchase in both periods. However, when the loyalty program does not include an upfront fee, quantities sold are identical to the quantities sold under No Contract. Here, while switching is effectively deterred, there is no ex-post distortion in the quantity purchased and the loyalty program is, in that respect, benign.

2. Inflexibility

A second difference between No Contract and Lock-in, which was displayed even when the price invariance held, is the “loyalty” of the consumer to one seller—the absence of any switching in equilibrium. In the benchmark analysis this was inconsequential because it was assumed that per-unit production costs are fixed at $100, invariant across sellers. We will now show that this “loyalty” feature can lead to inefficiency. The intuition is the following: In dynamic competitive markets, sellers are constantly improving their products and offering lower cost (or higher value) products. The quality and cost of products thus vary over time and across sellers. “Loyalty,” driven by switching costs, reduces the likelihood that consumers would switch to a better-value, innovative product. We label this the “inflexibility” distortion.

Return to the original setup. There is one consumer and two sellers. Both sellers’ costs in period 1 are $100. The consumer is demanding exactly one unit per period, which provides the consumer a value of $125. Now assume that in period 2 one of the sellers will introduce a product improvement that will increase the surplus by $10. The improvement can be a cost-saving technology, reducing the cost of producing a unit to $90; or it can be a value-enhancing technology, increasing the value of a unit to $135. It is unknown, at the outset, which of the two sellers would introduce the improvement; each has a probability of 50% of becoming the innovative seller. In this setting, the total maximal surplus is $60 (= (125 – 100) + (135 – 100)).

\[\text{Total maximal surplus} = (125 - 100) + (135 - 90) = 60.\]
No Contract. In this case, the consumer will buy the improved product in period 2, as the innovative seller will offer a slightly better deal. If the improvement is a cost reduction, the seller who turns out to have lower cost in period 2 can offer a small discount, attract the consumer, and enjoy a profit of up to $10. If the improvement is a value enhancement, the seller can offer a better value to the consumer, and charge up to $10 more for it. The period-1 price remains equal to the period-1 cost of $100. From an efficiency perspective, the increased surplus is realized: the consumer always buys in period 2 from the innovative seller, even if this requires switching. The total surplus is maximal, $60. The consumer ends up with a $50 net payoff and the seller with a $10 profit.

Lock-in Contract. Under a lock-in arrangement (with a $20 termination penalty), the consumer will buy in period 2 from the innovative seller only if it happens to be the same seller she bought from in period 1. Specifically, if her seller is the one with the product improvement (the one that creates a surplus of $35, as opposed to the lower surplus, $25, that the original product creates) there is no price that the lower surplus seller can offer to make the consumer switch and pay the switching costs. Specifically, the lower-surplus seller will not set a price below $100, and so, if the consumer switches, she will enjoy a net value of (at most) $5 ($125 – $100 – $20). The higher-surplus seller, who also enjoys the lock-in advantage, will set a price of (just below) $130 – to match the $5 net value ($135 - $130) – and reap a profit of $30. The consumer will not switch.

More interesting, if it is the other seller who offers the product improvement, there is still no price that will make the consumer switch. Suppose, for example, that the other seller can produce the product for only $90. This will force the existing seller to reduce its period-2 price to $110 (because in that case the competition can offer $90), but it will manage to keep the consumer from switching. The $10 improvement is not enough to overcome the $20 switching cost. The same is true if the product improvement is an increase in consumer value, developed by the other seller. The seller with the new product can offer the consumer a maximum net value, accounting for switching costs, of $15 ($135 – $100 – $20). The existing seller will thus set a price of (just below) $110, which would provide the consumer with a net value of (just above) $15 ($125 – $110). The consumer, while paying a lower price to the lock-in seller, will not buy the higher value product – an inefficient outcome.
Nothing changes in period 1. Before it is known who will be the innovative seller, each seller expects that, if it gets the locked-in consumer in period 1, it will earn a period-2 profit of either $30 (if it is the innovative seller) or $10 (if it is not), each with equal probability—for an expected profit of $20. Anticipating this, in period 1 each seller will offer a below-cost price of $80.

As before, there is no switching. The consumer does enjoy increased surplus due to cost reduction (a 50% chance that the period-2 net payoff will be $15, rather than the originally anticipated $5). The total expected net consumer payoff is therefore $45 + \frac{1}{2}$5 + \frac{1}{2}$15 = $55. As compared to No Contract, the consumer is better off by $5 under the lock-in contract! The expected profit for the seller remains $0, due to competition. The only difference is that we now have a stochastic profit—in period 2 the profit will be either $10 or $30, for an expected profit of $20—which will be offset by the $20 discount in period 1.

While consumers benefit from lock-in, it is inefficient. The inefficiency is attributed to the forgone improvement in period 2: there is a 50% chance that the consumer would not purchase from the innovative seller in period 2 and remain locked-into the unimproved product. Overall surplus under lock-in is $55, whereas the optimal outcome allows for a surplus of $60.

In sum, relative to No Contract, lock-in creates inefficiency (overall surplus is $55, rather than $60), but also increases the consumer surplus (from $50 to $55). The reason is that the seller’s period-2 profits from lock-in are competed away in period 1. With No Contract, the seller with the new product makes supra-competitive profits in period 2, but these profits are not competed away in period 1.

A similar efficiency cost is incurred when lock-in is enforced using loyalty programs. Consumers choose to remain loyal to their seller, even if in a world without such programs they would switch to the superior match. Think of a consumer who books a flight with United Airlines, just to maintain her “elite” frequent-flyer status, notwithstanding the better fare or flight itinerary on Southwest Airlines. Note that loyalty programs impose an inflexibility cost regardless of whether the program charges an up front participation fee or not.
3. Entry Deterrence

Another implication of the inflexibility effect is entry deterrence. Lock-in contracts dampen competition by deterring entry of potential competitors into the market. By making it more difficult for consumers to switch to a new entrant, lock-in contracts render entry less profitable. As a result, lock-in helps sustain oligopolistic markets and deprives consumers of the benefits from more intense competition.\(^{15}\)

The basic model assumed that both sellers are already in the market in period 1, and that consumers enjoyed the full benefits of competition that drove prices down to marginal cost. Alternatively, assume that only Seller A is in the market in period 1. This means that the consumer always buys from Seller A in period 1, and that the price may exceed marginal cost. In period 2, Seller B is considering whether to enter the market and compete with Seller A. To simplify matters, assume that Seller B would enter the market only if it has a non-zero chance of attracting the single consumer.

**No Contract.** With No Contract, if seller B enters the market in period 2, competition will force both sellers to set a price of $100, equal to their marginal cost. Since both sellers offer an identical product at an identical price, the consumer will randomly select one of the sellers. Anticipating a 50% chance of being chosen, seller B will enter the market.

**Lock-in Contract.** The outcome with lock-in is different. The $20 exit penalty in the lock-in contract would prevent the consumer from switching to Seller B. Seller A will set a price slightly below the minimum price that Seller B can set, $100, plus the termination fee (say, a price of $119). Anticipating this, Seller B will not enter the market. Rather than paying $100 in period 2, the consumer will pay (almost) $120. Moreover, unlike in the basic model, the high period-2 price does not lead to a lower period-1 price.

Entry deterrence has a distributive effect, of increasing the incumbent seller’s profits at the expense of consumers. It may also cause inefficiency by deterring entry of more efficient sellers. These effects have been widely recognized in the airline industry, for example. Frequent-flyer programs, the airline version of loyalty programs, help the incumbent airline dominate key hub airports and,

\(^{15}\) See Farrell and Klemperer, supra note 6, Section 2.7.
with this hub dominance, deter entry by potentially more efficient airlines (not to mention the cost of high airfares charged by the dominant airline).\textsuperscript{16}

\section*{D. Imperfectly Rational Consumers}

Many consumers fall short of the perfect rationality ideal assumed in the analysis so far. What are the social welfare implications of No Contract, as compared to lock-in, when consumers are imperfectly rational?

The main concern about lock-in is that many consumers would not fully appreciate the period-2 effect—increased prices and a penalty for exit—and that this myopia would lead consumers to engage in excessive consumption in period 1. The distortions might then come from two directions. First, consumers might be trapped in relationships that they would otherwise prefer to exit. And, second, consumers might enter into inefficient deals by the lure of low upfront prices. While the first distortion merely exacerbates problems with lock-in that occur even when consumers are rational—namely, the inflexibility effect, which limits ability to capture new opportunities for better deals—the second distortion is unique to the irrational choice setting.\textsuperscript{17}

We can identify at least three distinct misperceptions that consumers might have. First, consumers might underestimate the switching costs, whether these are contractual penalties (the early termination fee) or real switching costs (e.g., changing one’s cellphone


\textsuperscript{17} We focus on the risk that consumers might underestimate the cost of lock-in. There is another, related risk – that consumers would overestimate the benefit of No Contract. While No Contract eliminated contractual switching costs, it does not eliminate other non-contractual (real) switching costs. The risk is that consumers, lured by Sellers’ No Contract pitch, would enter into welfare-reducing transactions. Cf. Shmuel I. Becher and Tal Z. Zarsky, Open Doors, Trap Doors, and the Law, 74 Law and Contemporary Problems 63 (2011). [Perhaps this deserves a more comprehensive treatment in the text.]
number). Contractual penalties are likely to be underestimated because they are buried in the fine print that consumers do not read.\textsuperscript{18} And real switching costs are underestimated due to lack of experience and naïveté. Second, consumers might fail to anticipate the escalating prices associated with lock-in contracts, especially when the price is broken down into a complex, multi-factor formula that includes numerous itemized fees, some of which depend on the consumer's yet unknown use-patterns. Also, the contract term that defines exactly when period 1 ends and period 2 begins is often non-salient to consumers and rarely highlighted by sellers prior to the first escalated bill in period 2 (hence the colloquial term "bill shock").\textsuperscript{19} Third, consumers might underestimate their potential period-2 opportunities. Greater benefits might be captured in period 2 by switching to products and technologies that, at period 1, do not yet exist. If consumers underestimate the pace of change in technology, cost or their own preferences, they will underestimate the benefits from the option to switch and, correspondingly, the effective cost of lock-in.

In some cases, these mistakes might not hurt consumers, relative to the perfect rationality benchmark. Take our initial example of a product that costs $100 to produce, where the price rose from $80 to $120 due to a lock-in penalty of $20. Consumers experience a large decline in net payoff at period 2, but the fact that they might fail to anticipate this pattern does not necessarily change their conduct or choices. They might be upset or disappointed, but they would not have behaved differently, and they are not hurt by their limited cognition.

In other cases, consumers’ irrational expectations might lower their payoff relative to the perfect rationality outcome, and might also lead to inefficient trade, in which consumers enter contracts that are overall welfare reducing. To illustrate, assume that a consumer is unaware of the $20 lock-in penalty, mistakenly believing that it is $0. The consumer would thus fail to anticipate the period-2 price increase.


\textsuperscript{19} The FTC found that 30 million Americans -- or one in six mobile users -- have experienced "bill shock," a sudden increase in their monthly bill that is not caused by a change in service plan. Nearly half of cell phone users and almost two thirds of broadband users with early termination fees don't know the amount of the fees they are accountable for. See News Release, FCC SURVEY CONFIRMS CONSUMERS EXPERIENCE MOBILE BILL SHOCK AND CONFUSION ABOUT EARLY TERMINATION FEES, May 26, 2010.
Assume now that, due to the period-2 price increase, the consumer would have a negative period-2 payoff, something that a rational actor would be able to predict (and take into account in period 1), but which an irrational consumer fails to anticipate. Specifically, assume that the value of the product to the consumer is only $95. The sellers will set a price of $80 at period 1 and a price exceeding $115 in period 2.\textsuperscript{20} The naïve consumer will make the purchase in period 1 but will exit in period 2. He will net $15 in period 1, but will lose the $20 termination penalty in period 2. His overall welfare will be -$5. The private loss is also a social loss—it is due to an inefficient period-1 purchase, in which a product that is worth only $95 is produced at a cost of $100.\textsuperscript{21}

In this illustration, the consumer actually exited in period 2 and paid the termination penalty. A different type of inefficient outcome occurs when the consumer remains locked-in in period 2, forfeiting the opportunity to switch to a different, more efficient, seller. We already saw that even if consumers are perfectly rational, they might end up inefficiently locked into low value purchases. For example, when an opportunity to switch to a higher-surplus seller arises stochastically, it might be squandered if the gain from switching is less than the lock-in penalty. This inflexibility effect is compounded in two ways when consumers suffer from irrational expectations. First, it may arise even in non-stochastic environments, for example when consumers enter a contract with Seller A failing to recognize that Seller B will introduce a better product in period 2. Second, irrational consumers may enter inefficient period-1 contracts and remain locked in.

In all, when the cost of lock-in is underestimated, the cost of a product or service that is accompanied by a lock-in contract will be underestimated. Demand for these products and services will thus be artificially inflated: Consumers will purchase products and services

\textsuperscript{20} A period-2 price exceeding $115 would induce consumers to exit and pay the $20 penalty, because purchasing at this price would involve a loss greater than $20. The seller would thus earn the termination penalty of $20. A period-2 price of $115 or lower would induce consumers to make the purchase, but the seller's net payoff will be, at most, $15.

\textsuperscript{21} The same analysis applies if consumers are aware of the $20 termination penalty but fail to recognize that sellers would exploit it to raise the period-2 price. Believing that the price will remain $80 in period 2, the consumer makes the period-1 purchase but then exits in period 2.
that they shouldn’t.

One manifestation of this bias is the excessive allure of upfront perks that consumers accept, in return for a lock-in arrangement. Free gifts, high-end phones, and various other teasers are used to “seduce” consumers, but often these are consumption artifacts that rational consumers would choose to forgo, if they had to bear their true cost or price. Many consumers would hold on to their used smartphones longer, rather than upgrade them to a marginally improved device, if not for the opportunity to receive a “free” upgrade every time they renew a lock-in arrangement with their provider.

Lock-in is a rational response by profit-maximizing sellers to the imperfect rationality of their customers. With No Contract consumers enjoy intermediate payoffs in both periods. With lock-in consumers enjoy high payoffs in period 1 and low payoffs in period 2. Rational consumers anticipate the declining payoffs under lock-in and, consequently, exhibit no preference for Lock-in over No Contract: High payoffs in period 1 followed by low payoffs in period 2 is no better than intermediate payoffs in both periods. Imperfectly rational consumers might fail to appreciate the declining payoffs that lock-in implies. Products accompanied by lock-in contracts would thus appear to be more attractive: High payoffs in period 1 followed by similarly high payoffs (or intermediate payoffs) in period 2 are better than intermediate payoffs in both periods. A seller who offers No Contract would thus lose business to a seller who offers a Lock-in Contract.

These adverse implications of imperfect rationality apply also when lock-in is enforced using loyalty programs, rather than termination penalties. Reconsider the three misperceptions identified above: The first – underestimation of switching costs – applies equally to loyalty programs, as does the third misperception – underestimation of potential period 2 opportunities. The second – failure to anticipate escalating prices – also applies, at least when the loyalty program does not impose an upfront fee. We have seen that the effective price, under such programs, would remain unchanged across the two periods, with the nominal period-2 price rising by the value of the reward. At period-2, the consumer might recognize this tradeoff. At period 1, however, the same consumer might overestimate the value of the loyalty reward, since sellers spend much promotional effort highlighting the loyalty perks, but not the accompanying price increases. The consumers might be tempted to overpay even in period 1 to qualify for the perceived reward. Finally, loyalty programs entail a

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22 See Bar-Gill, supra note 2, ch. 1.
23 See Bar-Gill, supra note 2.
fourth misperception that is not present when lock-in is enforced with a termination penalty. Loyalty rewards often come with a wealth of fine-print restrictions: Think black-out dates in airline frequent-flyer programs or expiration dates on reward vouchers. The concern is that consumers will underestimate the burdens imposed by these restrictions and thus overestimate the value of the loyalty rewards. This misperception further reduces the likelihood of efficient switching. Even if a new seller offers a deal that is sufficiently attractive that it outweighs the actual value of the loyalty reward, it might not outweigh the overestimated value of the same loyalty reward.

E. Investment Efficiency

The value of a product or service is determined, in large part, by investments that the seller makes in improving the quality of the product or service. Cable companies can increase the value of their service by investing in better, more varied content, or in installation of broadband infrastructure. Cellphone companies can improve the quality of service by investing in a better network and building more towers. Satellite TV can install more powerful dishes. And health clubs can invest in new equipment. The question we now ask is whether contractual design – No Contract vs. Lock-in – affects the incentives to make such investments.

A basic, intuitive conjecture may go as follows: Lock-in guarantees sellers a longer duration contract and greater returns from their investments. As long as sellers enjoy some per-period profit—that is, as long as competition does not dissipate all the profits—lock-in will be associated with greater returns for investment and, accordingly, sellers will invest more.

Our analysis below will show that this conjecture is false. It overlooks a more subtle effect: under No Contract, despite the potentially short duration of the relationship, a seller would have an additional incentive to invest – to keep the consumer in the relationship. Instead of depending on its clients’ no-exit obligation, the seller will have to improve the product’s value to convince the clients to stay.
To appreciate the generality of this observation, we will present the analysis more formally. Consider a two period setting in which a single seller and a single buyer transact over a single unit of a product. The per-period value of the product to the consumer is \( v \), and it is a function of the seller’s investment, \( x \), namely \( v = v(x) \). The contract between the parties has two aspects. First, it divides the surplus, \( v(x) \), between the parties, with a fraction \( \alpha \) secured by the seller and \( 1 - \alpha \) by the consumer.\(^{24}\) Namely, the seller can charge a per-period price of \( \alpha v \) (assume that the seller’s per-unit cost is zero).\(^{25}\) Second, the contract determines the duration, 1 or 2 periods. A 1-period contract corresponds to a “No Contract” arrangement, whereas a 2-period contract is a “Lock-in.” We assume risk-neutrality, zero discounting, and perfect information.

The intuitive conjecture stated above builds on the idea that if the transaction is a one-period transaction, the seller’s revenue is \( \alpha v(x) \); and if it is a two-period transaction, the seller’s revenue is \( 2 \alpha v(x) \). The marginal increase in revenue from a $1 investment in value is twice as large if the transaction lasts two periods, as compared to only one period \( (2 \alpha v(x) \text{ as compared to } \alpha v(x)) \). Accordingly, as long as investment yields positive but decreasing marginal returns, a profit-maximizing seller will invest more in improving the quality of its product, if it expects the consumer to stay for a longer period. This basic insight – that longer seller-buyer relationships lead to higher investment (and thus better product value) – would seem to provide an argument for lock-in. Let us now examine this more closely.

**No Contract.** Let \( p \) denote the probability that the consumer will stay on for the second period. This probability may depend on various factors not captured in the model (e.g., outside options), but it is also a function of the per-period value of the product to the consumer: \( p = p(v) \). And the value of the product is a function of the seller’s investment in quality: \( v = v(x) \). Hence: \( p = p(\nu(x)) \). Under No Contract, the seller’s profits are:

\[
\alpha v(x) + p(\nu(x)) \cdot \alpha v(x) - x
\]

or

\(^{24}\) We assume that the fraction each party secures is exogenously fixed.

\(^{25}\) To keep things simple, we assume – for purposes of this simple model – that the per-period price is the same in both periods, under both No Contract and lock-in. We have seen that this is not the case with lock-in (where the period-1 price is low and the period-2 price is high). But our simplifying assumption is innocuous here, because, for investment purposes, sellers care about total price, not about the per-period price.
\[ \alpha v(x) \cdot [1 + p(v(x))] - x \]

The investment level that maximizes profits satisfies the first-order condition (FOC):

\[ \alpha v'(x) \cdot [1 + p(v(x))] + \alpha v(x) \cdot \left[ dp(v(x))/dv \right] \cdot v'(x) = 1 \]

or

\[ \alpha v'(x) \cdot \left[ [1 + p(v(x))] + v(x) \cdot \left[ dp(v(x))/dv \right] \right] = 1 \]

The FOC captures three distinct effects that determine the level of investment:

(i) *Higher price.* The first expression on the Left-Hand Side (LHS) of the FOC, \( \alpha v'(x) \), reflects the per-period increase in the surplus that the investing seller can capture. Higher investment increases the total surplus, \( v(x) \), and the seller sets a higher price to capture the same share, \( \alpha \), of this larger surplus.

(ii) *Duration multiplier.* The second expression on the LHS of the FOC, \( [1 + p(v(x))] \), reflects the expected number of periods in which the investment will bear fruit. Since the consumer buys in the first period for sure (probability 1) and in the second period with probability \( p(v(x)) \), the "higher price" effect is multiplied by a factor greater than 1. The higher \( p(v(x)) \) is, the greater the return to investment, which translates into higher profits for the investing seller.

(iii) *Keeping customers happy.* The third expression on the LHS of the FOC, \( v(x) \cdot \left[ dp(v(x))/dv \right] \), reflects a bonding effect of investment: investing more increases \( v \), which in turn increases the probability that the consumer will be sufficiently satisfied with the product that he will choose to buy in the second period, despite the "No Contract" option to exit. By choosing No Contract, the seller effectively commits to invest in making its customers happy.

*Lock-in Contract.* Consider, in contrast, the seller's incentive to invest under lock-in. Since lock-in guarantees that the consumer will
purchase the product in both periods, the seller's profits are: \( \alpha v(x) \cdot 2 - x \). And the first-order condition (FOC) is:

\[
\alpha v'(x) \cdot 2 = 1
\]

The FOC here captures two effects that determine the level of investment:

(i) **Higher price.** The first expression on the LHS of the FOC, \( \alpha v'(x) \), reflects again the per-period increase in the surplus that the investing seller can capture.

(ii) **Duration multiplier.** Because the seller is guaranteed purchases over two periods, the multiplier is 2.

We can now compare the investment incentives under No Contract and Lock-in.

(i) **Higher price.** This effect, \( \alpha v'(x) \), which is the per-period increase in the price the seller can charge, is independent of the duration of the transaction and is thus identical under both regimes.

(ii) **Duration multiplier.** Since \( 1 + p(v(x)) < 2 \), this effect is greater under the lock-in regime. The guaranteed second-period profit under lock-in is a greater booster to investment than the uncertain, probabilistic second-period profit under No Contract. This is the effect that underlies the intuitive conjecture mentioned above, whereby long-term relationships are more conducive to investment.

(iii) **Keeping Customers Happy.** This effect exists only under a No Contract regime. Under lock-in, the seller does not have to invest in order to keep the consumer – the contract secures the period-2 purchase. Under No Contract, by contrast, the seller who invests more increases the likelihood that the consumer will stick around and will generate a period-2 profit.

Thus, in contrast to the more naïve claims, it is impossible to conclude that sellers will invest less under the No Contract regime. The investment may be either higher or lower, depending on which effect dominates, the duration multiplier or the strategic motivation to keep customers happy.
Lock-in forces consumers to stay for a longer period. No Contract can induce consumers to voluntarily stay for a longer period. In particular, in the absence of lock-in, No Contract sellers must invest to prevent customers from leaving. In essence, No Contract serves as an inducement to sellers to keep maintaining high value for their customers. In equilibrium, No Contract sellers invest in quality and consumers stay more than one period (hence making the investment cost justified). It is impossible to determine analytically if such investment is higher or lower than under lock-in.

Similar insights apply to relationship-specific, or seller-specific, investments by buyers. Buyers can invest, for example, in learning about the seller’s product, or in assets that are specific to the seller’s network (e.g., phone apps or hardware that cannot be readily transferred to other networks). Again, the buyer may spend less in the short-duration, No Contract regime. A buyer that expects to stay with the seller for a longer period of time will be more likely to make investments that are seller-specific. But there is also a countervailing effect: Since seller-specific investments increase the cost of switching, these investments increase the expected duration of the seller-buyer relationship under No Contract. In other words, anticipating a longer-duration of the No Contract relationship brought about by her investment, the buyer will have a stronger ex ante incentive to invest. This effect is absent under lock-in, where the duration is fixed at two periods. As with the seller’s investment in quality, the buyer’s investment under No Contract can be either lower or higher than the investment with lock-in.

F. Signaling

We have thus far assumed, implicitly, that information is symmetric. Specifically, we assumed that buyers know the quality of the seller’s product. In many consumer markets this assumption is unrealistic. Buyers are only imperfectly informed about product quality. Consider the quality of cellular service (reception) in a given geographical area. The cell phone company knows the reception quality; consumers will generally be not as well informed. High-quality sellers, H-types, want to convey their high quality to buyers. But simply announcing “my product is of high quality” would not convince

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26 We did allow for imperfect information, and even for biased perceptions, about other contractual dimensions. See supra Section D.
buyers. Anyone, including low-quality sellers, L-types, can simply announce that their product is of high quality. H-sellers thus need a means of *credibly* signaling the high quality of their products. And, to be credible, the signal must be such that L-sellers would be unable to use it.

No Contract is such a signal.\(^{27}\) Consider an H-seller and an L-seller. The H-seller knows that if a consumer buys its product in period 1, the consumer will be satisfied with the high quality and will buy in the second period as well. The consumer will want to stay. Lock-in is unnecessary for the H-seller. The L-seller, on the other hand, realizes that if a consumer buys its product in period 1, the consumer will be dissatisfied with the low quality and, in the absence of lock-in, switch to another seller in period 2. This differential effect of lock-in on H- and L-sellers allows No Contract to serve as a credible signal of quality. H-sellers will offer No Contract, since they do not need lock-in to keep their customers. The No Contract design is cheap for H-sellers. For L-sellers, on the other hand, it is expensive to offer No Contract, and they will continue to offer lock-in contracts.\(^{28}\)

The result is a signaling equilibrium: Instead of simply announcing "my product is of high quality," H-sellers will accompany this announcement with a No Contract offer. The message is clear: "We are sufficiently confident in the quality of our product that we don’t need to lock you in." Many consumers will hear this message and buy from the H-sellers. Of course, not all consumers will buy from H-sellers. Now that they can credibly signal their high quality, H-sellers will be able to charge high prices for their high-quality products. Some consumers will prefer the low-quality, low-price products offered by the L-sellers.\(^{29}\)

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\(^{28}\) What if L-sellers try to mimic H-sellers and offer No Contract? The L-sellers will experience more exit and their market share will drop. Therefore, in the long-run equilibrium only H-sellers will offer No Contract.

\(^{29}\) And some, imperfectly rational consumers will also buy from L-sellers, because they underestimate the cost of lock-in. See supra Section D.
The signaling equilibrium exhibits an interesting feature: When consumers want to exit – to switch to another seller – because of low product quality, lock-in contracts prevent them from exiting. And when consumers are happy with the high quality product and do not want to exit, the H-sellers’ No Contract contracts allow them free exit. When consumers want to exit, they can’t. And when they can, they don’t want to.

One of the most striking implications of the signaling account of No Contract is the emergence of this contract form in the elite segments of the market. We mentioned that No Contract began in various markets as a short-term prepaid arrangement serving poor consumers, whose credit rating precluded the implicit financing that lock-in provides, and whose volatile income necessitated easy exit options. These No Contracts were associated with low, rather than premium quality. Such prepaid wireless plans often came with low-end handsets (phones) and low-quality signal. But as No Contract expanded to the prime segments of the market, and became a signal for quality, the products it is packaged with also evolved, and now all major wireless carriers offer No Contracts with premium quality devices and service.30

To take another example, until recently health clubs promoted their year-long membership subscriptions, even when per-visit (or per-month) pricing was available.31 The emphasis on subscriptions – a lock-in contract – was arguably responding to consumer overestimation of the frequency with which they will visit the health club: When the number of visits per year is overestimated, the effective per-visit price under the subscription contract appears to be

lower than it really is. Recently, however, more health clubs, including leading national chains operating high-end clubs, have been promoting the No Contract, pay-as-you-work-out (usually month-at-a-time, but also day-pass) option. When consumers form more accurate predictions about the frequency of health club attendance, and a better understanding of the true cost of lock-in, the imperfect rationality story loses force and the advantage of lock-in fades. This creates room for the signaling story: the high-end health clubs signal their quality with No Contract.

G. Benefits of Lock-in

We have seen that lock-in can lead to inefficient outcomes and hurt consumers. We have also seen that lock-in is not necessarily better than No Contract in promoting investment, and that No Contract can play a useful signaling function. Is the deck stacked against lock-in? Is lock-in all bad? The answer is no. Lock-in contracts entail a series of benefits, which are normally associated with long-term contracts. As it turns out, however, these benefits, while potentially important in other settings, play a relatively minor role in consumer markets.

First, lock-in can be efficient when the contracting parties are concerned about hold-up. Assume that Seller and Buyer enter into a contract for the production and delivery of a unique, custom-made good. Seller makes a substantial investment in machines and materials that are specifically designed for this unique order, and have no value for other orders that Seller may receive. After Seller makes this investment, Buyer might threaten to breach the contract unless Seller agrees to reduce the contract price. In this scenario, lock-in – sufficiently large breach remedies that would prevent Buyer from threatening to exit and buy from a competing seller – would be efficient. Without such lock-in, Seller would anticipate the hold-up and refuse to invest – to the detriment of both parties. The hold-up problem, however, does not seem to figure prominently in markets for consumer goods and services, in which sellers rarely make substantial investments that are specific to a particular consumer.

32 Id. at 695–96.
Second, lock-in can facilitate efficient risk-allocation. Consider the case of commercial real estate: Company A owns a shopping mall on tract A, while company B owns a vacant lot on the adjacent tract B. Company A wants to use tract B as an overflow parking lot for weekend shoppers. The two companies can enter into a No Contract lease agreement, where each party can exit, without penalty, after one year; or they can enter into a lock-in contract for two years. The choice between the two contractual arrangements depends, among other things, on how risk should be allocated between the parties. For example, Company B has several offers from potential lessees now, but is concerned that next year the commercial real estate market will be weaker. Company B prefers to allocate the risk of fluctuations in the real estate market to Company A, through a long-term contract. Such an allocation of risk may well be efficient if Company A is better-situated to bear this risk, especially if the volume of shoppers, visiting Company A’s mall, is unlikely to decline over the two-year period. (If the risk of such a decline is large, Company A would prefer a 1-year, No Contract arrangement.) As a general matter, efficient risk allocation can be facilitated by either No Contract or lock-in, depending on the circumstances. In consumer markets, however, it seems that sellers will usually be the efficient risk-bearers, suggesting that No Contract would be the superior choice.

Third, lock-in can be an efficient means of providing credit and addressing liquidity concerns. A buyer who has only $80 now but will have $120 in the next period, would prefer a lock-in contract with a [80, 120] price schedule over a No Contract schedule of [100, 100]. Of course, credit and lock-in go hand-in-hand; without an assurance of future payment, plus interest, credit would not be available. While this efficiency justification for lock-in is plausible, its practical importance is tempered by the availability of other sources of credit. Most consumers have access to credit cards and bank loans and should not need credit from sellers of consumer products and services. Indeed, banks and credit card issuers are probably the more efficient underwriter of consumer credit. Nevertheless, it is possible that for some small loans, the seller would be the superior creditor, since it can reduce the risk of non-payment by threatening to cut service, and

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35 Similar considerations affect the buy vs. rent choice.
36 Long-term residential leases and car leases provide counterexamples of lock-in contracts that efficiently allocate risk to the consumer.
spread the remaining risk by increasing the price of the service to all customers.

Finally, lock-in can provide an efficient commitment device for consumers who suffer from a weakness of the will. Consider a consumer who is contemplating a New Year’s resolution to visit the gym every week. This consumer, if he is sophisticated enough, would recognize that this resolution might not stick. A long-term gym membership – a lock-in contract – can act as a commitment device to encourage exercise by reducing the marginal cost of a gym visit. Commitment devices can prove valuable in other contexts as well. The internet venture, stickK.com, provides people with a means to set a long-term plan and sacrifice a chosen sum of money if they deviate from their plan. In essence, the service being offered by stickK.com is an early termination penalty! The lock-in-as-commitment account assumes that consumers are aware of their weakness of the will and seek to overcome it. The evidence, however, suggests that most consumers are not quite so sophisticated. And the demand for the services of stickK.com has yet to skyrocket.37

Long-term commitments are not without benefits. Yet, our assessment of the benefits of lock-in suggests that their magnitude, in consumer markets, is limited.

H. Summary

We can now summarize our discussion of the economics of No Contract. The counter-intuitive benchmark for our analysis was the irrelevance result: Lock-in in and of itself is harmless. It affects a temporal shift in pricing – from the short-term to the long-term – but without increasing (or decreasing) the total price that consumers pay. When lock-in is enforced using loyalty programs, rather than

termination penalties, the temporal price shift may be reversed, but the irrelevance result still holds.

When combined with other market features, however, lock-in can have real effects. First, the temporal shift in pricing can distort consumers’ purchasing decisions, resulting in excessive purchases in the low-price period and insufficient purchases in the high-price periods. Second, locked-in consumers might be deterred from switching to more efficient or more attractive products and services, as those emerge after the initial period but before the expiration of the long term commitment. Third, lock-in makes it more difficult for new sellers to enter the market, thus inhibiting competition.

When consumers are imperfectly rational, the costs of lock-in increase. The concern is that the long-term costs of lock-in – the exit penalties, the escalating prices and the forgone opportunities – would be underestimated by consumers. The terms that these consumers will insist on, at the earlier period, will thus fail to reflect the subsequent burdens. As a result, consumers might make welfare-reducing purchases.

We explored the effects of Lock-in vs. No Contract on investment decisions and signaling. We showed that, contrary to the conventional wisdom, lock-in does not necessarily improve incentives to invest – by sellers and buyers – because the duration of the relationship is not necessarily shorter. In fact, No Contract might even provide superior incentives. As for signaling, No Contract allows high-quality sellers to credibly signal their type and distinguish themselves from low-quality competitors.

Finally, we considered the upside of lock-in. Lock-in does provide certain benefits – preventing hold-up, allocating risk, facilitating credit transactions and supplying a commitment device. But these benefits appear relatively small, especially in consumer markets. Our tentative conclusion is that, in many consumer markets, the costs of lock-in outweigh its benefits. No Contract is often the superior mode of contracting.

Our economic analysis sheds light on the recent expansion of No Contract. When consumers underestimated the cost of lock-in, it was profitable for sellers to offer lock-in contracts and to extract rents from
consumers who were committed and could not exit. This changed as consumers learned to appreciate the burdens of lock-in. Recognizing that upfront discounts and perks come with escalating prices, exit penalties and costly inflexibility, consumers have become more cautious about the short-term benefits that lock-in provides. The improved consumer understanding of the implications of Lock-in vs. No Contract prompted sellers to use No Contract as a bonding mechanism – as a commitment to maintain high quality and to avoid exploitation of consumers – and as a signaling device for high-quality sellers.

Misperceptions, however, remain. First, the proliferation of No Contract might suggest that consumers now overestimate the cost of lock-in. While non-salient risks are underestimated, salient risks can be overestimated. Such overestimation of risk explains the success of products like extended warranties for household appliances, and terrorism or flight-crash insurance. Arguably, the once non-salient cost of lock-in is becoming all too familiar to an increasingly large number of consumers, and a similar transformation – from under- to over-estimation is occurring. But even if consumers now overestimate the cost of lock-in, there is little reason for concern. This will only hasten the rise of No Contract, which, as we have shown above, is generally better for consumers and for society than the lock-in alternative.

Another misperception related to lock-ins concerns the value of loyalty awards. Since the switching costs that such programs rely on are more subtle—opportunity costs rather than outright penalties—consumers may fail to recognize the disadvantages of the lock-in effect. When signing up to received “points” for hotel stays, airline travel, or car rental, consumers envision the perks that these points will eventually buy, holding all else equal. That all else is not equal—namely, that prices would be higher and switching less profitable—often escapes the imagination of consumers. Even over time, the flow of loyalty awards would serve to numb the frustration associated with the drawbacks of lock-in. It is not surprising that the No Contract trend emphasizes the elimination of termination fees, not loyalty programs. Indeed, the prevalence of loyalty programs is steadily increasing.

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39 Consumer awareness of the costs of termination penalties and relative unawareness of the costs of loyalty programs can also be attributed to the different framings triggered by these two types of contractual switching costs. Penalties are perceived as losses, while loyalty rewards are perceived as gains.
II. THE LAW OF NO CONTRACT

We have shown that, in some cases, lock-in can hurt consumers and reduce social welfare. These costs may explain the law’s critical approach to lock-in. Courts have been policing early termination fees (ETFs) – the contractual footing of lock-in – as unlawful liquidated damages, under the common law Penalty Doctrine and under Federal and State consumer protection laws. And legislators and regulators have been restricting the use of termination fees in specific consumer markets.

The law of ETFs or, we should say, the law of lock-in, is reviewed in Section A. Section B then evaluates this body of law in light of the theoretical framework developed in Part I. We argue that the law of lock-in, based on the Penalty Doctrine, is fundamentally misguided. Section C goes beyond the Penalty Doctrine and considers a softer mode of regulation: disclosure mandates. We conclude that existing rules mandating the disclosure of ETFs will not substantially improve consumer awareness and understanding of lock-in and its implications. Section D ends this Part on a more positive note: Consumers are becoming increasingly informed about lock-in, without the aid of disclosure mandates, and sellers are responding to the demand generated by these informed consumers. The No Contract trend, which is, in large part, a voluntary market response to consumers’ increasing apprehensions about the costs of lock-in, reduces the need for legal intervention.

There is, however, an important caveat to this happy ending: Loyalty programs. As explained in Part I, loyalty programs and the switching costs they create can also lock consumers in. And while consumers are becoming increasingly sophisticated about the implications of ETFs, the same cannot be said, at least not yet, with respect to loyalty programs. For this reason, No Contract is responding to consumers’ hostility towards ETFs, and at the same time loyalty programs continue to expand. If legal intervention is to be considered, then—paradoxically—it should be focusing on loyalty programs

And, as is well recognized, losses often loom larger than gains. See Daniel Kahneman and Amos Tversky, Prospect Theory: An Analysis of Decision Under Risk, 47 Econometrica 263 (1979).
(which consumers tend to love) rather than on the abhorred termination penalties.

A. Unlawful Liquidated Damages

Lock-in is enforced by an agreed-upon fine for early termination, usually referred to in the contract as an Early Termination Fee. Contract law views ETFs as liquidated damages for breach of contract by the consumer. Traditionally, these liquidated damages have been policed using the Penalty Doctrine, which allows courts to strike over-compensatory liquidated damages clauses. 40 In addition, State consumer protection laws now commonly include specific prohibitions against excessive liquidated damages. 41 And Federal statutes include similar prohibitions in specific markets, such as consumer leases and consumer loans. 42

The main question the Penalty Doctrine addresses is whether ETFs are compensatory or punitive. In answering this question, the doctrinal methodology requires comparison between the magnitude of ETFs and the lost profit caused by early termination. Much of the relevant litigation involved cellphone contracts.

Until approximately 2008, the typical cellphone contract had a two-year duration and a fixed ETF. A common provision would stipulate an ETF of $250, regardless of the time of early termination—whether it was in the first or the last month of the two-year contract. The fixed ETFs in cellphone contracts provided an “easy” target for courts. Since the harm to the service provider from early termination is a function of the time left on the 2-year clock, such fixed ETFs did not provide a reasonable formula for ascertaining the actual harm to the breached-against party. In particular, when termination occurred late in the two-year period, the ETF was clearly over-compensatory, ex post. 43

40 See the Restatement (Second) of Contracts, Sec. 356 (1981); the Uniform Commercial Code, Sec. 2-718.
43 See, e.g., Oren Bar-Gill and Rebecca Stone, Mobile Misperceptions, 23 Harv J L & Tech 49 (2009). The cellphone companies claimed that while actual harm varied with the timing of the breach, even the low-end of the actual-harm range exceeded the fixed ETF. See In re Cellphone Termination Fee Cases, 193
Still, courts struggled to find that the fixed ETF clearly exceeded actual harm. The comparison between actual harm and the ETF was made difficult by controversy over the appropriate method of calculating lost profits from consumer exit. As a result, courts turned their attention to the question of intent: Was the purpose of the ETFs compensatory? In a leading 2011 California decision, *In re Cellphone Termination Fee Cases* [hereinafter: “Cellphone Cases”], the court struck down the ETF in Sprint’s cellphone contracts based on the absence of a compensatory purpose. Relying on internal communications between Sprint employees, the court found that ETFs were intended to reduce so-called “churn rates”—the rate at which customers terminate contracts early—rather than to cover estimated harm to the carrier from early terminations. In other words, the court found that an ETF was unenforceable because of the purpose it served: deterrence of early termination, rather than compensation.

The practical ramifications of the ruling in the *Cellphone Cases*, or of other decisions that struck the ETF provisions in cellphone contracts, is limited by the following two factors: First, carriers have argued, with some success, that state law, including restrictions on the magnitude of liquidated damages, is preempted by the Federal Communications Act (“FCA”), which prohibits states from regulating cellphone rates. Second, in response to the ETF litigation and the

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44 The focus on intent is, to some extent, the result of a California-specific rule. See Hitz v. First Interstate Bank, 38 Cal.App.4th 274, 289, 44 Cal.Rptr.2d 890 (Cal.App. 1 Dist., 1995) (“[T]he focus is not ... on whether liquidated damages are disproportionate to the loss from breach, but on whether they were intended to exceed loss substantially—a result of which is to generate a profit.”)

45 Id.

46 Id.

47 Section 332 of the FCA, 47 USC 151–615(b) (2006) provides that “no State or local government shall have any authority to regulate the entry of or the rates charged by any commercial mobile service or any private mobile service, except that this paragraph shall not prohibit a State from regulating the other terms and conditions of commercial mobile services.” Some courts have held...
FCC’s possible regulatory intervention, every major carrier in the United States moved from invariant to prorated ETFs—fees that decline in proportion to the remaining duration on the contract.\footnote{Verizon Wireless’ contract has an ETF of $350, less $10 for each month completed (http://www.verizonwireless.com/b2c/globalText?textName=CUSTOMER_AGREEMENT, last visited July 24, 2012); AT&T’s contract has an ETF of $325, less $10 for each month completed (http://www.att.com/shop/legalterms.html?toskey=wirelessCustomerAgreement, last visited July 24, 2012); Sprint’s contract has an ETF of months remaining on the contract times $10 ($20 for “advanced devices), with a maximum of $200 and minimum of $50 (maximum of $350 and minimum of $100 for advanced devices) (http://support.sprint.com/support/article/Learn_about_early_termination_fee?case-sp061027-20110823-171256, last visited July 24, 2012); T-Mobile’s contract has an ETF of $200 for over 180 days remaining, $100 for 91–180 days remaining, $50 for 30–90 days remaining, $50 or monthly charges, whichever is less, for less than 30 days remaining (http://support.t-mobile.com/docs/DOC-2938 last visited July 24, 2012). See also Oren Bar-Gill and Rebecca Stone, Mobile Misperceptions, 23 Harv J L & Tech 49, 118 (2009).} Prorated ETFs are much harder to attack on the basis of the Penalty Doctrine and, indeed, there has been no litigation involving prorated ETFs.

Beyond consumer telecommunications contracts, liquidated damages doctrines are often used to regulate early termination in a variety of long-term contracts. In leasing contracts, for example, the Federal Consumer Leasing Act (CLA), using language similar to that of the Common Law Penalty Doctrine, prohibits super-compensatory liquidated damages.\footnote{Pub. L. 94–240, Mar. 23, 1976, 90 Stat. 257 (15 §§ 1601, 1640, 1667, 1167a to 1667e). Under the statute, liquidated damages are allowed only if “reasonable” in the light of (1) anticipated or actual harm, (2) the difficulties of...
early termination fees used by auto companies and dealerships. Automobiles depreciate substantially when first purchased or leased. Auto companies employed ETFs to ensure that most (or all) of this depreciation is born by the consumer who terminates the lease agreement prematurely. Some companies went further, setting ETFs in excess of the total payments due under the lease agreement. Courts have generally invalidated ETFs where they found that the early termination of the lease would grant a windfall to the lessor. As a result, auto companies reduced the magnitude of their ETFs. Specifically, the companies revised contracts that set ETFs in excess of the total payments due under the lease agreement.

As we have seen, some courts strike ETFs based on a finding that the fee exceeds actual harm or that the purpose of the fee is not compensatory. Other courts, reluctant to second-guess the wisdom of lock-in contracts, refuse to find that the ETFs are impermissibly high or lack a compensatory purpose. Alternatively, such courts question the very classification of ETFs as liquidated damages. Instead, they characterize ETFs as “alternative means of performance.” The consumer can perform the contract by continuing to pay the monthly service fee for the duration of the lock-in contract or she can terminate and pay the ETF. Under this interpretation, a consumer’s decision to terminate the contract is not considered a breach, and so the ETF is not considered liquidated damages.

proof of loss, (3) and the inconvenience or nonfeasibility of otherwise obtaining an adequate remedy. See 15 USC § 1667b(b).

50 See, for example, Mitchell v Ford Motor Credit Co, 702 F Supp 2d 1356, 1368 (MD Fla 2010).

51 Id.

52 See, for example, Hutchison v AT&T Internet Services, Inc, CV07-3674 SVW (JCX), 2009 WL 1726344 (CD Cal May 5, 2009) affd sub nom Hutchison v. Yahoo! Inc., 396 F App’x 331 (9th Cir. 2010) (“the ETF’s true function is not as a penalty, but...[as] an alternative performance provision); Minnick v. Clearwire US, LLC, 683 F. Supp. 2d 1179, 1184 (W.D. Wash. 2010) (same); Schneider v. Verizon Internet Services, Inc., 400 F. App’x 136, 138 (9th Cir. 2010) (same); Williams v. Oberon Media, Inc., CV098764-JFW AGRX, 2010 WL 1644888 (C.D. Cal. Mar. 4, 2010) (same, in a video game service contract). Among the courts that have viewed ETFs as “alternative means of performance,” some have sought to support their ruling by finding that the magnitude of the ETF is “relatively equal” to the cost, to the consumer, of fulfilling the contract. See, for example, Minnick v. Clearwire U.S. LLC, 174 Wash. 2d 443, 446, 275 P.3d 1127, 1129 (2012) (“Because the ETF, at the time
Shifting to market-specific rules, in certain consumer markets statutes and regulations set specific limits on the permissible magnitude of ETFs. In the U.S., the most prominent regulation of this sort targets prepayment penalties in mortgage contracts. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 restricts prepayment penalties to a subset of prime, fixed-rate mortgages. Moreover, when allowed, prepayment penalties are restricted in amount and duration: The prepayment penalty may not exceed three percent of the prepaid amount during the first year after consummation, two percent during the second year after consummation, and one percent during the third year after consummation. There can be no prepayment penalty after the end of the third year after consummation.\textsuperscript{53}

\textbf{B. Is the Penalty Doctrine the Proper Framework?}

The normative framework in Part I established the economic grounds for intervention in lock-in contracts, by identifying the situations when, and the reasons why, lock-in arrangements hurt consumers and reduce total welfare. We then saw that courts in fact scrutinize lock-in contracts and release consumers from their long-term obligations when the ETFs are deemed excessive under the Penalty Doctrine. In this section we ask whether the legal scrutiny of ETFs under the Penalty Doctrine is consistent with the economic grounds for intervention. We find limited consistency. The Penalty Doctrine, and related statutory rules, are not well-suited to implement the economics of lock-in.

\textsuperscript{53} Pub. L. 111-203, Sec. 1414. Similar restrictions exist in Europe, but reaching a broader range of consumer loans. In Germany, fees for early repayment of consumer loans may not exceed 1 percent of the amount repaid early (and 0.5 percent if terminated within a year of the end of the loan agreement), nor may it exceed the amount of interest that would have been paid during the period between the early and scheduled repayment. See German Civil Code § 502.
In a fundamental way, the question asked by courts—are ETFs over-compensatory—is the wrong question. ETFs are part of lock-in contracts in which consumers enjoy upfront discounts and sellers often assume upfront losses. The ETF determines the profit that sellers can enjoy in the remaining duration of the contract. Higher ETFs correspond to higher ex post profits and, thus, to higher harm from early termination. But, as we have shown, this link between ETFs and harm does not mean that lock-ins are welfare increasing. More generally, ETFs can be harmful to consumers—and inefficient—even if they do not over-compensate sellers.

Furthermore, the merits of the inquiry into the magnitude of ETFs – are they compensatory, tracking the seller's lost profits, or punitive, exceeding these lost profits – is unclear. ETFs come with low up-front prices. It makes little sense to compare ETFs to back-end profits, without considering the front-end losses that sellers commonly incur. There is no a-priori reason to think that high up-front prices and low ETFs are better, for consumers, than low up-front prices and high ETFs. As we showed in Part I, the harm from ETFs is more subtle, and is due to the way lock-in interacts with factors like elasticity of demand, changes in technology, and—importantly—consumer misperceptions.

The intent-focused inquiry applied in the Cellphone Cases is similarly unhelpful. The court struck the ETF based on evidence that Sprint intended the ETF to reduce “churn rates.” Because they served a deterrence, rather than compensatory purpose, the ETFs were deemed unenforceable.\textsuperscript{54} But deterrence and compensation are not mutually exclusive. ETFs can both work to deter early termination and compensate carriers for lost profit when deterrence fails. Moreover, even perfectly compensatory liquidated damages are commonly intended to influence the perform-or-breach decision.

The proper inquiry is not whether the business is enjoying super-compensatory damages or whether it harbored a non-compensatory purpose when adding the ETF.\textsuperscript{55} Rather, the proper inquiry is whether the consumer's decision to switch among sellers, or

\textsuperscript{54} See discussion of the Cellphone Cases, supra.
\textsuperscript{55} And the distinction between ETFs as liquidated damages and ETFs as “alternative means of performance” (see supra note 52 and accompanying text) seems arbitrary and without any solid economic foundation.
to vary the quantity purchased, or to upgrade the quality of service, is
distorted. This is an inquiry that courts, unfortunately, are largely
incompetent to perform, because it depends on factors beyond the
evidence presented in individual cases.

Moreover, the economic analysis of Part I sheds doubt on the
desirability of any legal rule that bans or restricts ETFs. Legal
restrictions on lock-in prevent contract differentiation and hurt
consumers who prefer low up-front prices, even when they are
coupled with high ETFs. Also, as explained in Part I.E., No Contract can
serve as a signal of quality. To serve this beneficial signaling role,
sellers must be able to freely choose between the two contractual
designs – No Contract and Lock-in. If the law were to impose No
Contract on all sellers, the signal would disappear.

The divergence between the Penalty Doctrine and the economics
of lock-in does not mean that courts wielding the doctrine never reach
good outcomes. Indeed, since lock-in is often less efficient than No
Contract (as shown in Part I), striking an ETF may well be beneficial. In
the cellphone market, courts applying the penalty doctrine, together
with the increasing salience of ETFs in the eyes of consumers,
instigated a market-wide shifted from fixed to graduated ETFs. Now, as
the two-year contract duration draws to an end, the ETF is
proportionally adjusted downward. This change (likely) satisfies the
demands of contract law doctrine with respect to the design of
liquidated damages. It is also likely to benefit consumers. In essence,
the move to a declining ETF brings us closer to a No Contract design.
Consumers can more easily exit the contract, especially in the later
periods. Of course, the reduced back-end revenue stream – from the
lower ETFs or from the lower back-end prices that carriers can charge
– would translate into smaller phone subsidies at the front-end. But, as
we have seen, the total effect will generally be welfare-enhancing.

C. Disclosing ETFs?

If liquidated damages doctrine is ill-suited to police lock-in
contracts, what can be done instead? Disclosure regulation offers one
alternative. In addition to the aforementioned restrictions on the
magnitude of ETFs, the law requires that sellers disclose their ETFs to
consumers. Moreover, since consumers rarely read fine print contract
terms, lawmakers have devised specific disclosure mandates that aim
to make ETFs more conspicuous. For example, under the CLA,
consumer lease agreements must display, “accurately and in a clear
and conspicuous manner,” a statement of the conditions under which
the lease may be prematurely terminated, and the amount or method for determining any ETF.\footnote{15 USC § 1667a(11). See Miller v. Nissan Motor Acceptance Corp., 362 F.3d 209 (3d Cir. 2004) (holding that an automobile lease violated CLA’s disclosure requirements in failing to specify two methods by which the lessor could calculate an ETF). See also Corrigan v First Horizon Home Loan Corp, CIV 09–12721, 2010 WL 728780 (ED Mich Feb 25, 2010) (challenging adequacy of disclosure under § 1667a TILA of a $500 ETF for prematurely closing a home equity line of credit with a $50 annual fee).}

Consumer awareness and understanding of ETFs and their implications is an important factor in assessing the potential harm from lock-in. Disclosure regulation would thus seem to be appropriate. Unfortunately, there is reason to doubt the efficacy of existing ETF disclosures. First, it is unlikely that consumers will read even the “clear and conspicuous” disclosures, which often come bundled with much other fine print matter. Second, to understand the implications of an ETF, it is not enough to know that the contract includes an ETF and how large the ETF is; consumers must also be able to accurately predict the likelihood of triggering such fees (or forgoing beneficial exit because of such fees). Since an ETF is triggered by early termination, the likelihood of triggering an ETF depends on the probability that early termination will become desirable. To estimate this probability, consumers need information on potential changes in the market, in technology, and in their own propensity to consume the product (which, in turn, is a function of changes in their income and their tastes). Existing disclosures do not provide such information.

D. Informed Choice Without Mandated Disclosure

Can consumers make informed choice about contract duration without the benefit of mandated disclosure of ETF? Unlike other legal terms in form contracts, which often remain obscure to most consumers, ETFs are becoming increasingly salient. Many cellphone users know that they are entitled to an “upgrade” (namely, a reset of the contract duration back to “period 1”) every two years. They understand that their contract does not allow them to switch to a new provider even if that competitor offers better technology or price. And they know that technology often advances at a pace that makes the lock-in costly. Similarly, health club members have gradually learned
that low per-period membership prices come with long-term hardline commitments. People learn about the cost of lock-in from their own experience as "repeat" consumers of products and services that come (or came) with ETFs. Or they learn from the experience of others, as stories propagate about difficulties encountered by consumers who tried to quit a service.

This increased consumer awareness has been recognized by several courts. In *Hutchison v. Yahoo! Inc.*, the Internet service provider waived an upfront installation fee (of approximately $175) and provided a discounted monthly fee in return for a 12-month commitment backed by an ETF. The court held that the ETF does not constitute unlawful liquidated damages; rather it presents the consumer with a "rational choice."\(^{57}\) The court explained:

"[W]hen Plaintiff agreed to this contract [with the ETF], Defendant correspondingly agreed to waive fees amounting to $175. Defendant also agreed to charge a discounted monthly rate. Therefore, when Plaintiff chose to terminate the contract in the twelfth month, he had already accrued a benefit of more than $175... Therefore, viewed from the time of making the contract, the ETF provision provides a consumer with a rational choice."\(^{58}\)

In *Hutchison*, the ETF was clearly over-compensatory. The consumer terminated the service only two weeks before the end of the 12-month lock-in period, and thus the service provider lost only two weeks' worth of profit – less than the $200 ETF. Nevertheless, the court enforced the clause, because the consumer made a "rational choice" – an informed, rational choice – to enter the lock-in contract.

The rise of No Contract provides additional support for the view that consumers are becoming increasingly informed about the cost of lock-in. The "No Contract" marketing campaigns appeal to ETF-averse consumers. Sellers are offering No Contract, because a substantial number of informed consumers demand No Contract. ETFs have become a locus of competition, and consumers’ distaste for ETFs provided the impetus for an expanding advertising strategy that trumpets "No Contract." This does not mean that all consumers, or even all informed consumers, prefer No Contract. It does mean that


\(^{58}\) *Hutchison v. Yahoo! Inc.*, at 334.
consumers who choose lock-in arrangements probably do so with an awareness of the ETFs and of the advantages they are trading away. The increasing awareness and competition should alleviate much of the concern about ETFs.

Loyalty programs are a different story. They increase switching costs and enforce lock-in – just like ETFs. But, unlike ETFs, the costs they impose are less salient. It is one thing to recognize the burden of fees charged upon early termination; it takes more sophistication to recognize the trap created by potential rewards. In the ETF scheme, it is the penalty that consumers notice, whereas in the loyalty program it is the reward. Consumers may recognize that they are paying higher prices to remain within the reward network and qualify for the next level of “elite” status within the loyalty program. But it is more difficult to compare the higher prices to the value of the reward, and to see that the overall effect of this scheme is (often) a net loss.

Moreover, fine print restrictions that limit the value of the loyalty rewards are largely invisible to consumers. Sellers can thus reap the lock-in benefit of loyalty programs, without incurring the cost of actually providing the full, anticipated benefit. Here, legal intervention could play an important role. To the extent that these practices are deceptive, consumer protection statutes could be invoked and regulatory action may be called for. And yet sellers may be savvy enough to avoid deceptive promotions of their loyalty programs. Therefore, one hopes that consumers would learn to recognize the pitfalls of loyalty programs, as they learned to appreciate the costs of penalty-based lock-in schemes. Information intermediaries can facilitate such learning by disseminating scores and ratings of loyalty programs and their effectiveness.

III. CONCLUSION: THE ALLURE OF NO CONTRACT

It is not hard to discern why the “No Contract” label has been so successful in attracting consumers. Hidden fees penalizing consumers for various patterns of use or non-use have proliferated in the consumer contract universe. A consumer signs up for a service, and

59 There are exceptions. For instance, CapitalOne “What's in Your Wallet” campaign emphasized fine-print restrictions in loyalty programs offered by competing issuers.
before she knows it she faces a potpourri of charges, including application fees, activation fees, upgrade fees, fees for using the service, fees for not using the service, maintenance fees, replacement fees and late fees (and we haven’t even began to count the various taxes). Many of these fees were not apparent when the consumer signed up, and might cause her to regret the entire transaction. With No Contract, she can act upon this regret.

Some consumers have learned—often the hard way—that a “Contract” means fine print terms, and that the fine print rarely contains happy surprises. (The happy stuff, like generous return policies, is never hidden, but rather posted on large store signs). Since the seller drafts the terms, this game seems rigged. The message of No Contract has the appeal of removing the asymmetry and eliminating the platform through which sellers secure their advantage. It doesn’t really mater that the No Contract label is technically incorrect and that in fact there is a contract (with plenty of sobering fine print). Exit is the great liberator.

And so No Contract is good news. It is a market response to limitations in consumer choice, whether due to irrationality, lack of sophistication, or imperfect information. It is a response that does not rely on the heavy-handed use of prohibitions, regulations, liability, or mandated disclosures. Many consumers used to like, and some still do like, to enter into long-term contracts for the benefit of upfront discounts or free phones. But they have also learned that these “gifts” come at a price, which—although deferred into the future—may still be too high. With the choice between No Contract and Lock-in so prominently offered, any propensity among courts to intervene in ETF-based lock-in contracts is unnecessary, and could do more harm than good.

And yet, not all news is good. For consumers to choose the optimal contract duration, it is not enough to recognize the misery of termination penalties. There are more subtle ways to lure consumers into de facto commitments, to charge them higher prices, and restrict their ability to efficiently switch over time – all this without explicit lock in fees. We analyzed the effects of loyalty programs as a strategy that sellers employ to obtain the same benefits they were used to reaping through termination penalties. Even in a No Contract, consumers may refrain from exit as they work their way to the coveted rewards. It takes far more savvy to resist the enticement of promised discounts, frequent-flyer miles and cash-back rewards.
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