

## Dynamic Inconsistency

Monopolist with stock  $S^M$  (extract cost  $c^M$ ) and competitive fringe with stock  $S^F$  (extract cost  $c^F$ ) agree at time zero on overall path which maximizes each profit given path of the other.

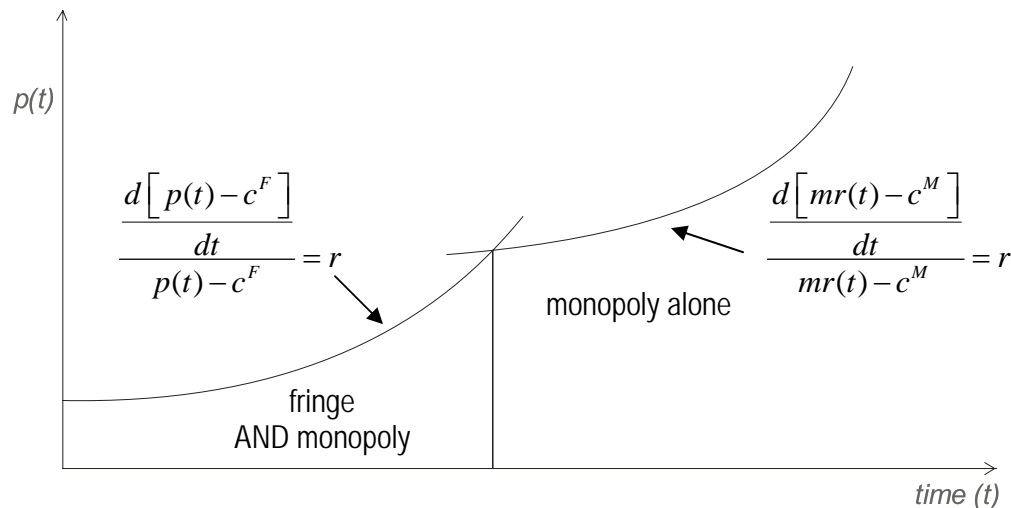
Path (a) competitive fringe goes first,

$$\frac{d[p(t) - c^F]}{dt} = r$$

AND monopoly agrees to “dump” some of its stock in this first phase (this “gets rid of” competitive fringe fast and benefits the monopoly.)

(b) second phase is monopoly alone to its exhaustion.

$$\frac{d[mr(t) - c^M]}{dt} = r$$



Commitment Strategy: each maximizes at  $t_0$  given path of the other. Monopoly has put some of its initial stock in the first phase to accelerate exhaustion of competitive fringe.

Dynamic Consistency: once competitive fringe has exhausted its initial stock, monopoly has no reason to stick to its commitment to “dump” some stock in phase I. Hence monopoly departs from its commitment. Hence, commitment strategy is not “stable” and a new dynamically consistent (backward recursion) strategy must be constructed.