

Deception and Consumer Protection in Competitive Markets

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Consumer Misunderstandings in Markets

- A recent body of literature has collected a lot of evidence that consumers make mistakes in various market and contracting settings. They both
 - Mispredict their own future behavior.
 - Misunderstand price or contract offers as well as product features.
- To emphasize I focus on consumers who *systematically misperceive* either of the above and not consumers who are merely uninformed.
- I want to ask when we should expect “ safety-in-competitive-markets” to prevail, and give some theoretical insights and (consumer-credit) examples for why we would not expect strong competition to cure consumer misunderstandings in some important settings.

Misunderstandings of Own Behavior in Credit Markets

Exploiting Naivete about Self-Control in the Credit Market

- We developed a credit-market model consumers misunderstand their own future behavior.
- In line with intuition and prior evidence, we think of consumers as time-inconsistent and partially naive about it.
- Consumers interact with risk-neutral and profit-maximizing lenders in a competitive market.
- Lenders face an interest rate of 0, and there is no default.
- Firms and consumers can sign exclusive credit contracts in period 0, and decide in period 1 how to repay given the options specified in the contract.
- A (general) contract consists of consumption c and possibly different repayment options $\{(q_s, r_s)\}$ from which the borrower can select in period 1.
- A repayment option specifies how much an agent repays in periods 1 and how much she repays in period 2.

Misunderstandings of Own Behavior in Credit Markets

Consumer Model: Time Inconsistency

- **Basics:**

- Three periods, $t = 0, 1, 2$.
- Consumption $c \geq 0$ decided in period 0 (the timing of consumption itself is not crucial).
- Repayment amounts $q \geq 0$ and $r \geq 0$ in periods 1 and 2.
- Instantaneous cost of repaying x is $k(x)$ with $k(0) = 0$, $k'(0) \geq 0$, and $k''(x) > 0$.

- **Time Inconsistency of Preferences:**

Self 0's utility: $c - k(q) - k(r)$

Self 1 maximizes: $-k(q) - \beta k(r)$

- $0 < \beta < 1 \implies$ In period 1, the borrower puts lower weight on period 2 than she would have preferred earlier.
- Notice that self 0 does not similarly downweight repayment relative to consumption. This is consistent with much of the borrowing motivating our analysis.
- We take the consumer's welfare to be self 0's utility and introduce naivete by allowing for incorrect beliefs about β .

Misunderstandings of Own Behavior in Credit Markets

Competitive Equilibrium with Sophisticated Consumers

- When all borrowers are sophisticated, the competitive-equilibrium contract has a single repayment option satisfying $k'(q) = k'(r) = 1$, and $c = q + r$.
 - Since sophisticated borrowers know how they will behave, the profit-maximizing contract maximizes their utility from a period-0 perspective.
 - The ability to commit is beneficial for time-inconsistent consumers..

Misunderstandings of Own Behavior in Credit Markets

Competitive Equilibrium with Non-Sophisticated Borrowers ($\hat{\beta} > \beta$)

- 1 The equilibrium contract now includes a decoy repayment option (\hat{q}, \hat{r}) the consumer thinks she will choose and a repayment option (q, r) she will actually choose.
- 2 $k'(q) = \beta k'(r) \implies$ the repayment schedule caters entirely to self 1's taste for immediate gratification.
 - The ability to write long-term contracts does not mitigate time inconsistency at all.
 - Intuition: once the firm induces unexpected switching, it designs the installment plan eventually chosen with self 1 in mind.
- 3 It gets worse. Even *given* that repayment is performed according to self 1's taste, the consumer borrows too much.
 - Intuition (rough): since the borrower believes she will repay early, she underestimates the cost of credit.
- 4 Note that all this holds for any $\hat{\beta} > \beta$! The equilibrium non-linear contract targets and exaggerates an arbitrarily small amount of naivete.

Misunderstandings of Own Behavior in Credit Markets

Consumer Protection Regulation

- If the non-sophisticated consumer is not too naive, her welfare is greater in a “restricted long-term market” that rules out large fees for backloading small amounts of repayment.
 - In line with US consumer-protection regulation that now requires credit-card fees to be proportional to the consumer’s omission, or disallows prepayment penalties for certain mortgage contracts.
 - Our model predicts that this will reduce the amount of consumer credit—in line with what opponents argue(d)—but that this is desirable.
 - If consumers’ types are observable, the regulation satisfies “libertarian paternalism”.

Misunderstandings of Own Behavior in Credit Markets

Consumer Protection Regulation

- Our model extends to case in which the consumers' types are heterogenous and unobservable—but now the restricted market makes sophisticated borrowers worse off and hence is not Pareto-improving.
 - Since non-sophisticated borrowers are more profitable, in a competitive equilibrium it must be that firms make money on non-sophisticated borrowers and lose money on sophisticated borrowers.
 - This cross-subsidy benefits sophisticated borrowers.
- *Independent of the fraction of non-sophisticated consumers*, the restricted market is socially-optimal in a total welfare sense because it eliminates the distortions in repayment terms.
- We think that this is a more reasonable perspective than libertarian paternalism. Also, we don't see obvious reasons why the regulation *would do more harm consumers with other "behavioral biases"*.

Consumer Exploitation in Competitive Markets

Consumer Misunderstanding of Contracts

- In many markets consumers' understanding of certain product features—such as add-on prices or bank fees—is severely limited. This has been documented for
 - retail banking (Cruickshank 2000, and Stango and Zinman 2009)
 - mutual fund industry (Gruber 1996 and Barber, Odean and Zheng 2005)
 - credit-card industry (Agarwal et al 2008)
 - mortgage industry (Cruickshank 2000 and Woodward and Hall 2010)
 - printers (Hall 1997)
 - cell phone industry the FCC is worried about consumer's "bill shock" when they ran up unexpected charges.
- Consumers not only don't know prices but are surprised by the fees they face.

- **Basics:**

- All $N \geq 2$ competing firms offer a homogenous product with value $v > 0$.
- Firm n 's product has an up-front fee f_n and an additional or add-on price a_n .
- The maximum add-on price is \bar{a} .
- Firms simultaneously offer contracts (f_n, a_n) and decide whether or not to (costlessly) unshroud all prices.
- When prices are unshrouded, consumers buy at the cheapest total price $f_n + a_n$.
- When consumers are indifferent (between all firms), firm n gets a market share $s_n \in (0, 1)$.
- Firm n 's cost of providing the product is c_n ; there are at least two firms with marginal cost $c_{min} = \min\{c_n\}$.

- **Key Assumptions:**

- *Consumers are naive:* When prices are shrouded consumers buy at the lowest up-front fee f_n as long as $f_n \leq v$.
- There is a *price floor* on the upfront fee: $f_n \geq \underline{f}$.

Motivating Key Assumptions

- Price floor
 - Suppose that the upfront price is negative and a person (arbitrageur) can get (infinitely) many items; then a negative price would bankrupt firms.
 - In retail banking, German bank earns about Euro 2500 from a typical investment account holder (see Hackethal, Inderst and Meyer 2010); supposing the cost of service are Euro 1000, they would have to offer a large sign-up bonus to make zero profits. This would presumably attract arbitrageurs.
 - Miao points out that the price for a new software package cannot be lower than that for an update—effectively creating a price floor.
 - Firms often seem to compete hard for consumers in other, non-price dimensions.
- Hidden fees
 - We can incorporate expected fees in the up-front price, while the unexpected ones are the “hidden fee” of our model.
 - We also develop an alternative model in which consumers underestimate their future willingness to pay for the add-on.

Benchmark: Equilibrium with Non-Binding Price Floor

- If the price floor isn't binding, firms earn zero profits and consumers pay a total price equal to marginal cost. We thus have a partial safety-in-markets result:
 - Ex post, since consumers are naive, firms charge \bar{a} .
 - Thus the value of attracting a consumer is $\bar{a} - c_n$.
 - Firms engaged in Bertrand-type competition must make zero profits, so that $-f_n$ equals the value of attracting a consumer. The money taken from consumers ex post is handed back ex ante.
- The market need not have any social value: consumers still buy if $v < c_{min}$ and $v + \bar{a} > c_{min}$!

Benchmark: Equilibrium with Sophisticated Consumers

- Sophisticated consumers buy if and only if the industry is socially valuable, and the total price at which the buy is equal to the lowest marginal cost.
 - When consumers are sophisticated, they care only about the total price.
 - Any price floor on the base good can be undone by lowering the add-on price; and Bertrand competition ensures that this total price is equal to marginal cost.
 - Sophisticated consumers buy if and only if the total price is less than their valuation.
 - The same is true with strategically sophisticated consumers. (Not about lack of information.)

Equilibrium with Binding Price Floor

- If the price floor is binding, a shrouded-prices equilibrium exists if and only if the following Shrouding Condition holds for all n :

$$s_n(\underline{f} + \bar{a} - c_n) \geq v - c_n. \quad (1)$$

- If prices are shrouded, all firms set the maximum add-on price \bar{a} .
- Since consumers are profitable ex post, firms want to attract consumers and hence $f = \underline{f}$.
- When unshrouding, a firm can at most charge v . This is unprofitable whenever the Shrouding Condition holds.
- When the Shrouding Condition is violated, firms have an incentive to shift competition to the add-on price.

Competition and Deception

Recall the Shrouding Condition:

$$s_n(\underline{f} + \bar{a} - c_n) \geq v - c_n.$$

- A shrouded-prices equilibrium requires that the total price $\underline{f} + \bar{a} > v$.
- In this case, a firm cannot attract consumers by unshrouding and cutting the price a little bit, because unshrouding reveals to consumers how expensive the product is. This is the curse of debiasing in our model.
- Suppose the regulator decreases \bar{a} ; for example consider the Credit CARD Act, which limited late payments, over-the-limit, and other fees to be “reasonable and proportional to” the consumer omission. Note this translates into a direct benefit to consumers.
- Our model provides a counterexample to a central argument brought up against such consumer protection: its cost will be handed on to consumers.

Competition and Deception

Recall the Shrouding Condition:

$$s_n(\underline{f} + \bar{a} - c_n) \geq v - c_n.$$

- Suppose the product is socially valuable $v > c_n$ for all n .
 - Then there exists a critical number of firms above which a deceptive equilibrium cannot be sustained; industry conduct changes as the number of firms increases.
 - The critical number of firms above which firms unshroud is reached faster if \bar{a} is lower. So with stronger consumer protection, merger control can be weaker in this model.
- Suppose the product is socially wasteful $v < c_n$ for all n .
 - Then a shrouded-prices equilibrium exists independent of the number of firms.
 - So if an industry experiences a lot of entry but does not “come clean”, our model predicts it is socially wasteful.
 - Perhaps actively managed funds (which cannot persistently outperform the market) are a good example, as they are wasteful relative to an index fund.

Innovation Incentives

Implications of the Shrouding Condition: $s_n(\underline{f} + \bar{a} - c_n) \geq v - c_n$.

- We now consider the incentives to invent new fees (raise \bar{a}), to increase the products value v or to reduce ones costs c_n . One firm may innovate, and thereafter firms play the game analyzed above.
- We find that the incentives to innovate in order to raise \bar{a} exists even if the innovation is non-appropriable. Indeed, a firm may only be willing to do so if it can teach its competitors how to exploit consumers!
- A firm will only do appropriable innovations to increase the products value or to reduce marginal costs.
- Even with appropriable innovations, a firm may want to commit to stay inefficient. Similarly, in a socially-valuable industry a firm does not want to raise v by a non-drastic amount.
- In a socially non-valuable industry, firms are willing to spend a given positive amount to increase the product's value by an arbitrarily small amount.

Implications for Regulation

Regulation is, of course, difficult

- We need to carefully think about realistic unshrouding—which seems to be market specific.
- Regulating ex-post prices may often be desirable but it can have unintended side-effects (ATM fees).
- Plain-vanilla regulation may be helpful but in imperfectly competitive markets but can have a negative effect on naive consumers.
- *More generally*, thinking of naive consumers as just uninformed can be misleading.

Implications for Regulation

Beyond the models above

- Learning deserves further study but consumer learning is often imperfect (e.g. Nardotto 2011, Agrawal et al 2008, Stango and Zinman 2009).
- Giving consumers more information can hurt both welfare—e.g. this is obvious in a Gabaix-Laibson type model and holds with non-sophisticated time-inconsistent agents (Heidhues and Köszegi 2009)
- ...but it could help reducing the incentives to invent new fees and tricks.
- Imperfect price information may be good (Grubb 2011).
- We could require that firms cannot artificially separate prices (e.g. fuel surcharge). Making contracts easier to compare can lead to endogenous responses (Piccione and Spiegler 2011).
- Regulation is difficult, and we need to think about individual markets separately.