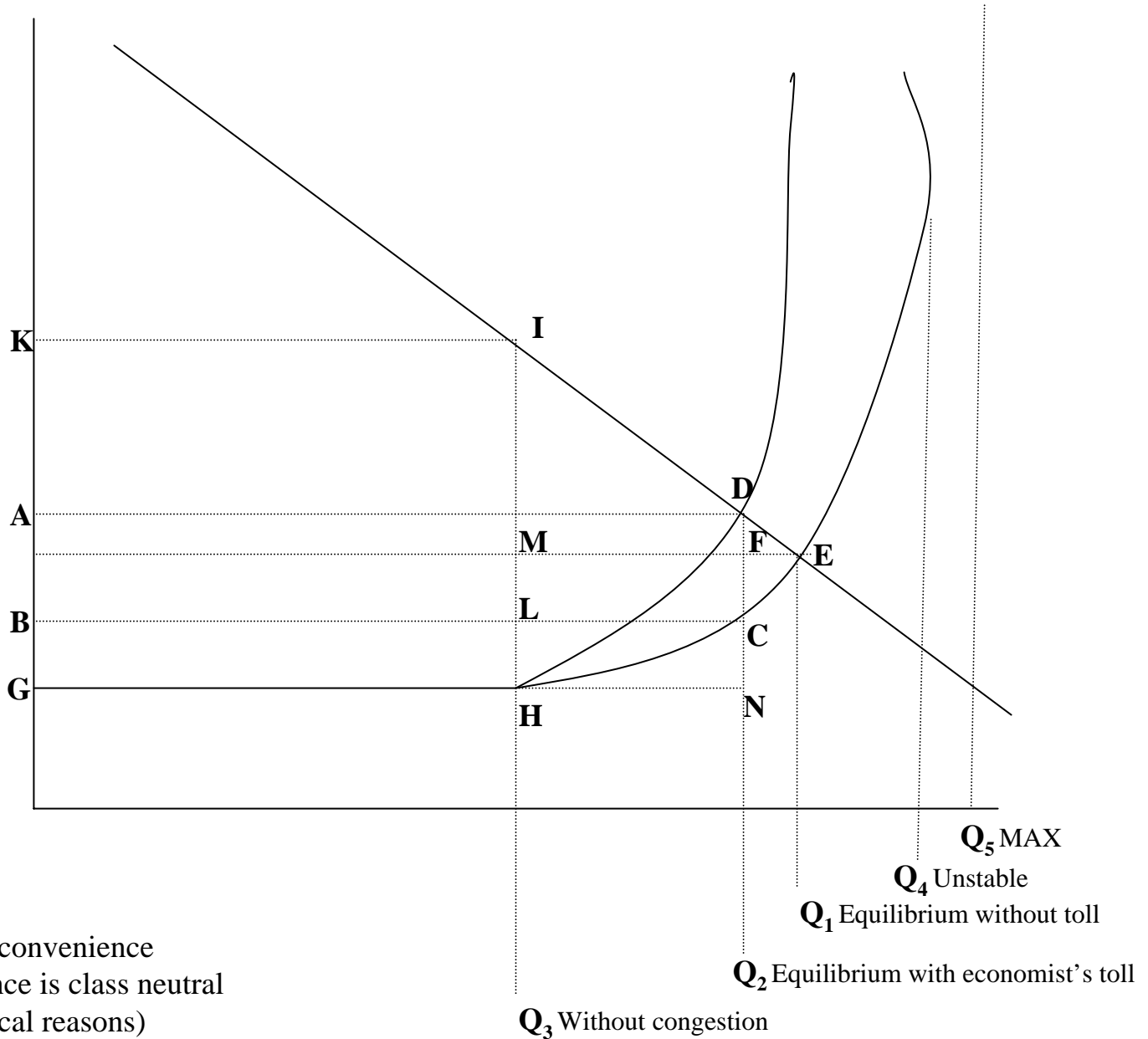


P with toll, no congestion

P with economist toll



P = \$ per mile plus inconvenience
(assumes inconvenience is class neutral
(theoretical and political reasons))

Q_3 Without congestion

Q_2 Equilibrium with economist's toll

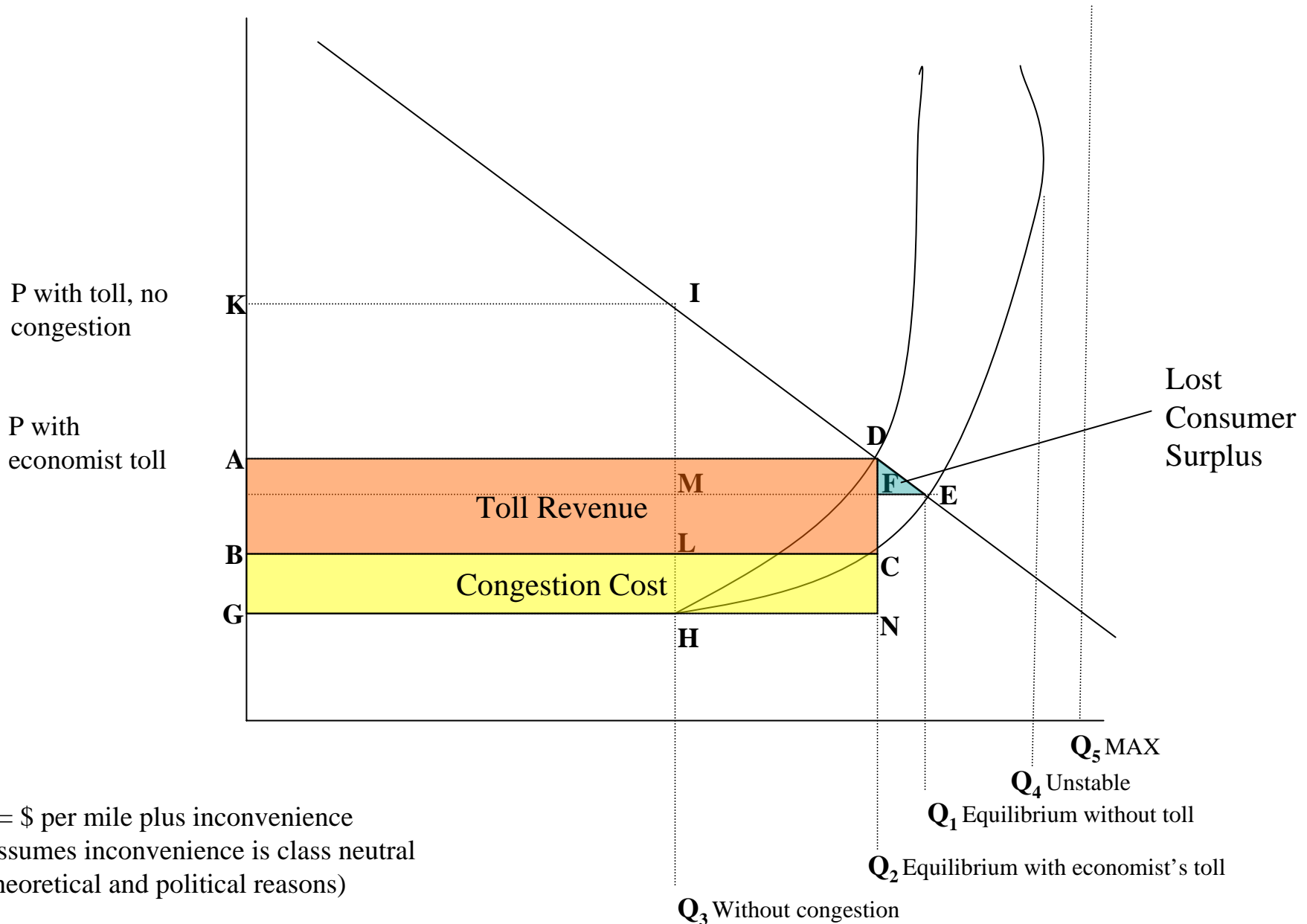
Q_1 Equilibrium without toll

Q_4 Unstable

Q_5 MAX

Economist Case

Tolled = Q_2
 Tolled off = $Q_2 - Q_1$

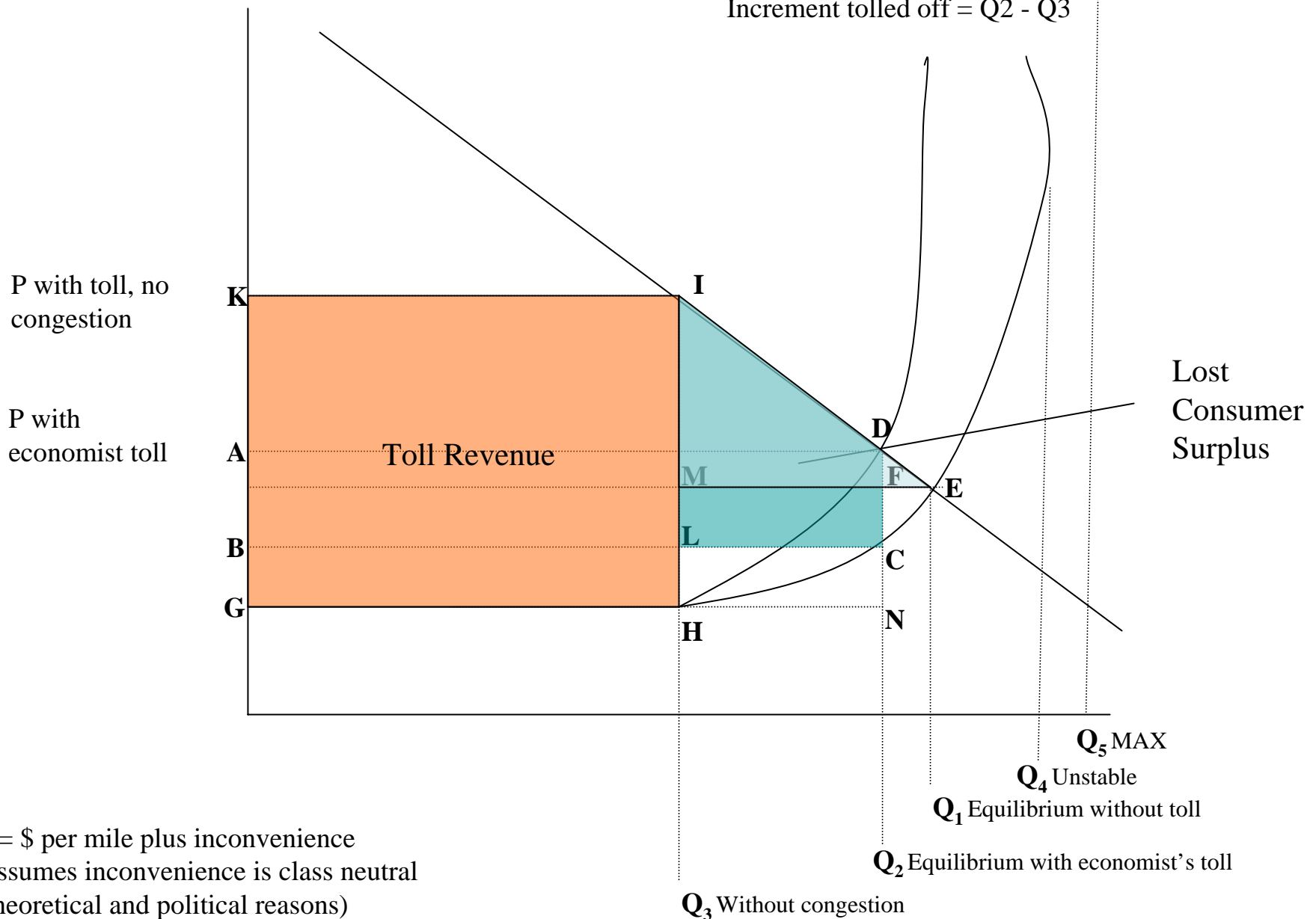


Toll too high (no congestion)

Tolled = Q_3

Tolled off = $Q_1 - Q_3$

Increment tolled off = $Q_2 - Q_3$



Note: Toll revenue KIGH is larger than
Toll revenue ABCD but less than
Toll revenue ABCD plus consumer surplus ILDC

Problem: Surplus FCE and LHC are not real because congestion destroys it

Note: Toll authority has temptation to “overtoll”

But assume “technology”, such as

-Transit or

-Larger aircraft or

-Off-peak discounted tolls and or

-Assume toll recovery helps to buy the “technology” transit expansion