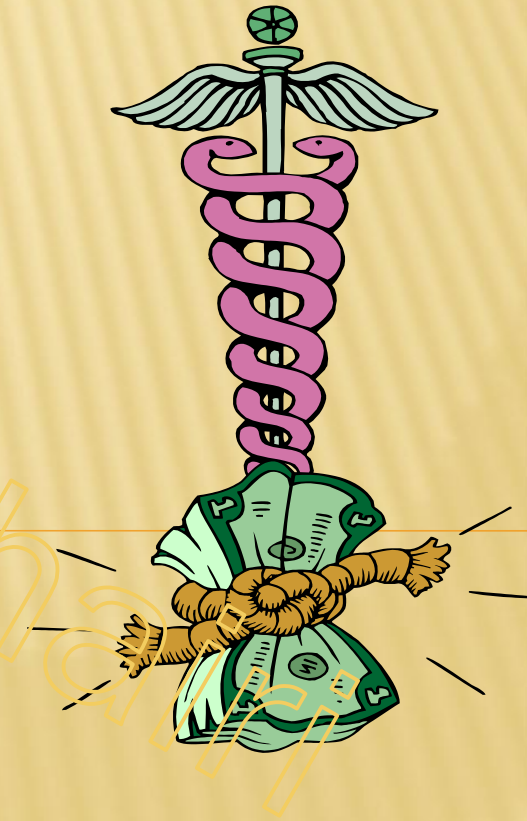
Post graduate course 2025

COST ANALYSIS



COST ANALYSIS TYPES

Cost analysis	Input	Output
	Cost	Economic benefit
	Cost	Results achieved
	Cost	Similar results
	Cost	Utility
		QALY DALY

CBA

- For evaluating public projects.
- measures inputs & consequence in money (Put $ value for years of life or health gain).
- Evaluates public investment costs, including those having no market, to determine their prices ➔ Pet scan

Examples:

-immunization

(mass vaccine or risk group) ➔ Polio, Hepatitis B, Rabies

-screening: Low specificity, double screening

-heart/bone-marrow transplant.

DOUBLE SCREENING: EFFECTIVE? EFFICIENT?

Screening in series

Test A → Negative

Test A → Postive → Test B → Negative

Test A → Postive → Test B → Postive

Screening in parallel

Test A → Negative

Test A → Postive

Test B → Postive → Postive

Test B → Negative

CBA LIMITATIONS

- Indirect costs (Benefits to non-immunized by herd immunity; benefits to boaters by pollution clean up).
- Future benefits must be discounted & deflated.
- Doesn't account for equity & distribution. Less to many = more to some. (Sonar & mammogram for breast mass detection differ in equity)

RIVER OIL POLLUTION

CEA

- Overcomes difficulties of placing monetary values for life /death. consequences measured in same quantifiable units.
- Compares costs of non-monetary objective
- Evaluating treatment with homogenous output (saving life, disease detection)

Example:

CEA for garbage mass reduction (comparing recycling or incineration).

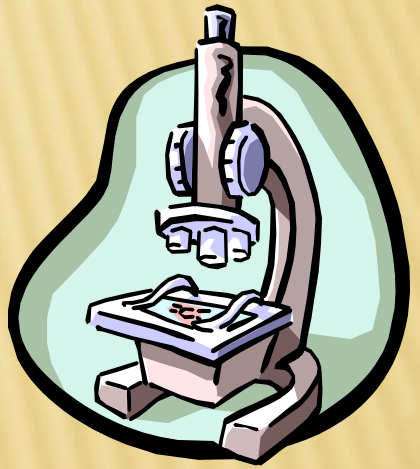
CS with/without prophylactic antibiotics ➔ % of patient with/without infection.

PRACTICAL: MALARIA LAB

You want to do economic analysis for malaria diagnosis lab (capacity of 300 slides / day):

What costs (fixed & variable) you should remember?

+ *Capital costs: building, microscope (fixed)*
+ *Personal wages (fixed, charged for 1st slide)*
+ *Slides, stains (variable)*



What will be your output?

Slides examined / day

What is the type of analysis you are doing? **C?A**

How can you get the maximum lab efficiency?

Examine 300 slides/day

CMA

Similar to CEA, but output (consequence) must be similar, in same units.

We select the lowest input cost for same output consequence.

Example:

CMA for blood pressure (or blood sugar) monitoring, by Dr versus self monitoring . Covid vaccines.

CUA

Saving 5 yrs in 80 old man isn't similar compared to 30 years young adult?

QALY is a weighting system assigns value 1(perfect health) to 0 (death) to yr of person's life.

A project providing small health benefits to many may have same cost / QALY with one with large health benefits to few. (DALY is similar).

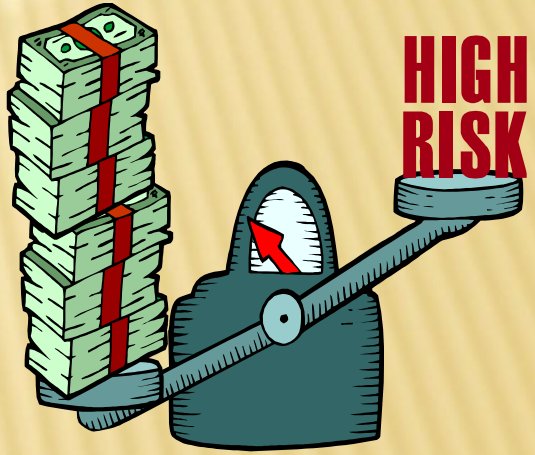
Example: stroke patients treated in intensive care or medical wards) ➔ life & disability

Economic burden of Disability > death. Why?

ECONOMIC ANALYSIS DIFFICULTIES

- **Measurability**: e.g. health service, life-death.
- **Capital:** depreciation & interest rate

$1000 (10% interest) ➔ 1331 after 3 years).



- **Time:** output is future (unpredictable e.g. loans, frozen assets). Inflated costs.
- **Place:** currencies & purchase power differ

ربا الفضل:فائدة رصيد البنوك.

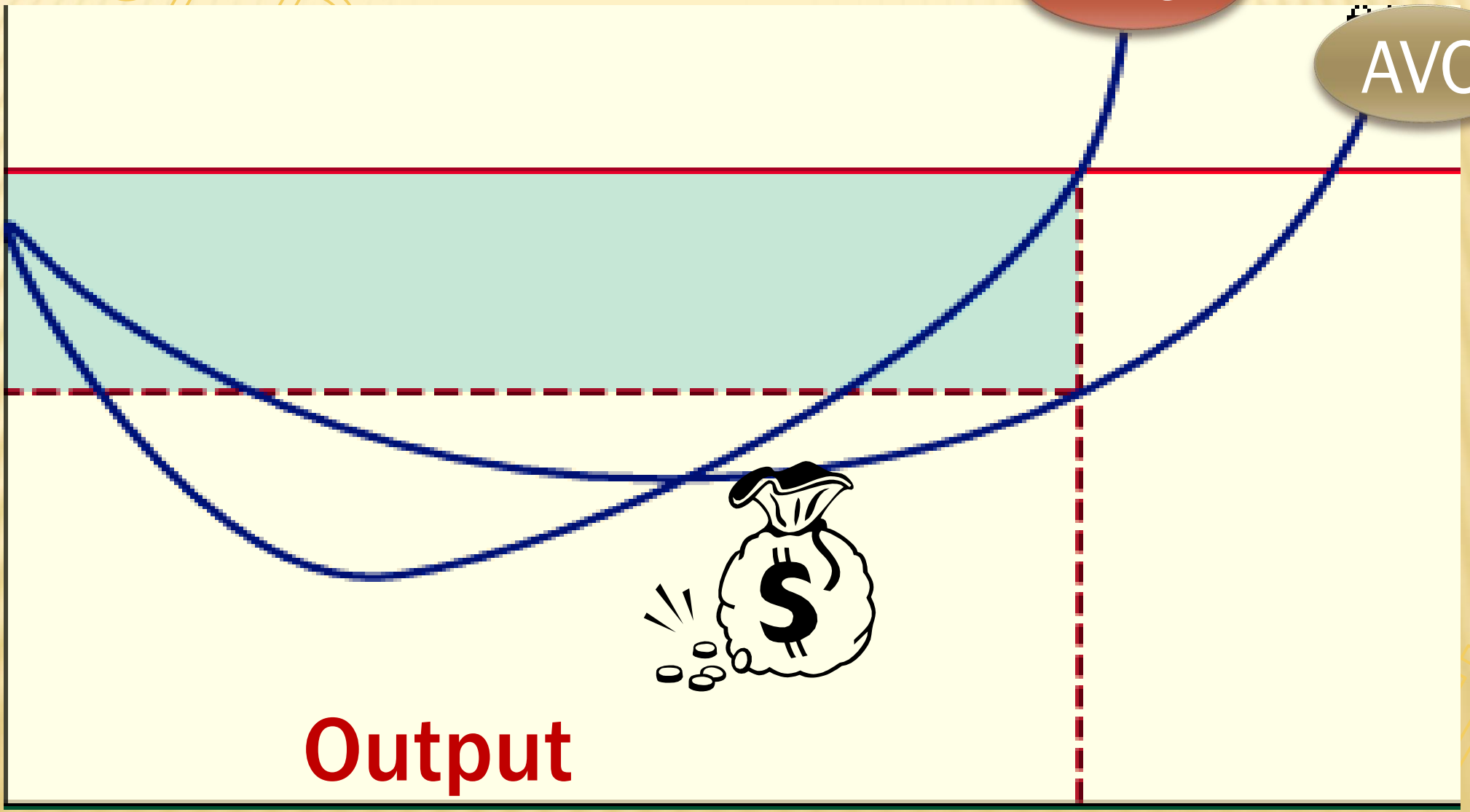
ربا النسيئة: دين يقطع منه عند التسليم او تسدد اعلى او يربط بزيادة مستمرة مع الزمن

ربا المثل:يقترض صيدلي كمية دواء من اخر،والثاني يطلب اكثر لتغير السعر

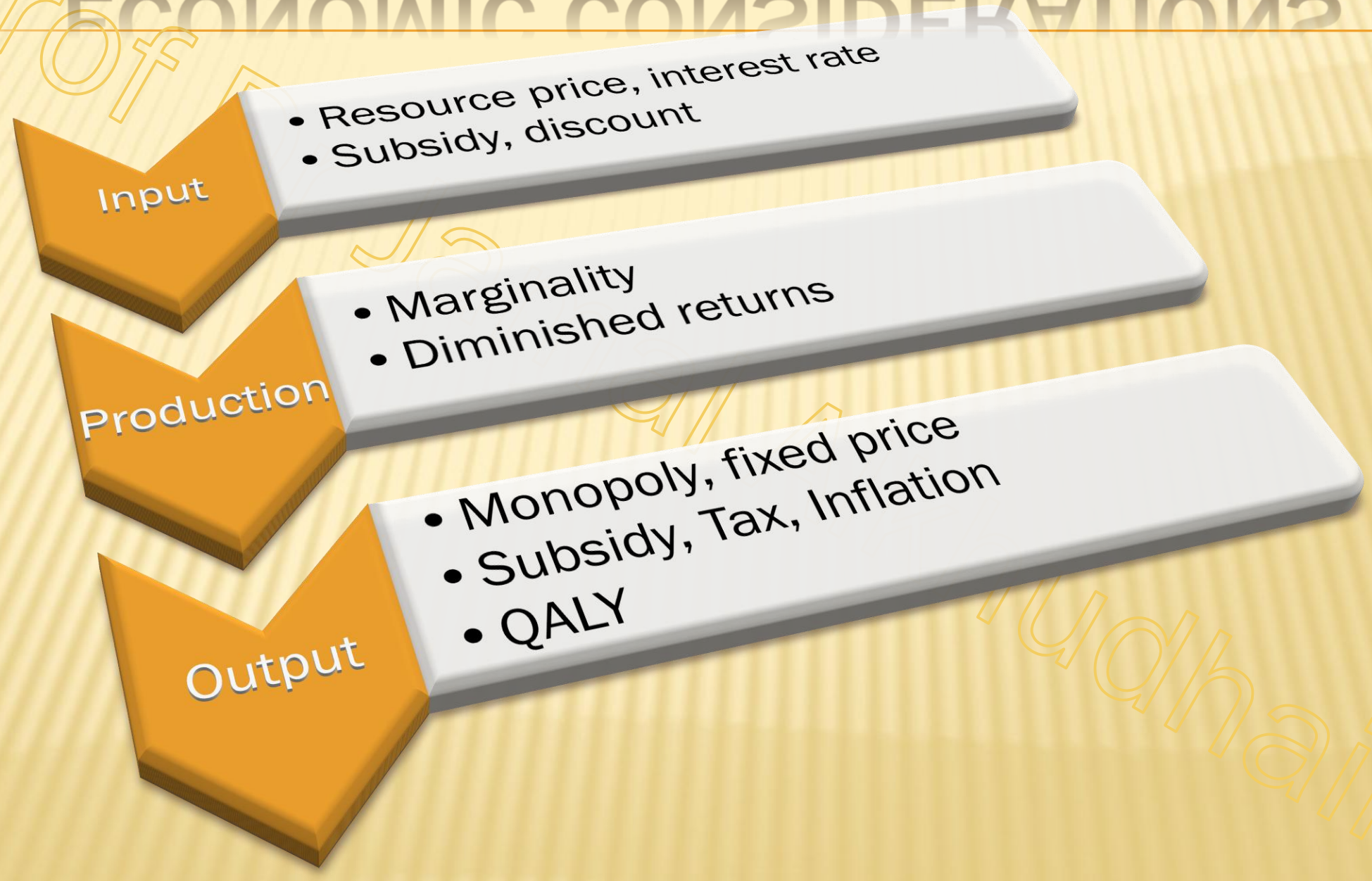
LARGE-SCALE PRODUCTION CHARACTERISTICS

- **Managerial inefficiency** (division of labor & Specialization increase returns).
- **Input price:** reduced by bulk resource purchase (discounts), increased by more demand on scarce resources
- **Law of diminishing returns**: progressing programs becomes costly (e.g. malaria eradication, cases discovered becomes less ➔ campaign costs increases).
- **Marginal value:** input/output cost change associated with output/input change by one unit.

MARGINALITY



ECONOMIC CONSIDERATIONS



PRACTICAL: CONSULTANT CLINIC

You are the only doctor in an outpatient clinic using single room. You can examine 5 pat / hr. Due to patients overload, you started to use 2 rooms which make you examine 8 pat / hr (why?) What have the extra room done to your clinic?

- *Increases efficiency?*
- *Increases effectiveness?*

PRACTICAL (CONT)

The idea sounds great, so you started to use 3 exam rooms making you examine 10 pat / hr. What conclusion about cost-effectiveness of your clinic? Why?

One of your (smart) friends convinced you to use 4th room. When you tried the idea, you soon recognized that it makes no difference. Why? What can you conclude now?

PRACTICAL (CONT)

Nobody on earth can convince you now to use 5 examining rooms, why?

- *Only 9 pat will be examined (low efficiency)*

What economic law can we get from this example?

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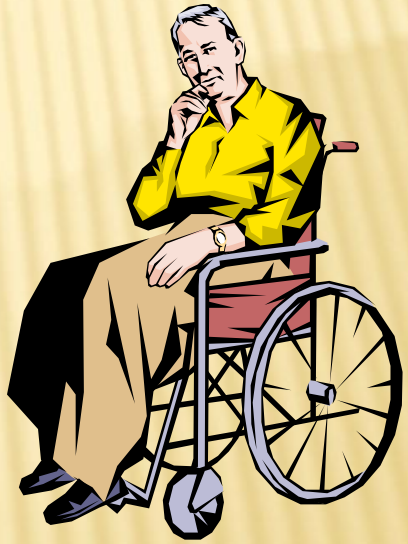
Find out marginal value for: 1,2,3 & 4 rooms

one room +3, *two rooms +2,*

three rooms 0, *four rooms -1.*

PRACTICAL: QALY

Procedure	*Cost / QALY gained*
Aortic valve replacement	£ 900
Pacemaker	£ 700
Heart transplant	£ 5000
Kidney transplant	£ 3000
Hospital haemodialysis	£ 14000
Home haemodialysis	£ 11000
Hip replacement	£ 750



What economic analysis needed to compare procedures?

- *C?A*

Why is haemodialysis so costly?

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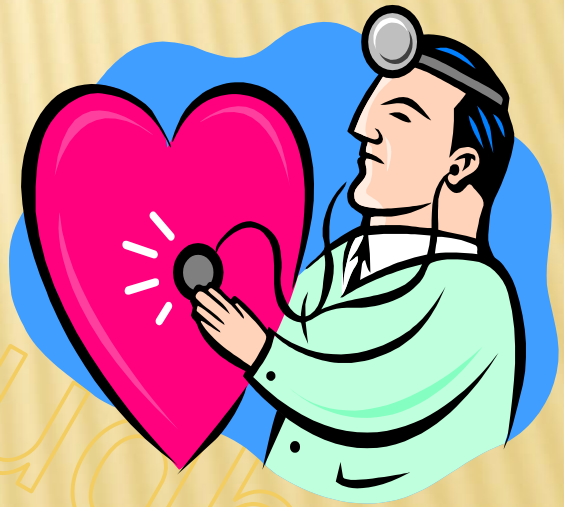
PRACTICAL:

UNCOMPLICATED MYOCARDIAL INFARCTION

Time	Average hospital stay
1950s	4-8w
1960s	3w
1970	2w
1980	7-10d
1988	4-5d



What type of economic analysis? C?A

PRACTICAL: (CONT)

Is the program for MI becoming more effective?

What questions should we answer before reaching to the above conclusion?

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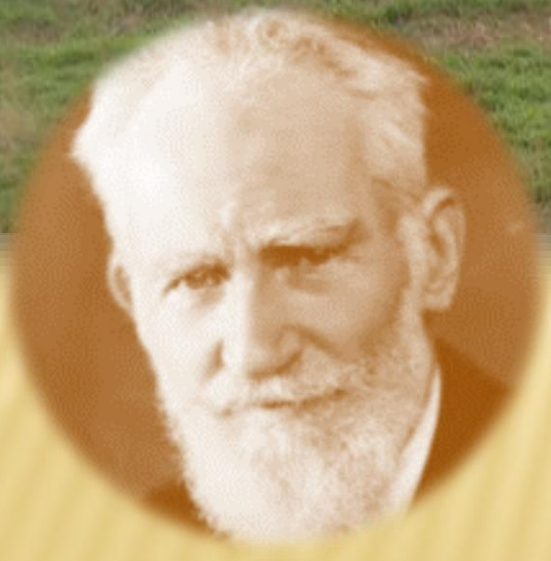

The economist knows
The price of everything
& the value of nothing