A bright yellow sticky note is partially visible on the left side of the slide, overlapping the white title card.

Demand and Supply of Health Insurance (Part 2)

EE 474 Health Economics
Semester 1/2012

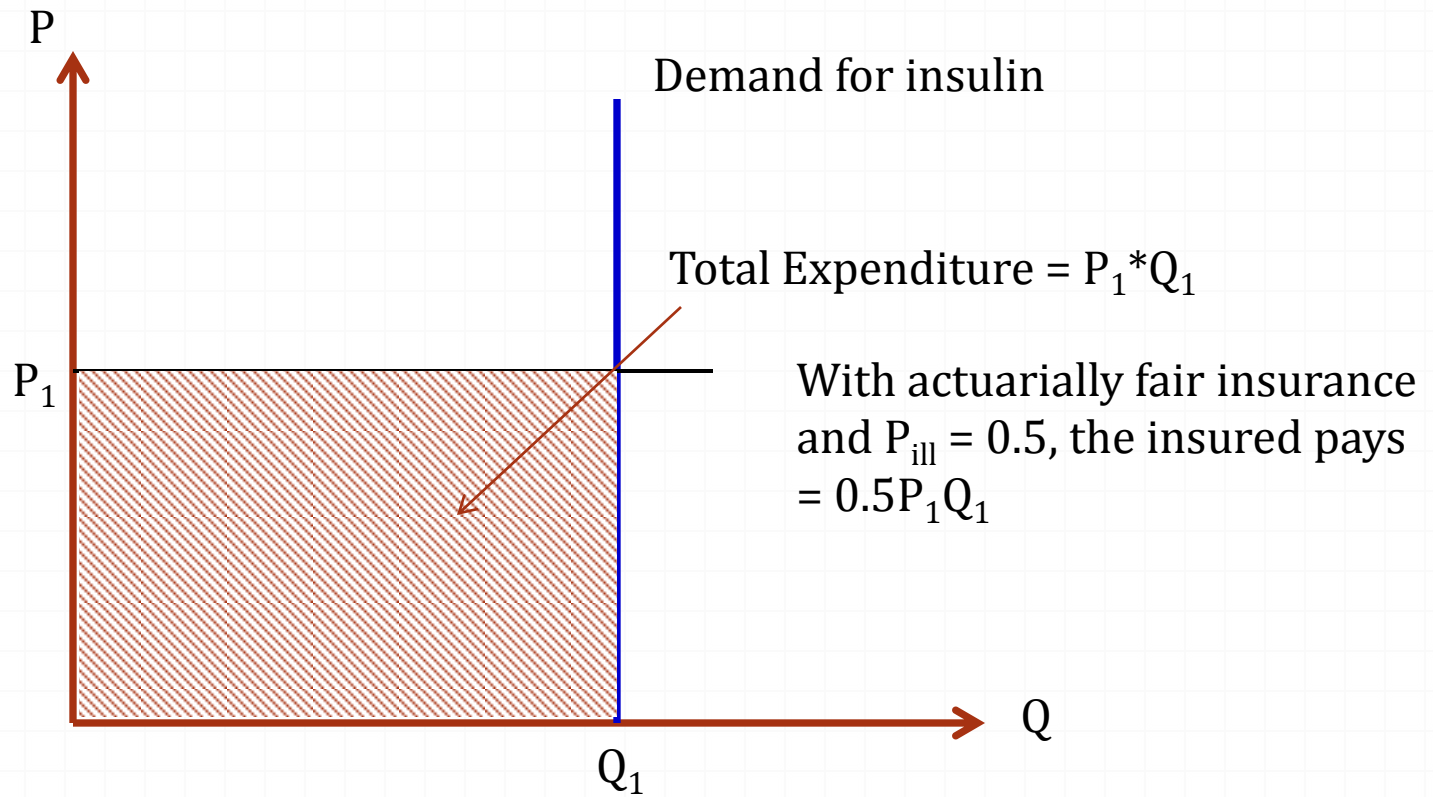
Topics

- Moral Hazard
- Health Insurance and the Efficient Allocation of Resources
- The New Theory of Demand for Health Insurance

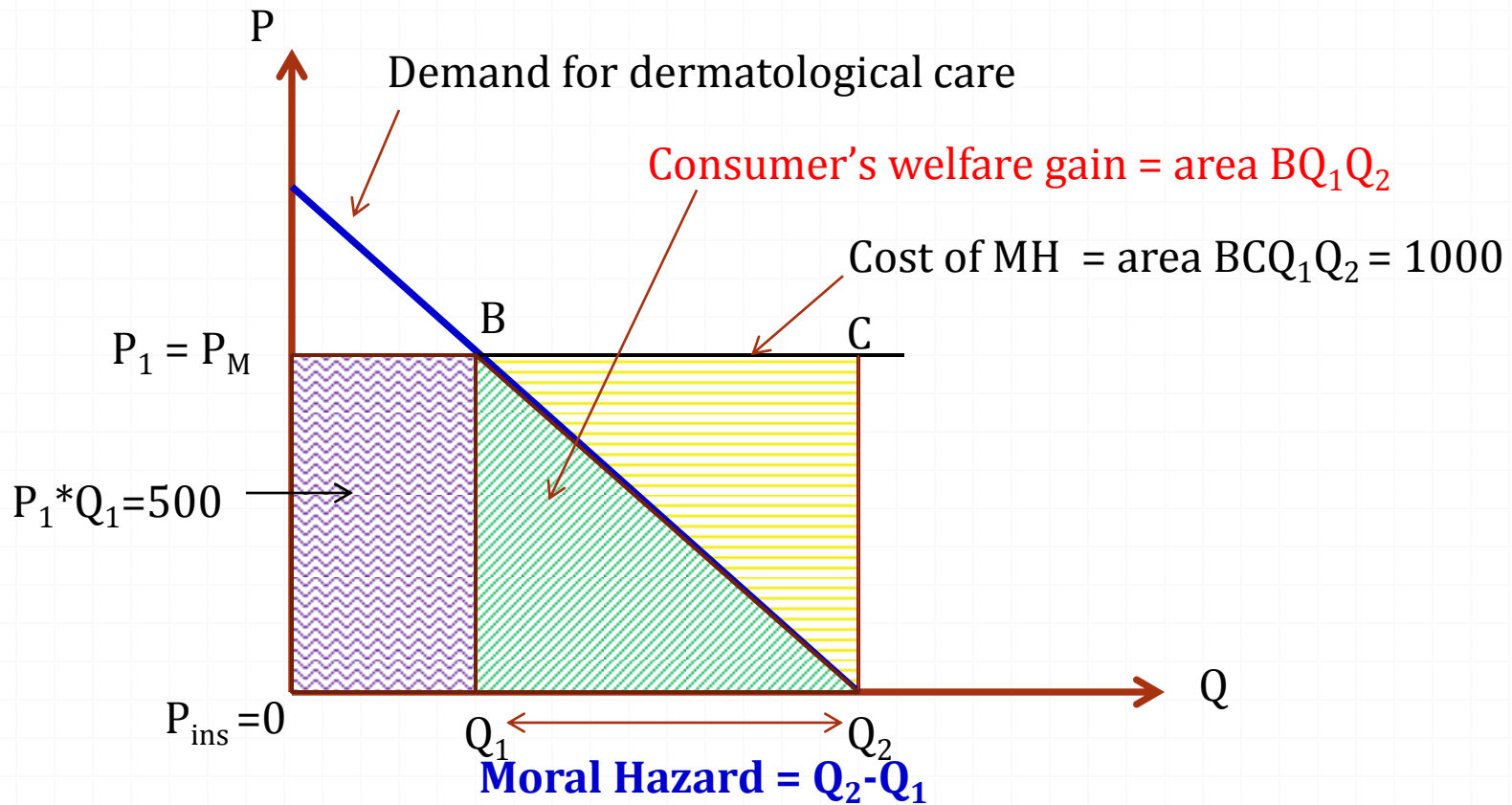
What is Moral Hazard?

- **Moral hazard** is the change in behavior that is associated with becoming insured
- **Ex post moral hazard** refers to the change in behavior *after* you become ill
 - An increase in health care consumption by the insured consumers
- **Ex ante moral hazard** refers to the change in behavior *before* you become ill
 - An increase in the probability of illness of the insured consumers because they have fewer incentives to take care of themselves.

Demand for Care and Moral Hazard (Perfectly Inelastic Demand)



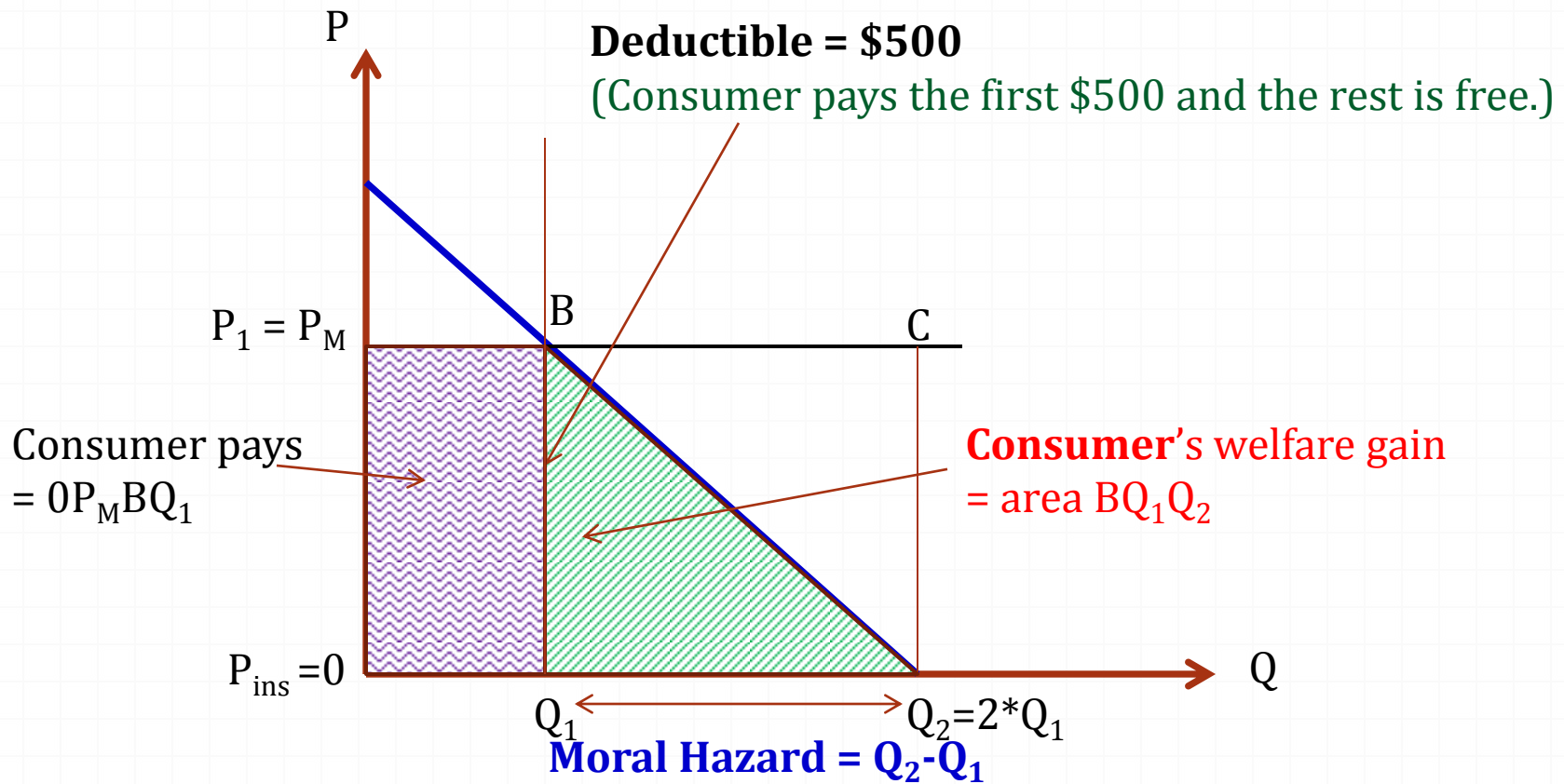
Demand for Care and Moral Hazard (Relatively Elastic Demand)



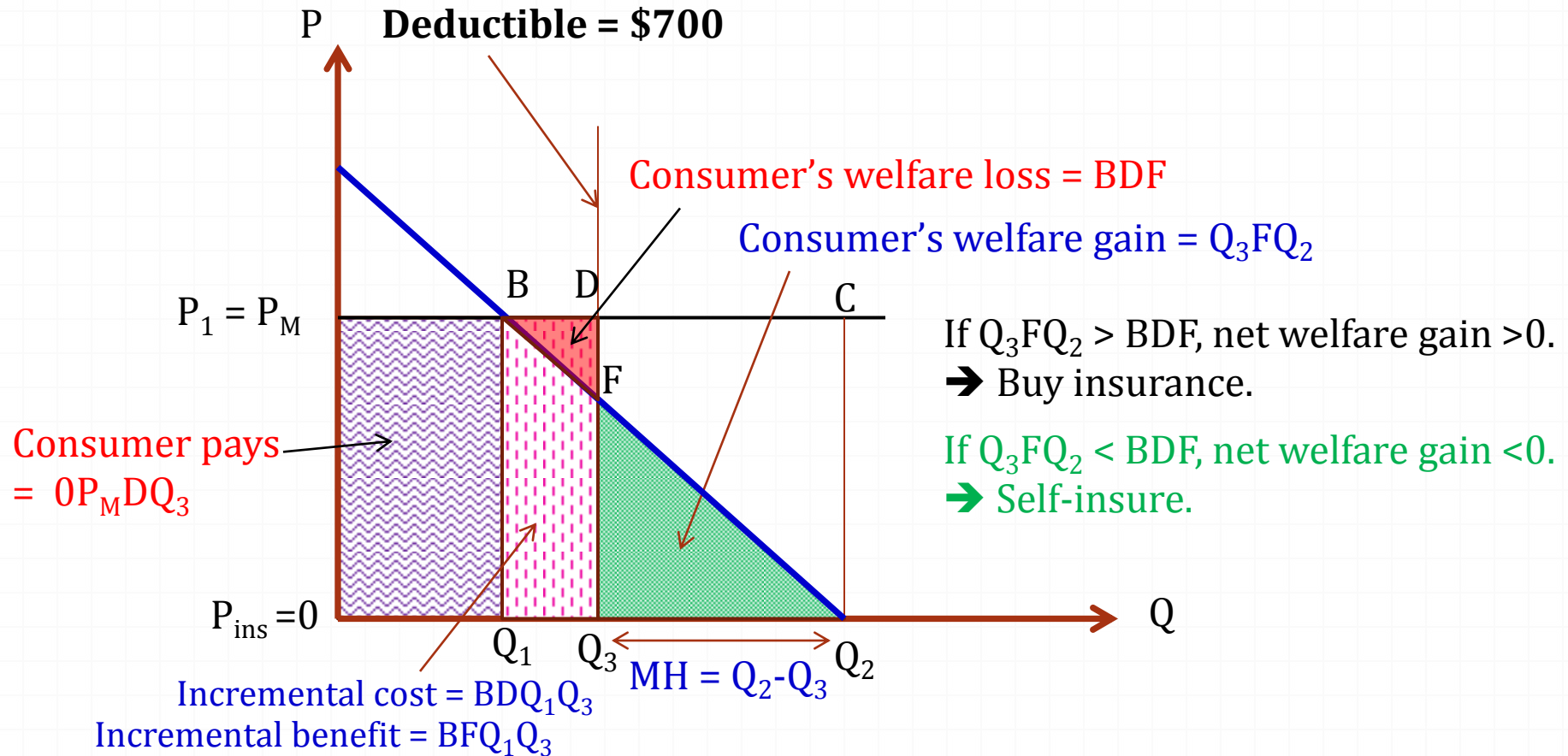
Predictions on the Types of Health Insurance

- More inelastic demand health care services
 - More complete coverage
- More elastic demand health care services
 - Less complete coverage or no insurance
- To reduce moral hazard, insurance companies use the following policies:
 - Deductibles
 - Coinsurance

Demand for Care and Moral Hazard (Elastic Demand & Deductible)



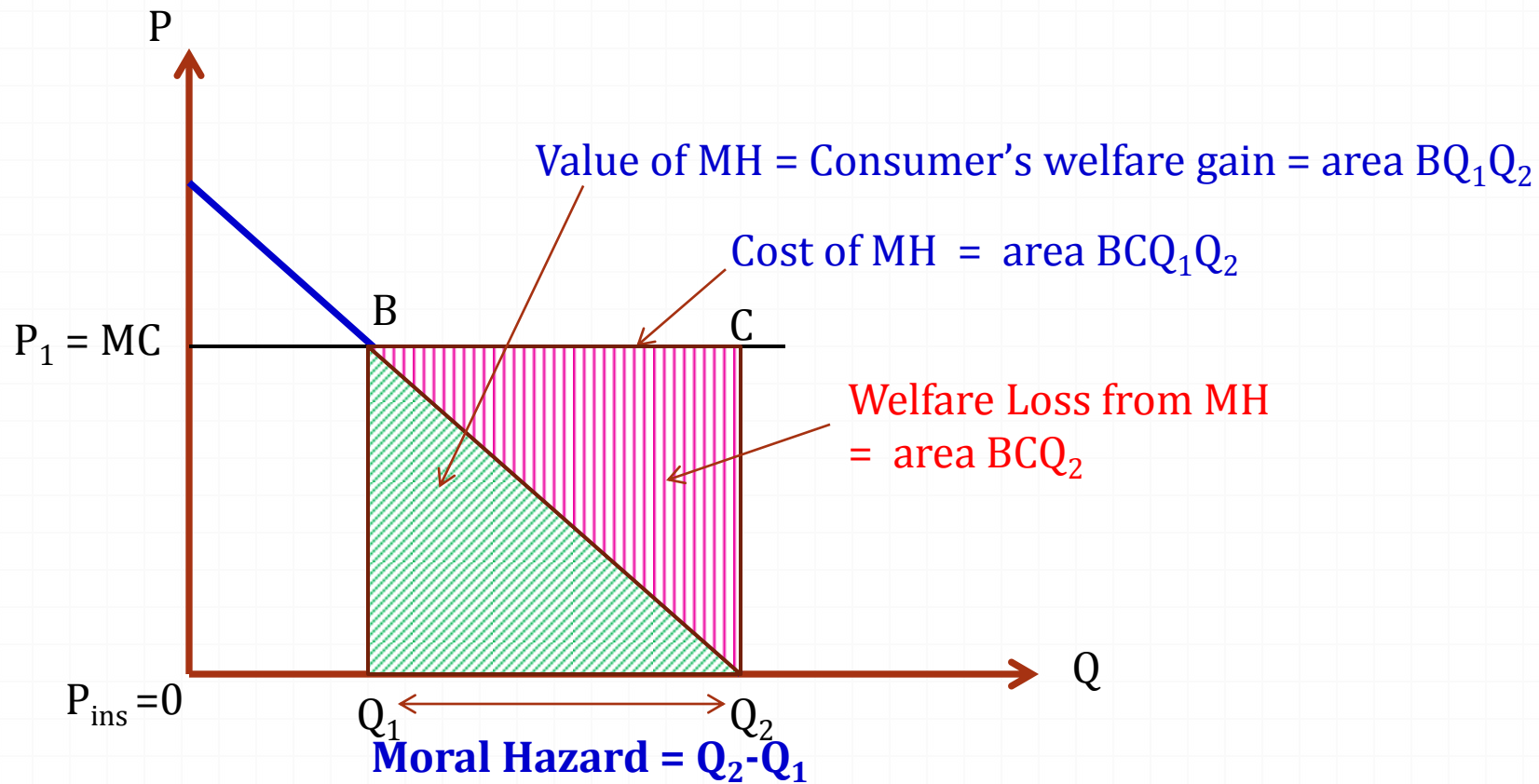
Demand for Care and Moral Hazard (Elastic Demand & Deductible)



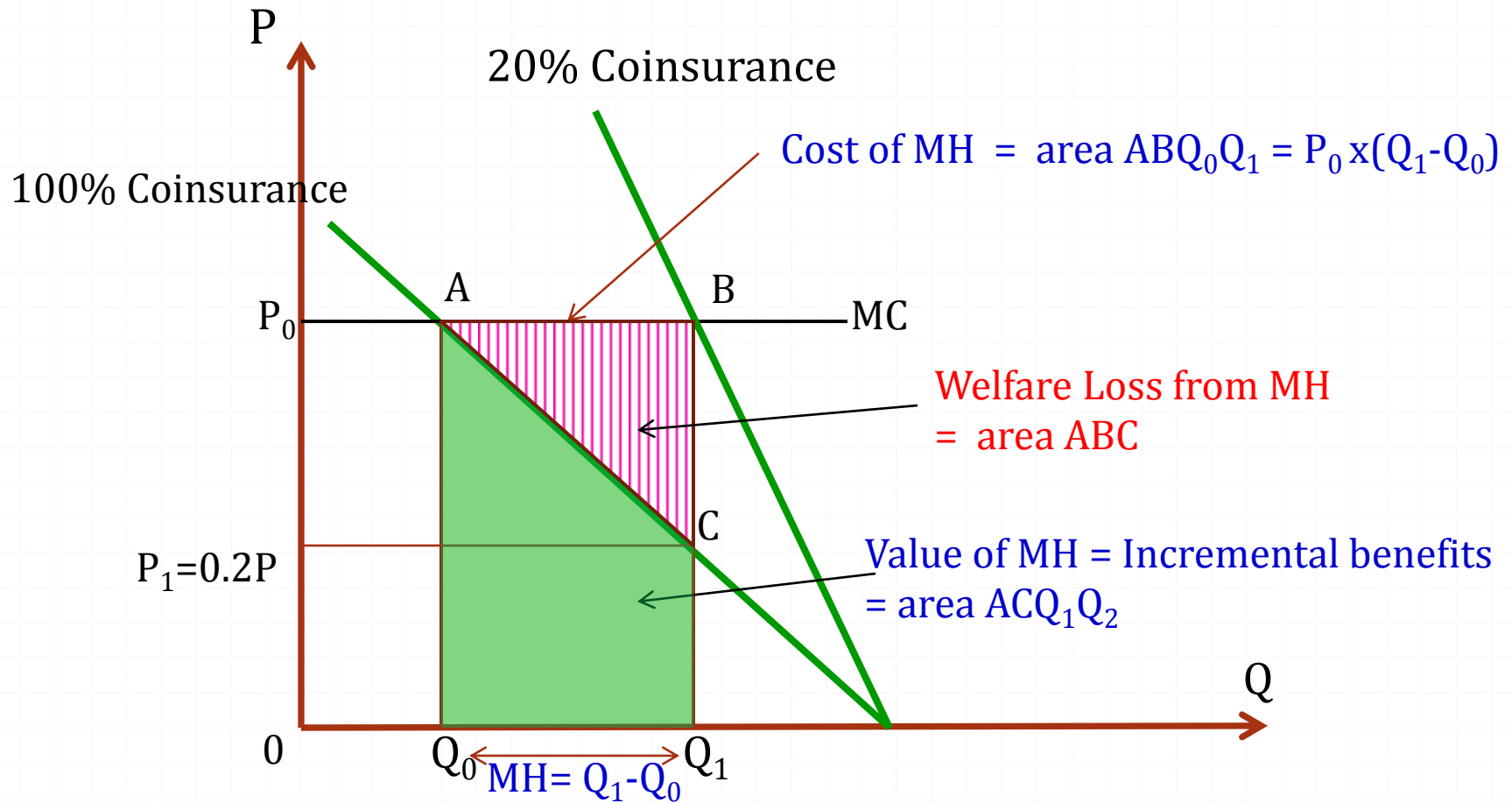
Efficient Allocation of Resources

- The **efficient allocation** of society's scarce resources occurs when **marginal cost (MC) equals marginal benefits (MB)**.
 - MC = The incremental cost of bringing the resources to market
 - MB = The valuation to those who buy the resources
- If $MB \neq MC$, society's welfare could be improved by re-allocating resources.
 - If $MB > MC$, allocate *more* resource to the individual or sector and *less* resources to others.
 - If $MB < MC$, allocate *less* resource to the individual or sector *more* resources to others.
- **Moral hazard** induced by health insurance can lead to inefficient allocation of resources.
 - $MC > MB \rightarrow$ **Welfare loss to society**

Moral Hazard and Welfare Loss (Full Insurance)

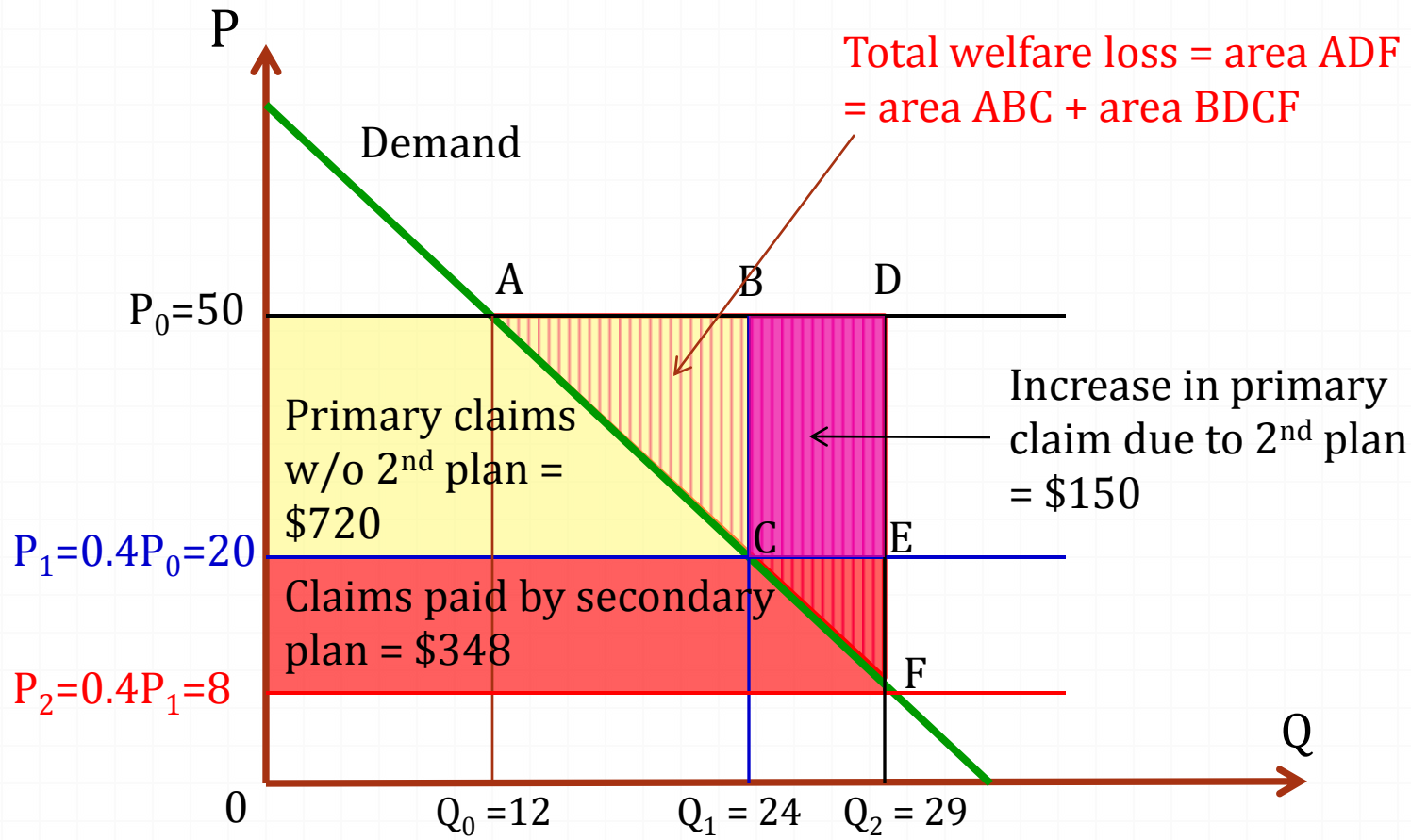


Moral Hazard and Welfare Loss (20% Co-insurance)

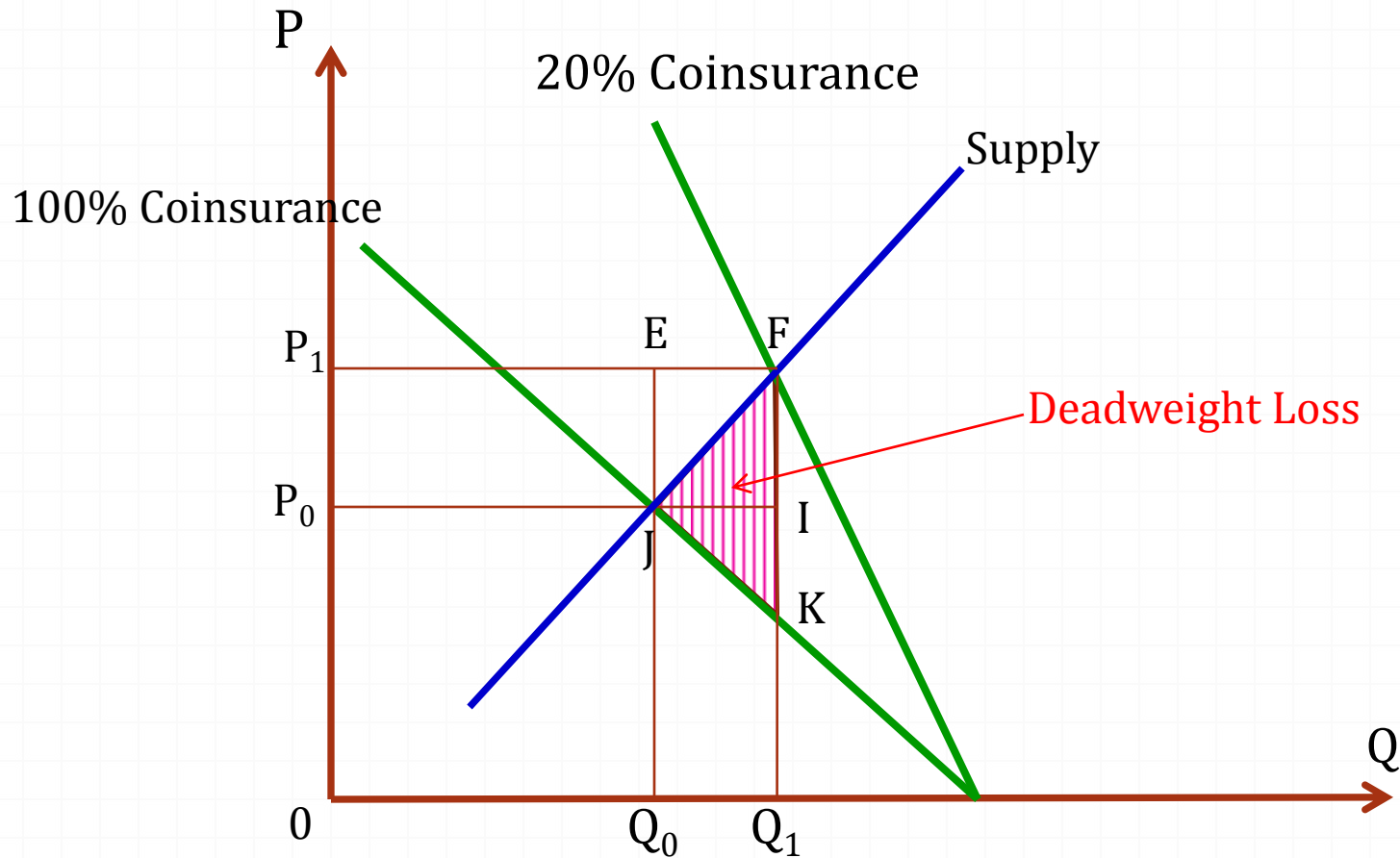


Two-tiers Insurance

(Primary Plan – 60% of total cost & Secondary plan– 60% of the rest)



Deadweight Welfare Loss



The (New) Theory of Demand for Health Insurance

- So far, we have learned about the *conventional insurance theory*, which suggests that health insurance always creates a welfare loss.
- John Nyman's (1999) new theory of demand for health insurance:
 - Health insurance is demanded in order to obtain **an transfer of income when ill** (income transfers from those who remain healthy to those who become ill).
 - Health insurance generally **increases welfare**, mainly because of moral hazard which represents **access to health care that would otherwise be unaffordable**.

Nyman's Model

o Some notations:

o m_i is total medical care cost when illness occurs

o r is the premium

o π is the probability of illness.

o c = coinsurance rate (Note: we've assumed $c=0$ previously.)

o Insurer sets a premium, r , at the **actuarially fair** level:

$$r = \pi(1-c)m_i$$

o The **payoff** that the insurer pays to the beneficiary who becomes ill is equal to $(1-c)m_i$.

Nyman's Model

- **Income transfers** are the portion of the payoff to the ill that is paid for by those who purchase insurance and remain healthy:
 - *Payoff* to ill: $(1-c)m_i$
 - *Premium* paid by each insured: $\pi(1-c)m_i$
 - *Income transfers* to ill: $(1-\pi)(1-c)m_i$
- Example: Medical spending with insurance is \$10,000, coinsurance rate is 20%, and probability of illness is 0.02.
 - Each insured pays: $c*m_i = \$2,000$ *out of pocket*
 - Insurer pays: $(1-c)m_i = \$8,000$
 - AFP: $r = \pi(1-c)m_i = 0.02(\$8,000) = \160
 - **Income transfers** are: $(1-\pi)(1-c)m_i = 0.98(\$8,000) = \$7,840$

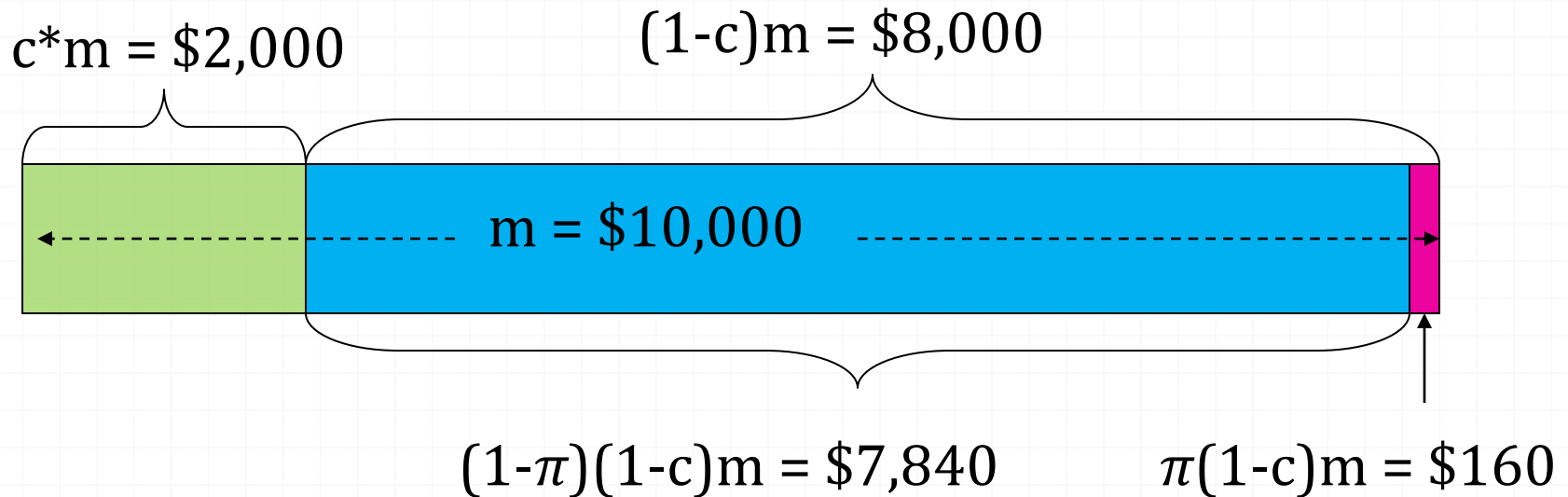
Diagram of c , π , and m in Nyman's Model

o Example

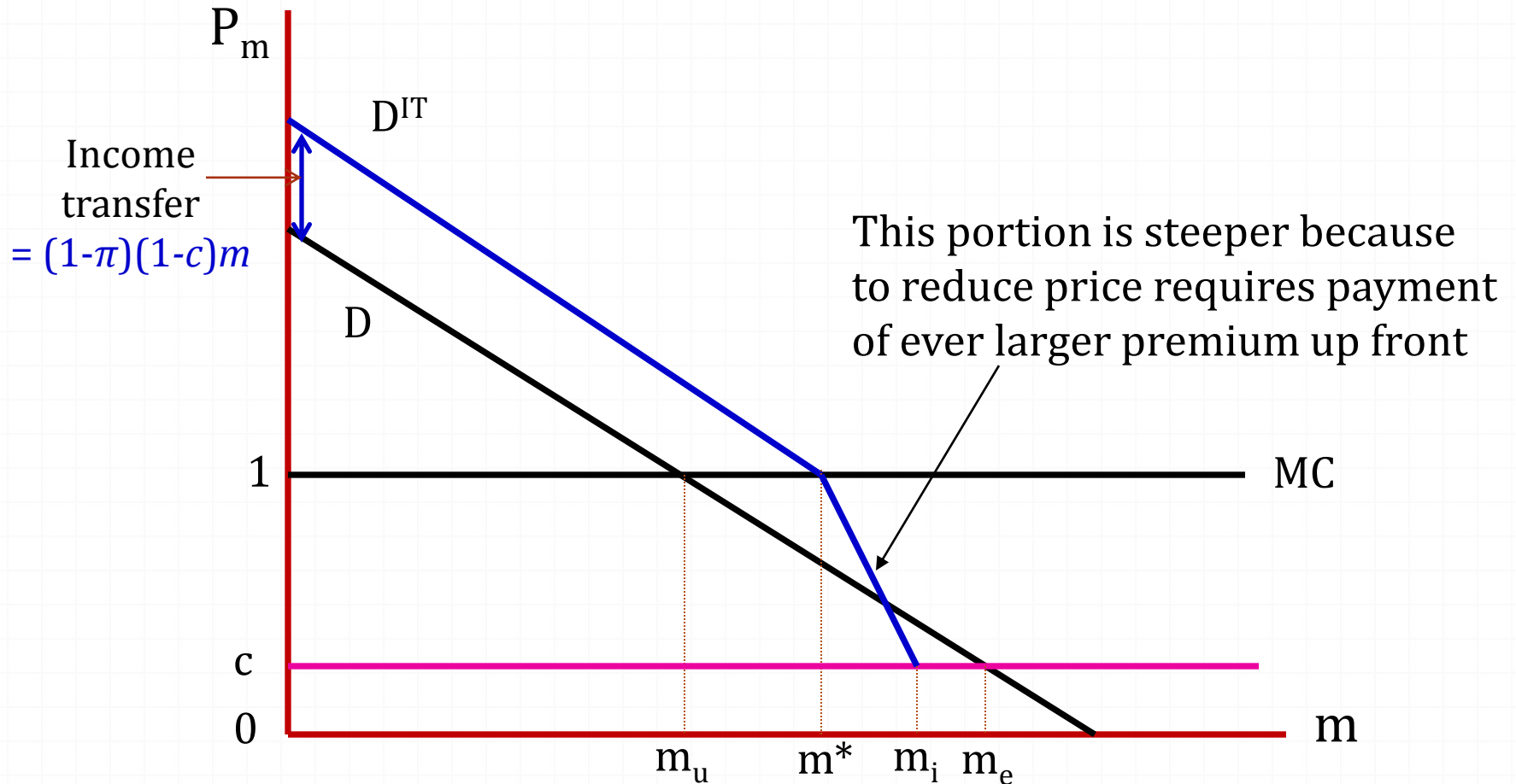
o $m = \$10,000$

o $c = 20\%$

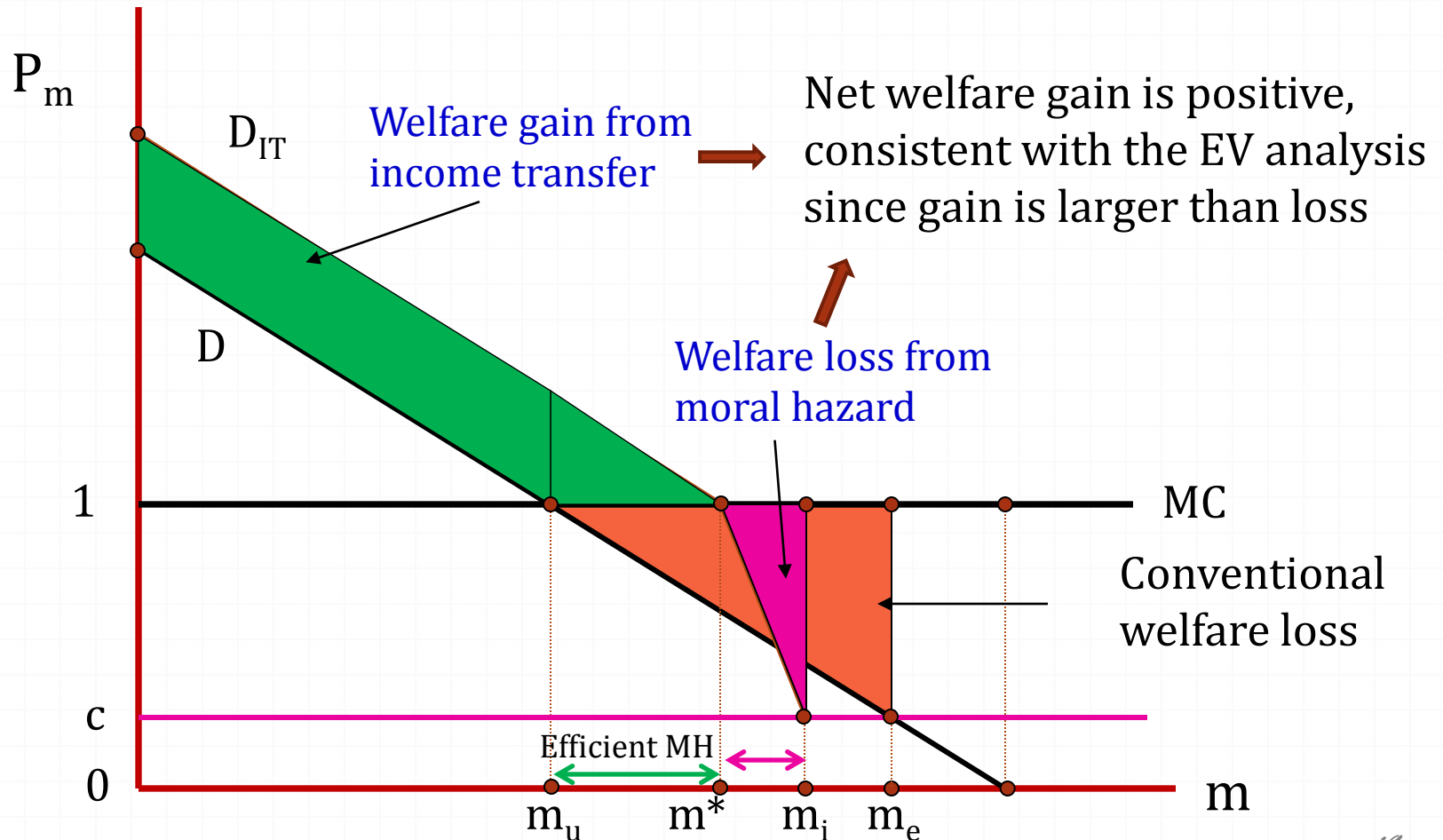
o $\pi = 2\%$



Nyman's Decomposition of Moral Hazard using Demand Curve



Nyman's Model: Welfare Gain



Elizabeth Example

- Elizabeth is diagnosed with breast cancer.
- *Without insurance*, she purchases
 - Mastectomy for \$20,000 ← Spending without insurance
- *With insurance* that pays for all her care, she receives the
 - Mastectomy for \$20,000,
 - A breast reconstruction for \$20,000
 - 2 extra days in the hospital for \$4,000

} Spending with insurance = \$44,000
- **Moral hazard spending:**
 - $\$44,000 - \$20,000 = \$24,000$ for breast reconstruction and hospital days

Elizabeth Example

- Question: Is the \$44,000 spending efficient?
- Assume that, if she had been paid off with a **lump sum payment** equal to the amount the insurer paid for her care (\$44,000), she would have purchased the **mastectomy** and the **breast reconstruction**, but **not the 2 extra days in the hospital**.
- Conclusion:
 - The **breast reconstruction** is *efficient* and **welfare increasing** because Elizabeth would have purchased that with the income transfer.
 - The **2 extra days in the hospital** are *inefficient* and **welfare decreasing** because she only purchases them because the insurer had distorted the price.

Illustration of Elizabeth's Welfare Gain

