

FACTORS OF HEALTH SERVICE
PRODUCTION:
PHYSICIAN'S PRACTICE

Topics

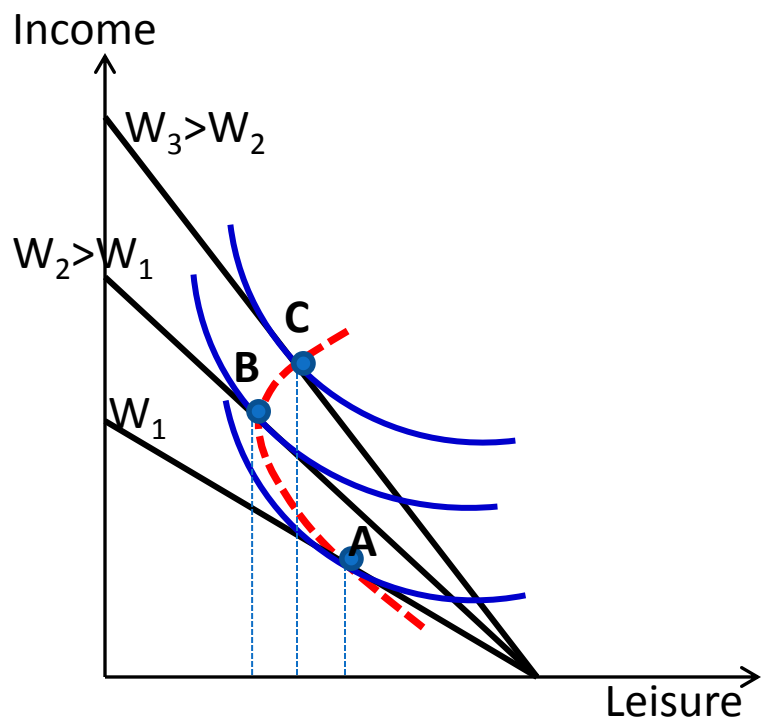
- Benchmark Model of The Physician's Practice
- Physician Agency and Supplier-Induced Demand
- The Target Income Hypothesis
- Diffusion of Information and Small Area Variations
- Malpractice

Benchmark Model of The Physician's Practice

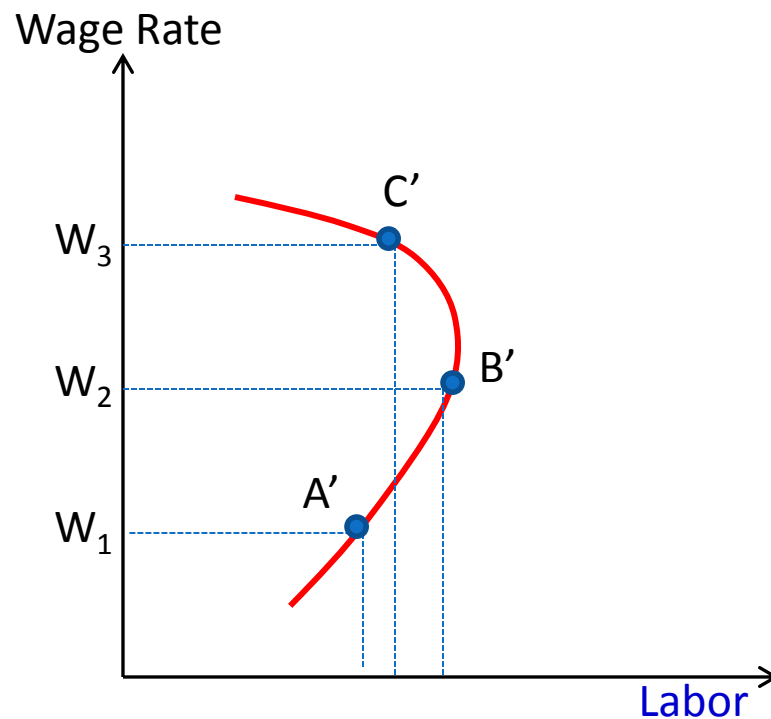
- McGuire and Pauly (1991) describe physicians as utility maximizers.
- Physician's utility depends:
 - Net income (π)
 - Leisure (L)
 - The degree of inducement (I): Physician's own efforts to induce patients to buy more care than appears medically necessary.
- Physician's Utility function:

$$U = U(\pi, L, I)$$

Supply of Physician Labor

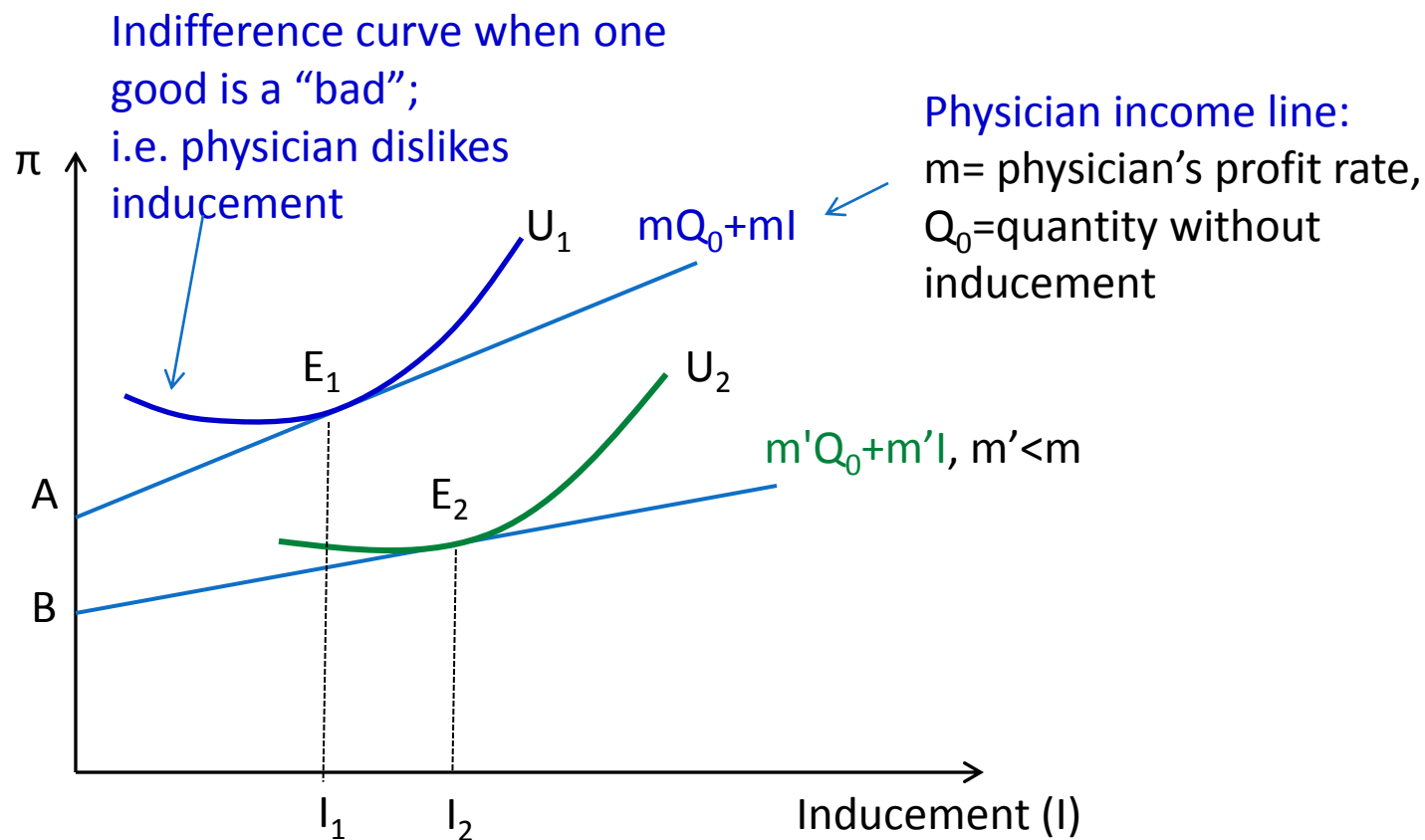


Labor-Leisure Tradeoff



Backward-Bending Supply Curve

Physician's Response to Reduced Rate of Profit

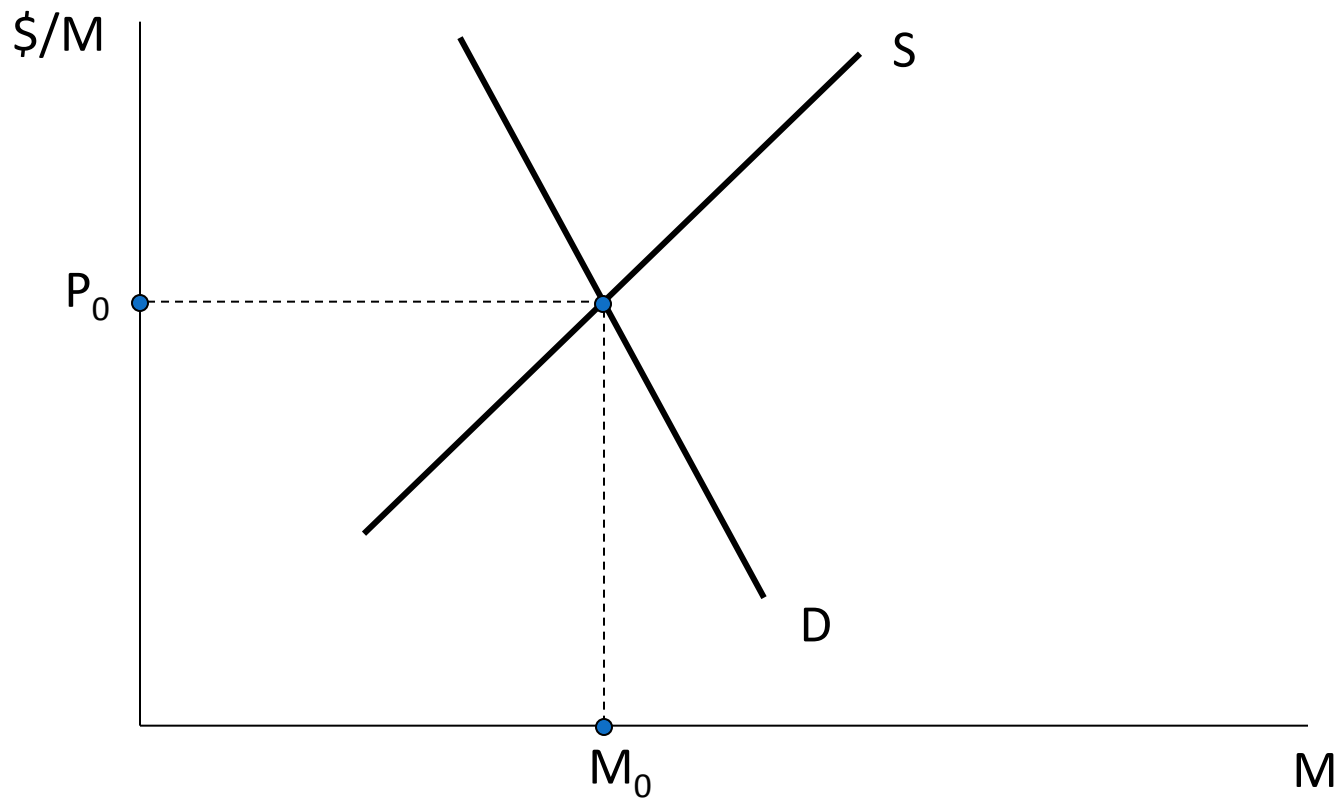


$m' < m$: A lower profit rate results in higher level of inducement.

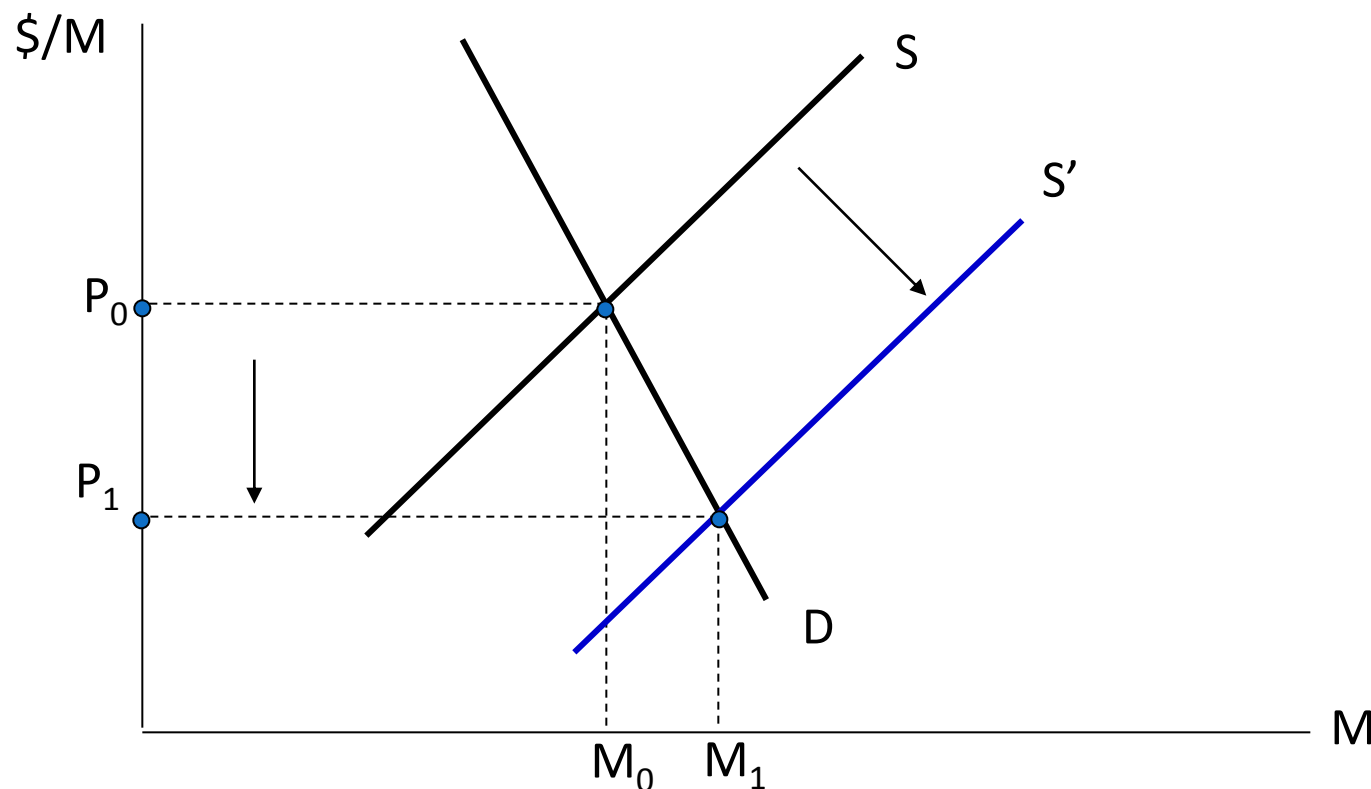
Physician Agency and Supply-Induced Demand

- In medicine, we identify the physician as the *agent*, and the patient as the *principal*.
- When two parties have *unequal* knowledge, the problem is called ‘*asymmetric information*.’
- Policy concern is when *self-interest physicians* may *violate their role as agents*.
 - “*Perfect agents*” are the agents who make choices and recommendations on the behalf of principals that the principals themselves would have made if they had the same information.

Original Situation

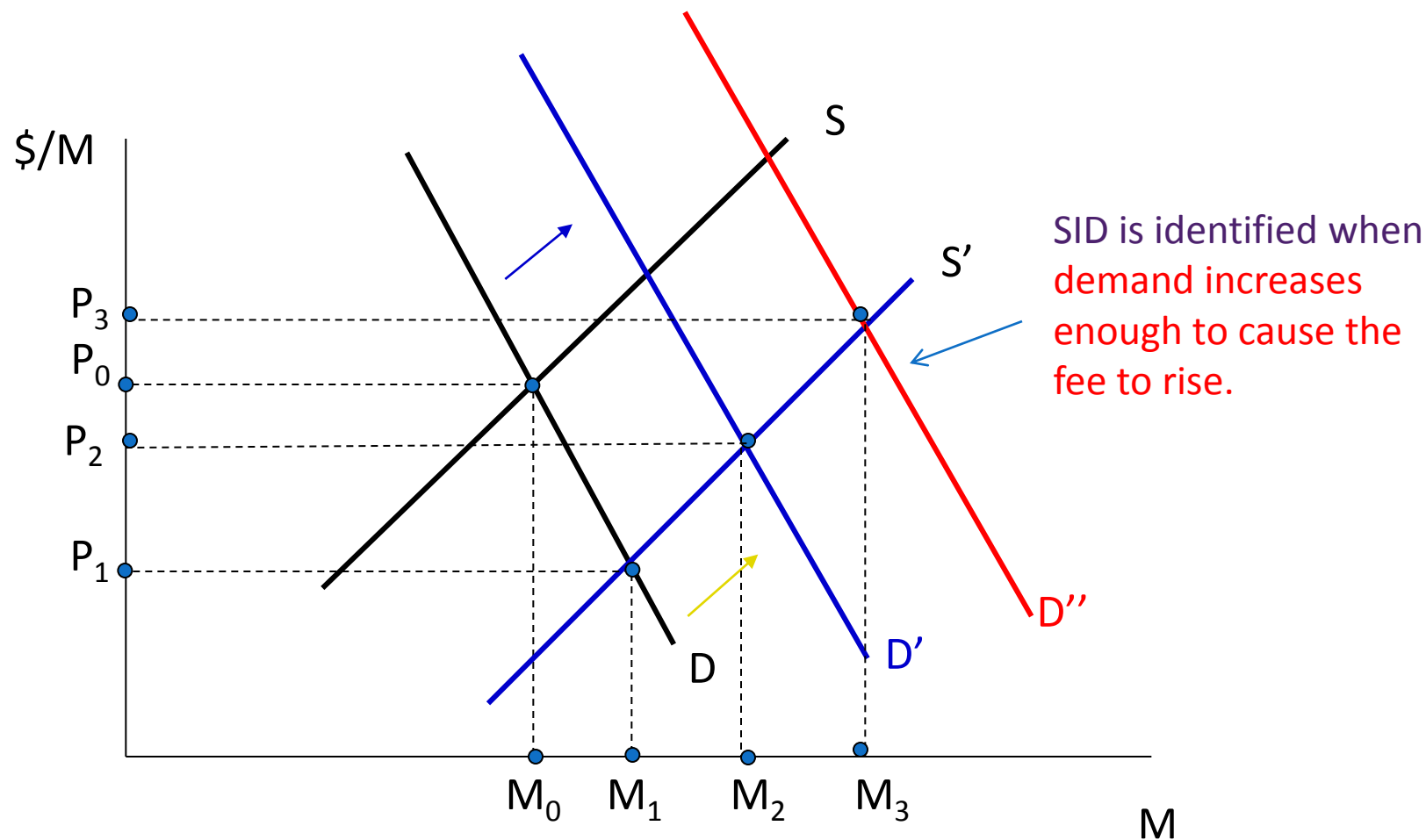


Some Exogenous Change in the Supply of Physicians Occurs (S increases)



Increase in S caused by an increase in the supply of physicians per person in the market.

Supply Induced Demand (SID)

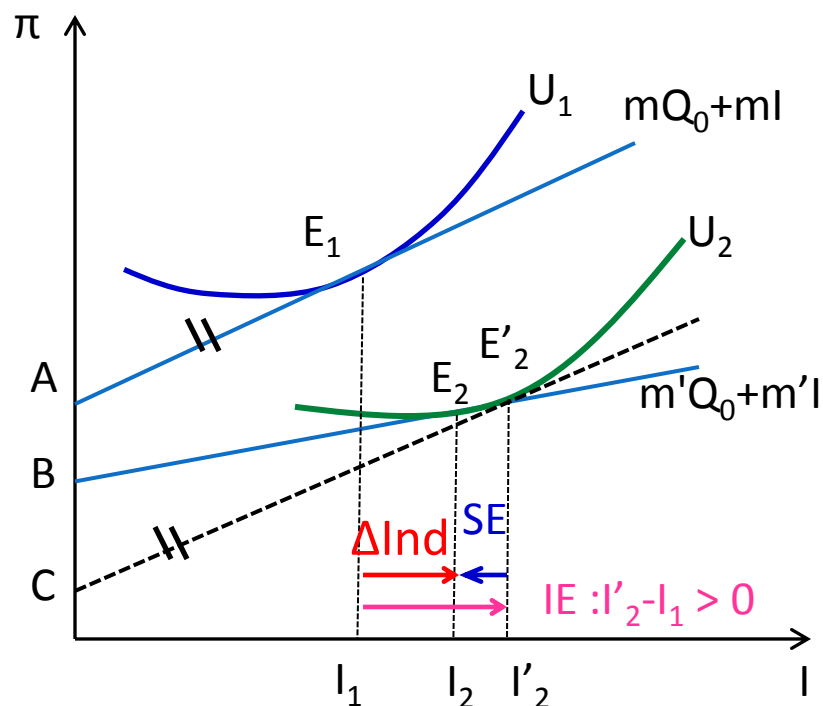


The Target Income Hypothesis

- Economists *expect* physicians to respond to the financial incentives, but the theoretical puzzle is why physicians would wait until supply had increased to induce demand.
 - We need some theory other than profit maximization to explain the behavior
- **Target income hypothesis** suggests that they have a certain level of income that they do not want to fall below.
 - This is an extreme case of the benchmark model.

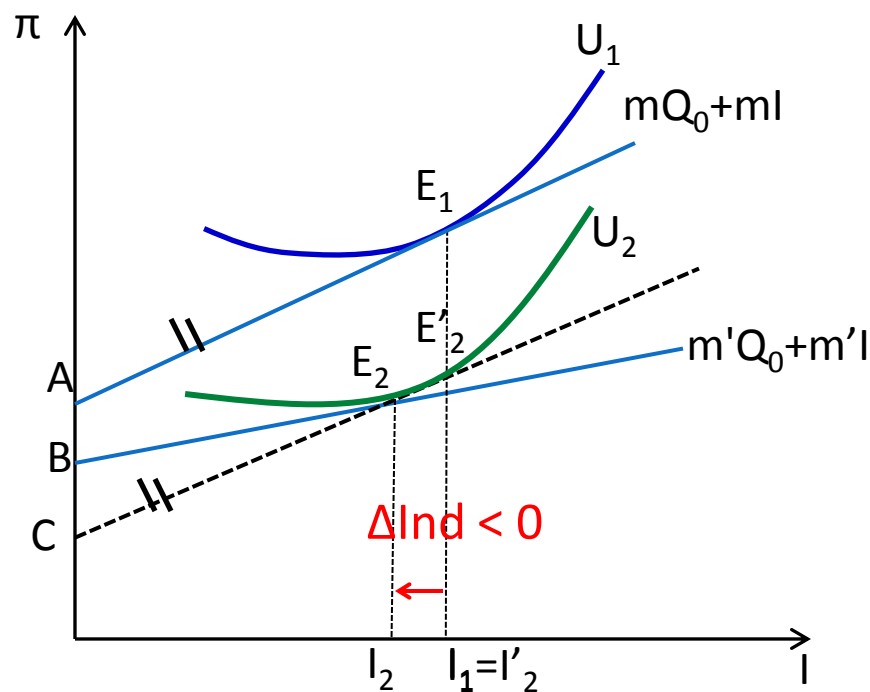
The McGuire-Pauly Synthesis of SID Benchmark Models

Target Income Behavior



Income Effect

Profit-maximizing Behavior



No income effect

The Benchmark Model as a Synthesis

- The McGuire-Pauly synthesis tells us that the size of the **income effect** is critical to understanding and identifying SID behavior.
- A lower profit rate, m , has two offsetting effects on inducement:
 - *Income effect*: Decreased income would make inducement more desirable.
 - *Substitution effect*: If inducement is less profitable (smaller m), providers would do less inducement, that is, substitute away from it.

Small Area Variation

- Another type of information problem related to physician's practice is where **neither the physician nor the patient know the best treatment.**
- Patient assumes that the physician knows and is giving good information. But the physician may not know either.
- This leads to an area of inquiry known as **small area variation** or small area analysis.
 - There are substantial variations in medical and surgical utilization rates across and within small geographic areas (e.g. zipcodes, hospital markets, etc.).

Small Area Variation (SAV)

- A measure of this variation is the coefficient variation (CV):

$$CV = sd/mean,$$

where sd is the standard deviation of the observed medical use rate across the area.

- Wennberg (1990) use the **extremal ratio** to describe the small area variation issue.
 - The *extremal ratio* is the ratio of the highest rate to the lowest rate. It shows the variance and the degree to which information is an issue.

Example:

Variations by Medical Procedure Category

Procedure	Coefficient of Variation	Extremal ratio	Number of Procedures
Open heart surgery	0.232	2.29	1,439
Appendectomy	0.305	2.86	5,381
Total hip replacement	0.353	2.99	1,717
Mastoidectomy	0.461	4.03	569
Total knee replacement	0.525	7.42	998

Source: Wennberg,(1990)

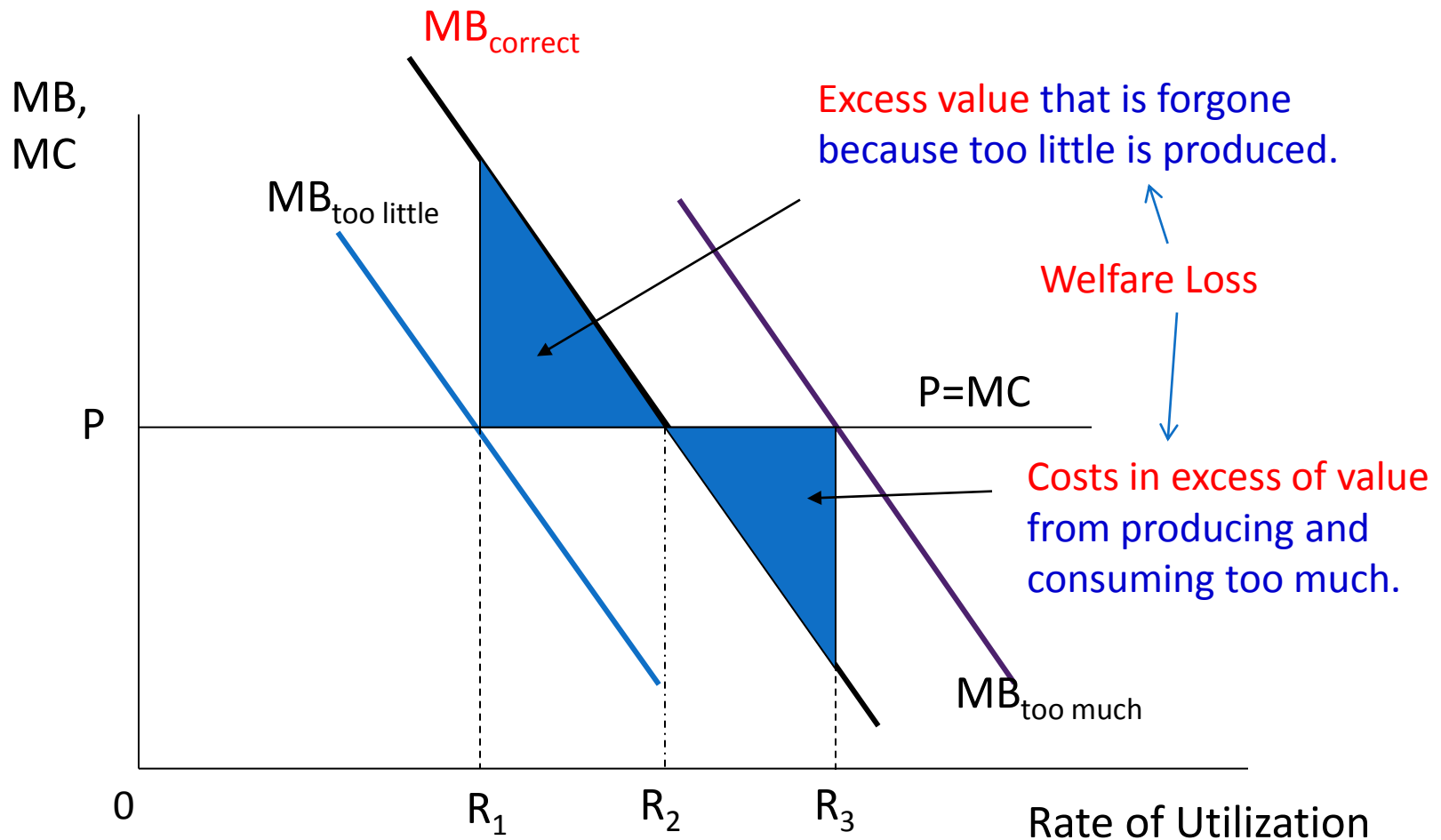
Different Views on the Variability

- The Physician Practice Style Hypothesis:
 - Practice style probably varies among physicians due to an *incomplete diffusion of information* on medical technologies (Wennberg, 1984).
- Formulation of Practice Style:
 - Physician's practice style are more influenced by *his peers* in the same hospitals and in other hospitals in his region (Epstein and Nicholson, 2009).
- Education, Feedback, and Surveillance:
 - *Information programs* directed at physicians can alter their behaviors and thus presumably their practice styles (Wennberg & Fowler, 1977).

Small Area Variation and the Social Cost of Inappropriate Utilization

- The most important issue in the SAV literature is the proposition that **substantial variation in utilization rates is an indication of *inappropriate care*.**
- It is necessary to determine the variability due to economic, social, demographic and chance reasons, in order to determine the residual portion that is due to physician decisions
- **What is the economic cost of this variability (i.e. physician misinformation)?**

Variation Causes Welfare Loss



Malpractice

- **Medical malpractice** occurs when a negligent act or omission by a physician or medical professional results in a damage or harm to a patient.
- Many malpractice judgments are very large and malpractice insurance premiums can be very high (at least in developed countries).
- The high likelihood of malpractice suits lead to what is called “**negative defensive medicine**” which occurs where physicians refuse to perform risky procedures to avoid lawsuits.