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Regulation of price increases

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U.S. federal and state governments rarely regulate healthcare price levels, but do regulate price changes for pharmaceuticals, hospitals, and health insurance. Previous research showed that limiting price increases can raise launch prices and reduce both profit and social welfare, assuming consumers are myopic. We show that with forward-looking consumers, limiting price increases can have the opposite effect, that is, launch prices fall while profit and social welfare rise. Ironically, inflation regulation can cause inflation to rise, but only because firms are reducing launch prices to make the regulation bind and credibly commit to future prices.

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1. Introduction

Healthcare is heavily regulated in most rich countries. However, in the United States, regulators are often reluctant to limit price *levels*, and instead limit price *changes*. For example, in health insurance beginning in 2011, the Affordable Care Act required that premium increases above 10 percent be reviewed by the government. In the hospital and physician market, the Attorney General of Massachusetts limited price increases to the consumer price index for Partners HealthCare (the state's largest healthcare provider)

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beginning in 2014. In the pharmaceutical market, the U.S. government penalizes firms that increase prices for innovative drugs faster than the consumer price index. Congress is considering extending the penalty to generic drugs as well.[1]

Firms can increase prices because consumer willingness to pay increases due to addiction (Becker and Murphy, 1988; Showalter, 1999) or adoption costs (Farrell and Gallini, 1988; Klemperer, 1995).[2] In healthcare, the value of a medicine, an insurance plan, or a provider network often rises over time. For example, a patient taking the anti-depressant Prozac (fluoxetine) does not fully benefit from the medicine for about a month. Likewise, an insured patient incurs the cost of choosing a provider in an insurance network and making the provider aware of her health history. Hence, new consumers are typically more sensitive to price than incumbent consumers (Strombom et al., 2002).[3] In these examples, consumers are repeat purchasers with rising willingness to pay. As a result, consumers expect that firms will raise prices over time.

We refer to policies limiting price increases as "inflation regulation" because they constrain price increases but not launch prices.[4] Previous research showed that inflation regulation harms both the firm and consumers (Abbott, 1995). The logic is that inflation regulation causes price compression: higher launch prices and lower subsequent prices. The compressed prices cannot help the firm, according to this logic, because the firm could have chosen those prices in the absence of the regulation.

We show that limiting price increases can have the opposite effect: helping both the firm and consumers. The inflation regulation allows the firm to credibly commit to a price path which increases demand among forward-looking consumers.

There are two competing effects from the inflation regulation. First, profit might fall because the firm cannot raise price to the profit-maximizing level in that period. Second, profit might rise because the firm can credibly commit to lower future prices and thus increase current demand among forward-looking consumers. Previous research identified

[1] For more information about the restrictions on insurance premiums, see Section 1003 of the Affordable Care Act which requires "health insurance issuers to submit to the Secretary and the relevant State a justification for an unreasonable premium increase prior to the implementation". For more information about the restriction on hospital prices, see the consent judgment which states that "For six and one half years the rate of increase, if any, of prices charged for Partners' health care services by providers in the Partners Network…shall not exceed the lower of general inflation or medical inflation." For more information about the restriction on drug price increases, see Section 4401 of the Omnibus Budget Reconciliation Act which requires that manufacturers pay a penalty if the percentage increase in the weighted average manufacturer price exceeds the Consumer Price Index. Senator Bernie Sanders proposed extending the inflation penalty to generic drugs.

[2] In the literature on rational addiction and switching cost, consumers are willing to pay more after initial purchase. After consumers make the initial purchase and become informed about the product, a monopolist selling niche products will increase prices (Bergemann and Välimäki, 2006; Nakamura and Steinsson, 2011). Launching at a relatively low price and increasing price over time is called "penetration pricing" (Reekie, 1978; Lu and Comanor, 1998). For new products and markets, consumers learn whether the product is right for them (Nelson, 1970; Villas-Boas, 2006), and firms learn about demand (Ridley, 2008; Shajarizadeh and Hollis, 2015).

[3] While this paper focuses on healthcare, there are other cases of increasing willingness to pay for consumers, from ink cartridges to subscription-based cloud computing. Our analysis provides an optimal value of the inflation commitment from both the firm and social perspectives.

[4] Inflation regulation only constrains price changes, whereas price-cap regulation typically constrains both launch prices and price changes. For a review of the literature on price-cap regulation see Armstrong and Sappington (2007).

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