Price Cap Regulation

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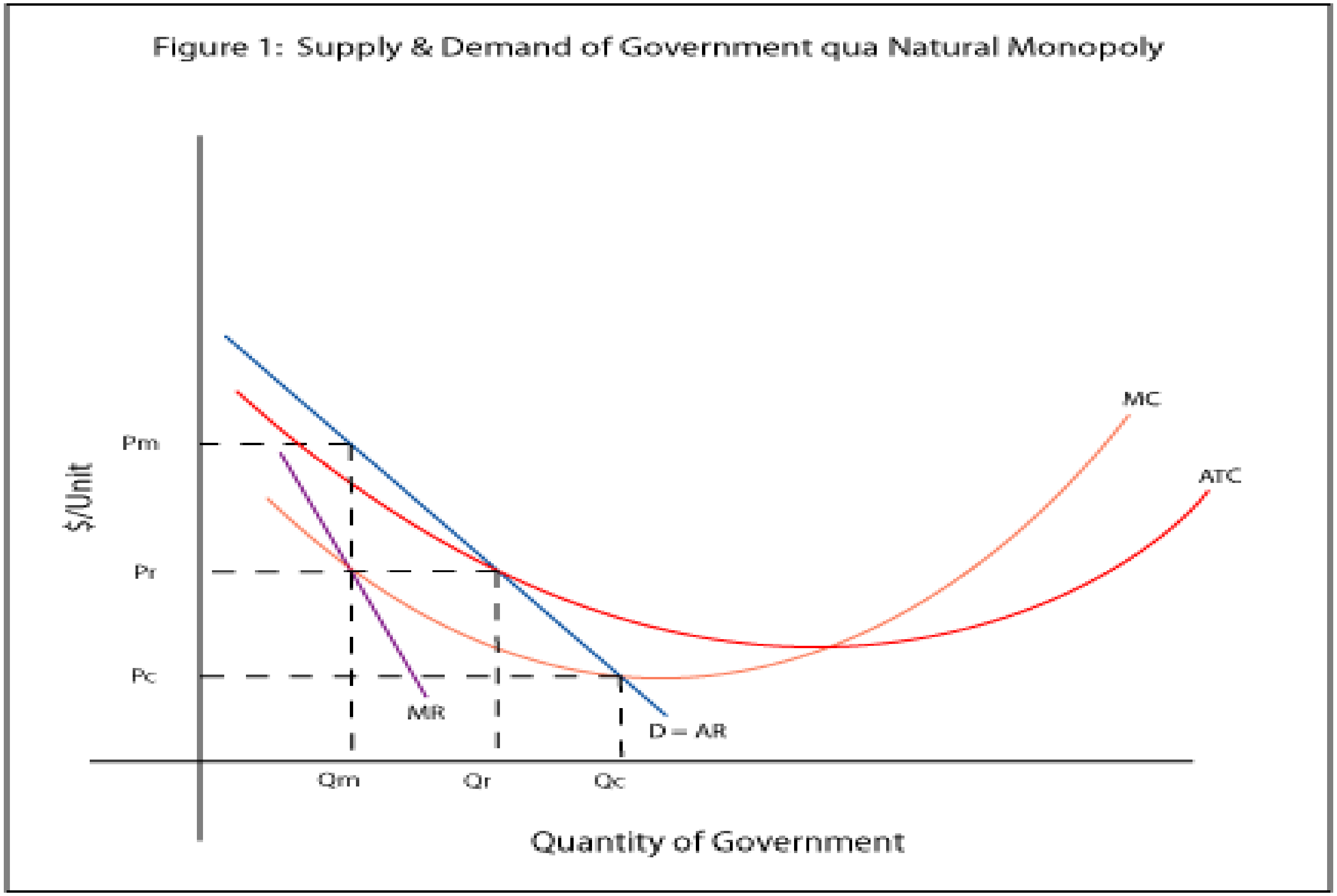
Natural Monopoly



Regulatory Constraints / Challenges

1.) Asymmetric Information

2.) Insurance of Breaks Even

3.) Administrative and Political

Address of Constraints In Michigan

In Michigan, we work through these constraints using “rate of return regulation.” (ROR). In rate of return regulation, the regulator determines a revenue requirement using a test year. The allowed return is a “reasonable” rate (an estimate of the cost of capital to the firm) multiplied by a rate base valued on a historical basis. (Now valued on a projected basis) In contrast to rate of return regulation, there is price cap regulation.

An Alternative Method of Address

Price Cap (PC) Regulation

Under PC regulation, a regulatory body fixes ceilings on prices, known as the “caps” below which the regulated firm has full pricing freedom.

1.) The “caps” are determined using price indices which are defined for one or several baskets of services chosen by the regulator.

2.) The indices are then adjusted by a factor, “X” which is updated at regular intervals.

3.) RPI – X

Advantages of PC Regulation (Compared to ROR Regulation)

1.) Smaller administrative costs

2.) Less time consuming

3.) Minimization of the Averch-Johnson effect (AJ effect)

4.) Fewer hearings equate to an incentive to minimize cost

Disadvantages of PC Regulation

1.) Incentives to minimize costs sometimes mean that the company will also lower the service quality in order to retain profits.

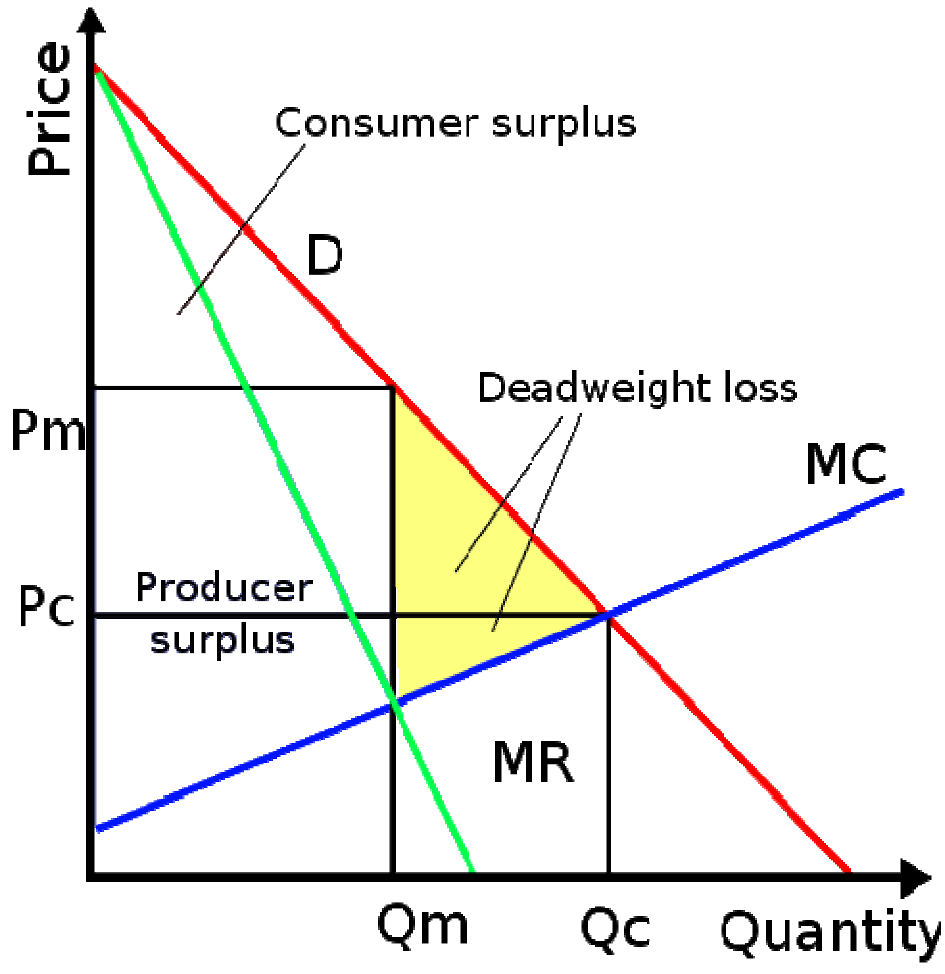
2.) Without specific obligations to serve all customers, the firm may not have incentive to service the classes of customers with the highest costs or the lowest willingness to pay.

3.) Consequences of setting price cap too high leads to the elimination of consumer surplus.

How Michigan Addresses the first two Problems with PC Regulation

- Public Act 304
- Michigan’s Service Quality and Reliability Standards

Illustration of Consumer Surplus



Disadvantages of PC Regulation (Continued…)

4.) PC regulators are not required to publish rate of return and have greater discretion in setting caps, which may lead to capture of the regulatory process by the firm.

5.) The lack of public rate hearings deprives the customer of a forum through which they can express their preferences.

Considerations in the Implementation of Price Caps

1.) How to set initial rates

2.) How to set and reset the X factor

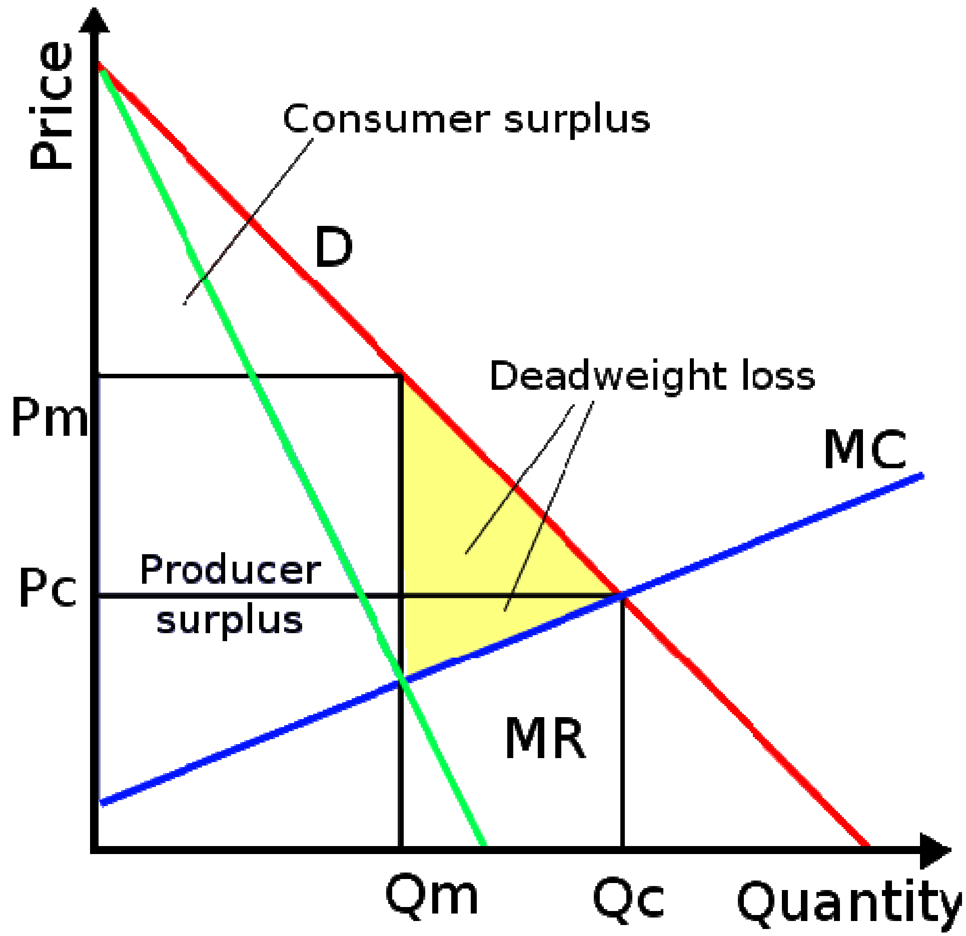
3.) How often to update

4.) What constitutes an appropriate index – what types can be used.

Consideration 1: How to first set initial rates (Issues)

- If the caps are set too high, too little of the surplus is transferred to customers and the deadweight losses are too high.
- If they are set too low, then the firm may be unable to break even, which may then may (1.) have difficulty in attracting capital and (2.) its service quality may deteriorate.
- In this environment of uncertainty, the agency is left with no choice but to set caps at an inefficiently high, but safe level.

Illustration of Consideration 1



Consideration 2: How to set the X-factor

Productivity and Efficiency

Discussed in next presentation

Consideration 3: How often to update

- Short lags allow for a greater fraction of the surplus to be transferred to customers.
- Longer lags will entice the firm to strive for productive efficiency, but customers will not immediately benefit from any surplus created.
- Administrative costs will play a part in the time period as well.

Consideration 4: What Constitutes an Appropriate Index

- A general price index carries with it the advantage and disadvantage of imperfectly matching actual costs.
- A disadvantage is that prices will always have a tendency to rise because RPI is almost never negative and therefore, there will never be a price decrease despite occasional decreases in input prices.
- An advantage is that an index unrelated to cost creates one fewer price-cost feedback and that such a lack of feedback would further encourage the firm to produce efficiently.

Consideration 4 Continued: General Index or an Industry Specific Index

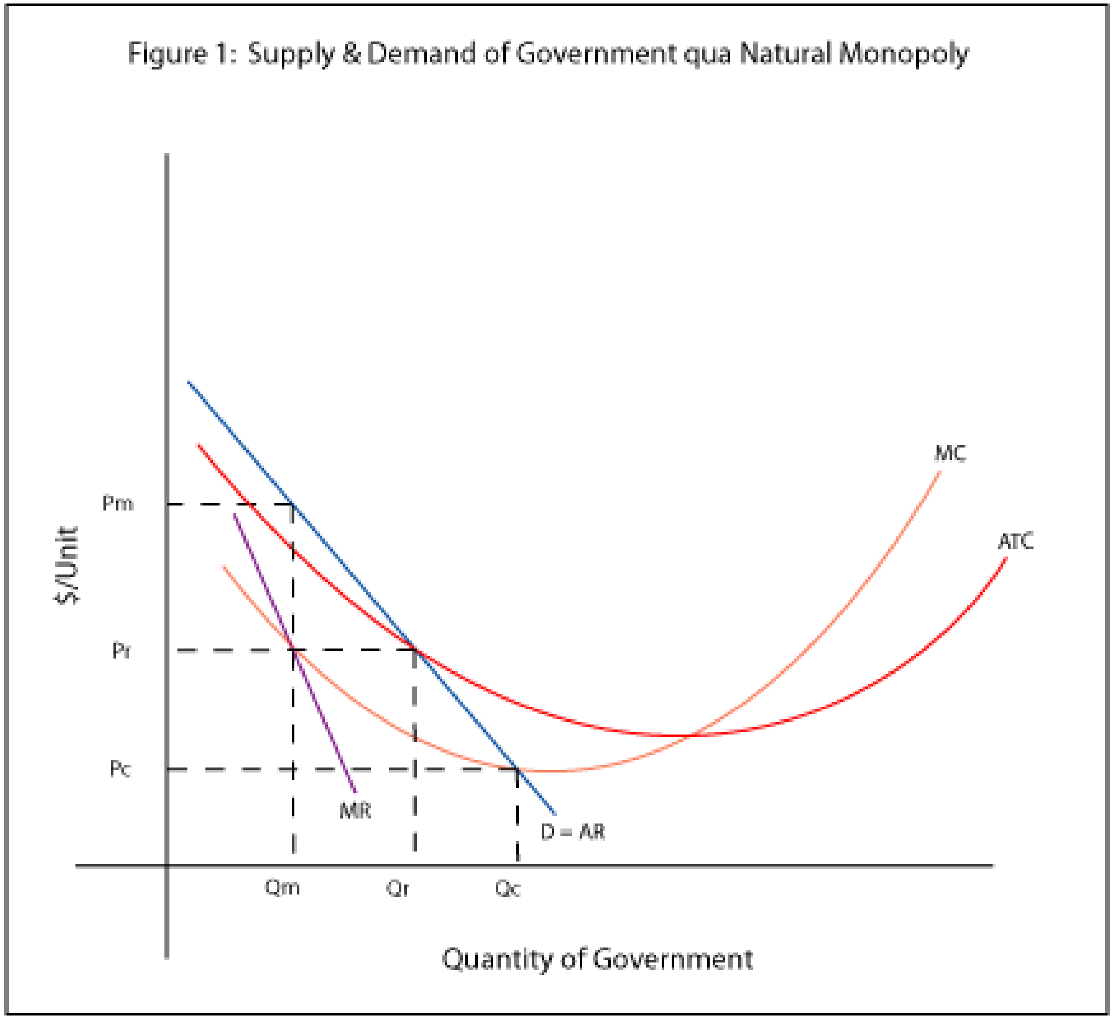
- Since a utility is not a consumer, then why use the consumer price index? CPI for 2010 and 2011 was 1.6 and 1.3 in the U.S., respectively.
- Since the utility is a producer, then why not use the producer price index? PPI for 2010 and 2011 was 3.6 and 0.2 in the U.S., respectively
- The Answer: The regulator is always trying to balance time and effort vs. accuracy.

Practical Issues with PC Regulation with a distinction of "Natural Monopoly"

A Natural Monopoly

- A natural monopoly occurs where the average cost of production "declines throughout the relevant range of product demand." The relevant range of product demand is where the average cost curve is below the demand curve. When this situation occurs it is always cheaper for one large firm to supply the market than multiple smaller firms, in fact, absent government intervention in such markets will naturally evolve into a monopoly.

A Natural Monopoly Illustrated



Natural Monopoly Continued…

- Most price cap schemes will attempt to set prices where marginal cost meets the demand curve. But in the case of a natural monopoly, this point on the graph is a point in which total costs are not being recouped through rates.

- In the case of a natural monopoly, price caps should be set where average total costs meet the demand curve. To reduce prices and increase output regulators often use average cost pricing. Under average cost pricing the price and quantity are determined by the intersection of the average cost curve and the demand curve. This pricing scheme eliminates any positive economic profits since price equals average cost. Average cost pricing is not perfect. Regulators must estimate average costs. Firms have a reduced incentive to lower costs.

Question…

What types of incentive mechanisms should be in place to encourage the company to produce at average total cost?

One Possible Answer: Sappington and Sibley

Assume Market Demand is Known

Assume Asymmetric Information

Assume Regulators are Able to Observe the Firms Accounting Profits with Lag

1.) Modified from the "Loeb – Magat" scheme.

2.) The firm is awarded only the true increment in social surplus between the two consecutive periods

3.) Method is an improvement over the Loeb – Magat scheme because it reduces the amount of transfers that the government must make to the firm

End of Presentation

Questions & Discussion Continued

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