

* Prelude

- In the simplest terms, public finance is the study of the role of the government in the economy.
- This is a very broad definition.
- This study involves answering the four questions of public finance:
 - 1) When should the government intervene in the economy?
 - 2) How might the government intervene?
 - 3) What is the effect of those interventions on economic outcomes?
 - 4) Why do governments choose to intervene in the way that they do?
- Public finance: taxing and spending activities of the government.
- However, fundamental issues are not financial.
- Rather, the key problems relate to the use of real resources.
- Hence, the use of the terms Public Economics and Public Sector Economics.

broadest

- In the ~~broadest~~ interpretation, public economics is the study of economic efficiency, distribution, and government economic policy.
- Public economics has developed from its initial narrow focus on the collection and spending of government revenues to its present concern with every aspect of government interaction ~~of~~ with the economy.
- The subject encompasses topics as diverse as responses to market failure due to the existence of externalities, the motives for tax evasion, and the explanation of bureaucratic decision-making.
- Public economics attempts to understand both how the government makes decisions and what decisions it should make.
- To understand how the government makes ~~decision~~ decisions, it is necessary to investigate the motives of the ~~decision~~ makers within government, how the decision makers are chosen, and how they are influenced by outside force.
- Determining what decisions should be made involves studying the effects of the ~~other~~

alternative policies that are available & evaluating the outcomes to which they lead.

- Positive & Normative analyses.
- framework.
- Market Efficiency ; Market Failure ; Efficiency & Equity
- Public Goods ; Public choice ; Public Production ; Externalities
- Theories of Taxation ; Fiscal Federalism
- Fiscal policy & stabilization
- Issues related to Indian Economy.

Externalities (Partial Equilibrium)

- What is the cost of driving down to workplace from your home?
Costs : Time required, cost of fuel, depreciation of vehicle.
- Economist Herbert Mohring (1999) studies the "cost" of congestion.
- Costs \rightarrow internal, external.

- Internal:
fuel, wear and tear on your car, and any tolls, as well as the cost of ~~your~~ your time spent driving. (you could have spent that time doing something productive).
- External: These are the costs that are not captured by market price.
There are other costs that you are much less likely to consider because you do not bear them yourself.
- In deciding how and when to travel, most travelers take into account the congestion they expect to experience; few consider the cost their trips impose on others by adding to congestion.
- Mowing found out that "the average peak-hour trip imposes costs on other travelers roughly half of the cost directly experienced by those taking the average trip."
- In the UK this cost can vary from £2bn (cost of delays) to £28bn (if we include noise, pollution, etc.).
- Markets with externalities & markets with public goods are two kinds of markets that are unlikely to allocate resources efficiently

* Externality:

Definition → The effect that an action of any decision maker has on the well-being of other consumers or producers, ~~be~~ beyond the effects transmitted by changes in price.

- Externalities arise due to the actions of one consumer or producer affect other consumers' or producers' costs or benefits in a way not fully reflected ~~is~~ by market prices.
- Perfect competition:
CS + PS is maximized. Since there are no externalities or public goods in a perfectly competitive market, the private costs & benefits that decision makers face are the same as the social costs & benefits.
- Social and market values of a good differ leading to "market failure" - equilibrium may not be economically efficient.
Market failure leads to deadweight loss.

* Types of externalities

1) Positive production:

Social value > Market value (Private value)

Example: Laser technology.

The person who invented laser sold it for the prevailing market value or got patent right but the benefit of using it percolates

out to the society. The social value is much greater than the market or private value.

2) Negative Production

Example: flyash.

3) Positive Consumption

Example: getting COVID-19 vaccine.

A vaccinated individual would be more protected & would be able to protect the people around him as well. ∴ His private benefit of getting vaccinated is much less than the ~~not~~ overall social benefit. Also the social benefit > market value of the product.

Education ⇒ If an individual becomes educated, it will affect the people around that individual also positively.

4) Negative consumption

Example: Smoking.

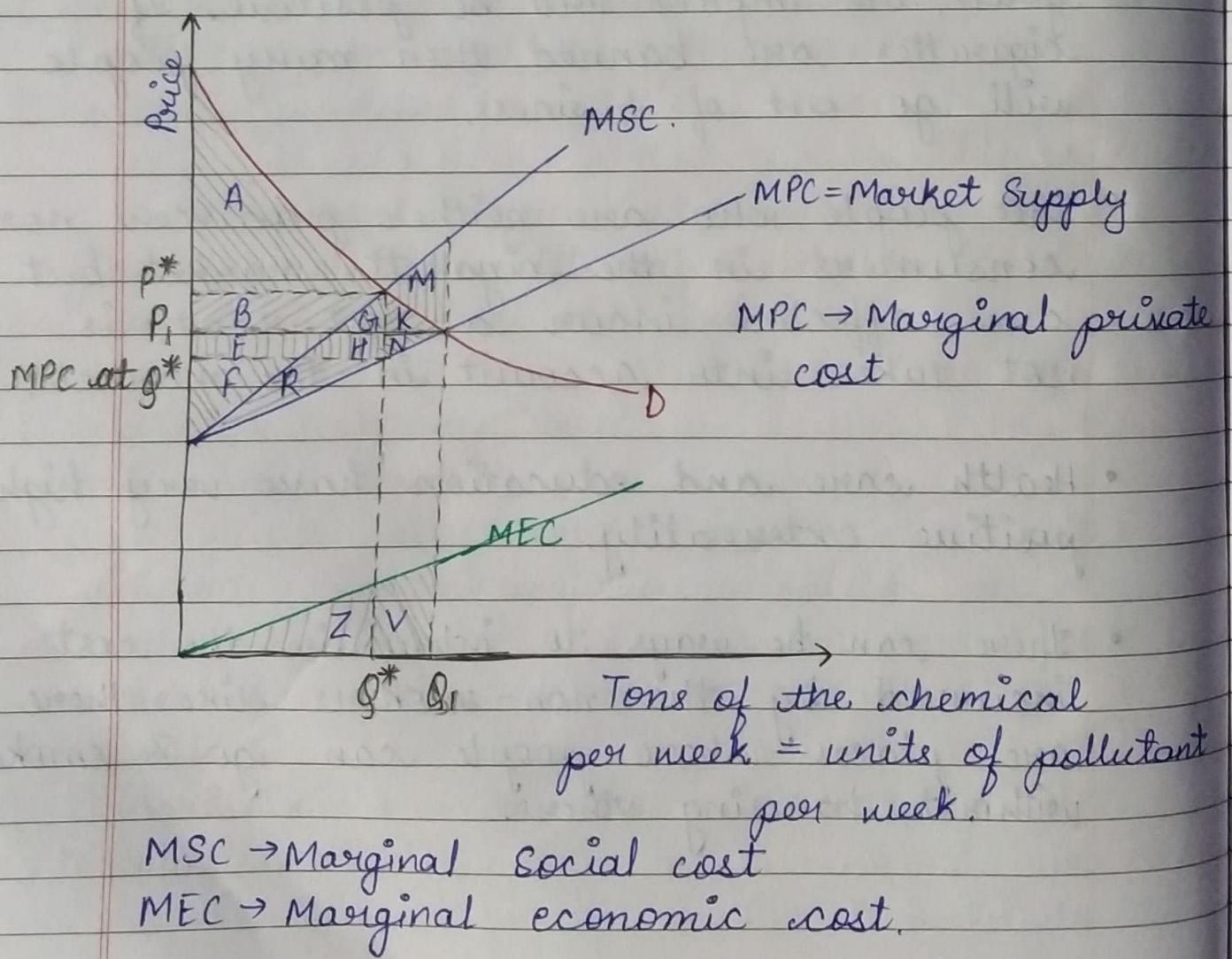
A person who smokes inflicts a health hazard on himself as well as on people around him who are non-smokers. ∴ The personal decision of that person is affecting the people who are not participating in the cigarette market negatively.

- Externalities are inflicted on the people who are not participating in the whole market transaction of the particular product.
- Cigarette is a negative externality for the non-smokers and not for the producers, buyers, distributors, etc. who participate in that market transaction. When the buyers sell the cigarette for the market price, the market clears.
- In fact, on the producers & sometimes on the govt., the impact will be positive. If cigarettes are banned, then many people will go out of business.
- The people who are neither producers nor consumers in the cigarette market but are affected incur a cost that is not taken into account in the market.
- Health care and education have very high positive externality.
- There can be ways to internalise the cost incurred by the non-smokers like there are places where people can go & smoke without harming others.

Cost of negative environmental externalities to the US economy for 6 major pollutants was \$184 bn (15% of US GDP) in 2002.

The social costs of air pollution from these compounds - what Muller, Mendelsohn, and Nordhaus call gross external damages (GED) - include negative effects on human health, social costs of reduced visibility, reductions in agricultural & timber yields, and degradation of recreational areas.

* Negative Externality & Economic Efficiency



MSC \rightarrow Social cost.

In this case, Social cost (MSC) $>$ Private cost (MPC).
A/c to market eq., P_1 & Q_1 are the eq. price & quantity.

But as the social cost is higher, govt. will impose heavier taxes & price will rise $\therefore P^*$ & Q^* will become the eq. point.

	Equilibrium (price = P_1)	Social Optimum (Price = P^*)	Dif. b/w Social Optimum & Equilibrium $\downarrow B - G_1 - K$
Consumer Surplus	$A + B + G_1 + K$	A	

Private producer
surplus.

-Cost of externality $-R - H - N - \cancel{G_1} - M$ $-R - H - G_1$ $M + N + K$
 $-G_1 - K - M$

Net Social benefit
(consumer surplus + private producer
surplus - cost of
externality)

$A + B + E + F - M$ $A + B + E + F$ M

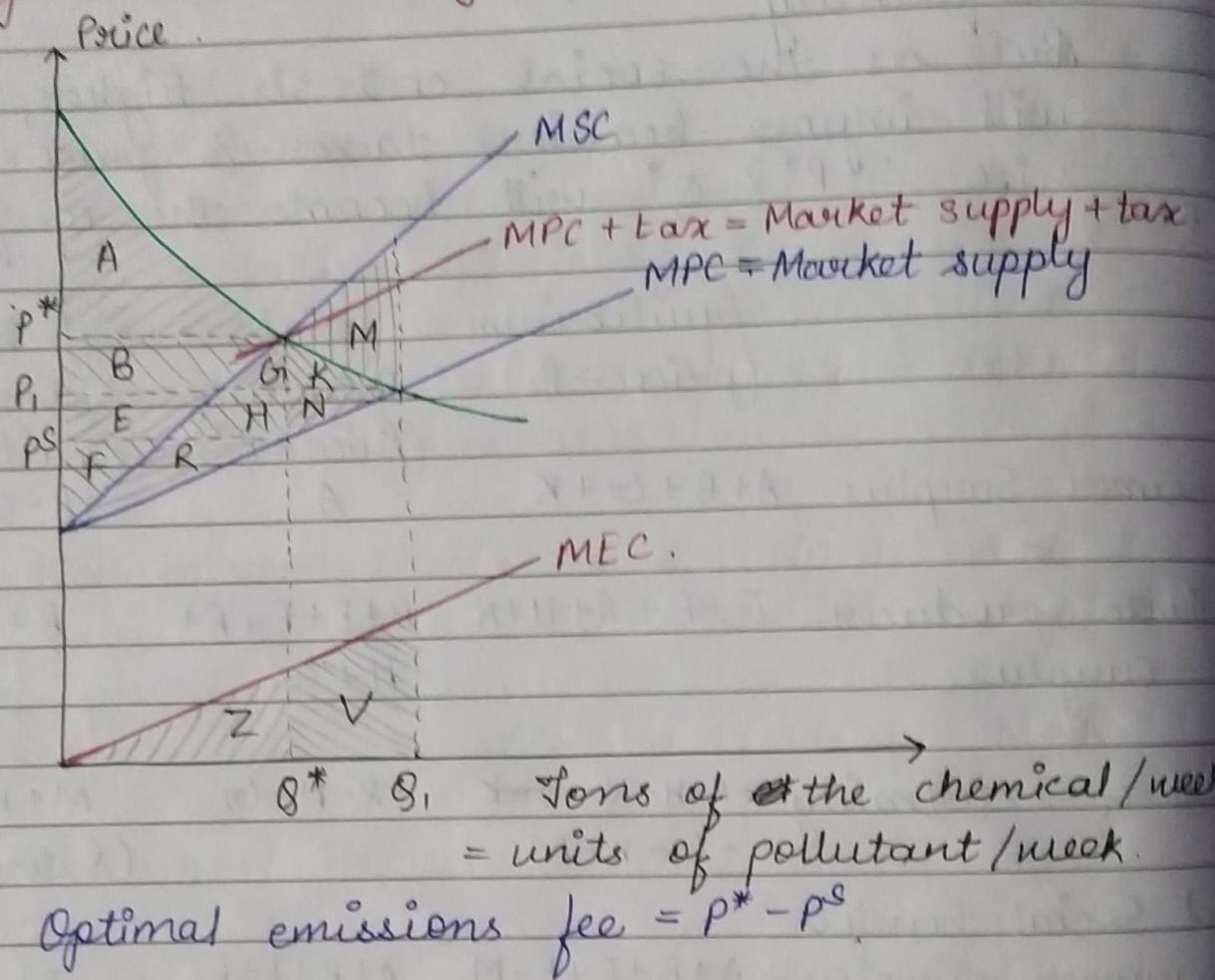
(increase in
net benefits at
social optimum).

Deadweight loss. M zero M

When there is no intervention, the market eq. is P_1, Q_1 but when negative externality is internalised, eq. shifts to P^*, Q^* (Social Optimum). As deadweight loss is zero in the new eq., internalisation of externality is

leads to greater social benefit.

Negative Externality & Tax.



Equilibrium (with Tax)

Consumer Surplus

A

Private producer surplus.

F + R

-Cost of externality

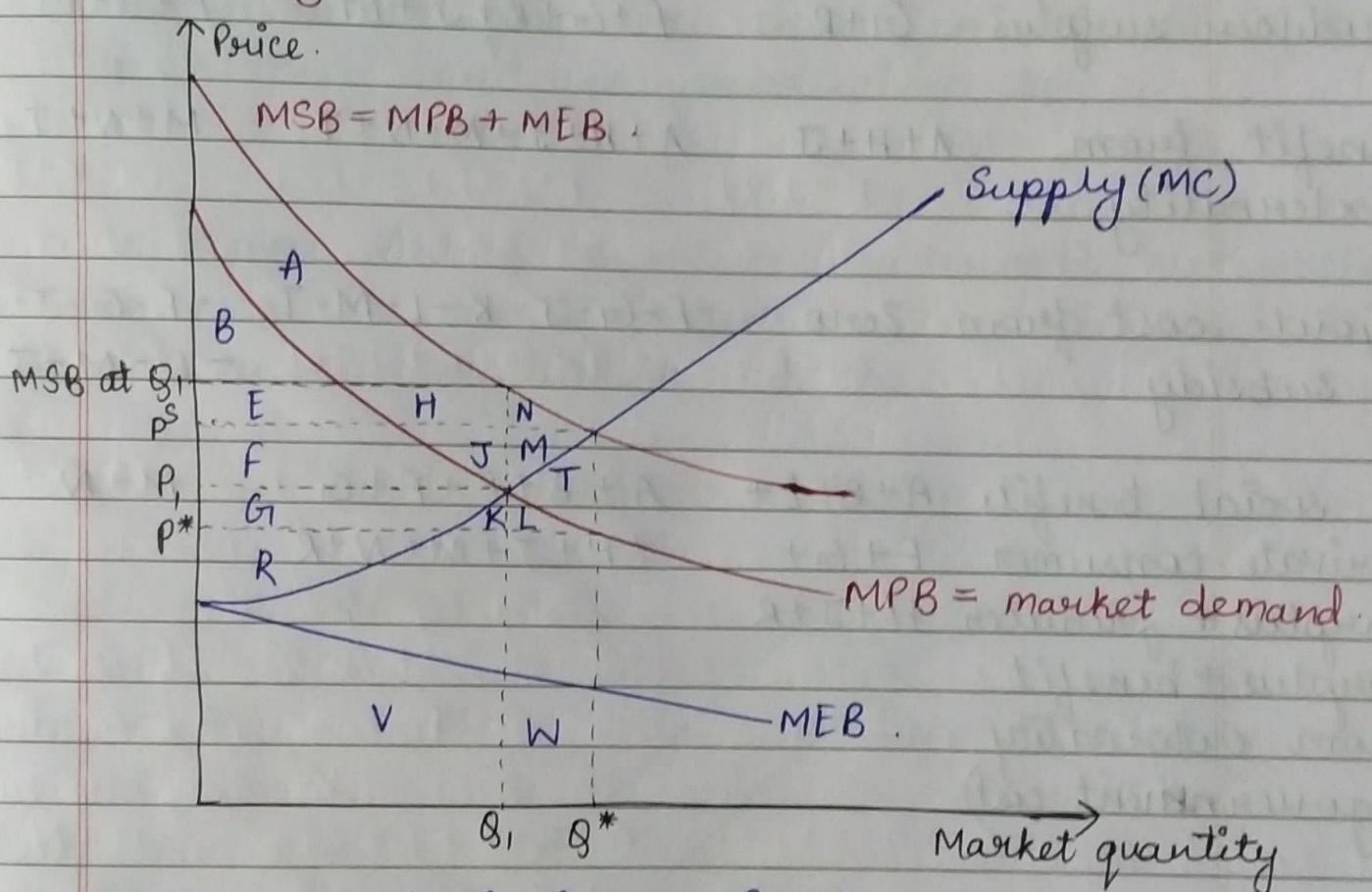
-R - H - G₁

Governments receives from
emission ~~tax~~ tax.

B + G₁ + F + H

Net social benefits (consumer surplus + private producer surplus + Govt. receipts - cost of externality). $A + B + F + F$.

Positive consumption externality & Economic Efficiency.



MEB → Marginal Economic Benefit

MSB → Marginal Social Benefit

MPB → Marginal Public Benefit

MEB falls with quantity → The social benefit of first person getting vaccinated is much greater than the last person getting vaccinated.

Equilibrium Social optimum Diff. in benefits
 (no subsidy) (eq. with b/w Social
 subsidy) optimum & eq.
 with no subsidy

Private consumer surplus $B+E+F$ $B+E+F+G_1+K+L$ G_1+K+L

Producer surplus G_1+R $F+G_1+R+J+M$ $F+J+M$

Benefit from externality $A+H+J$ $A+H+J+M+N+T$ $M+N+T$

-Govt. cost from zero subsidy $-F-G_1-J-K-L-M-T$ $-F-G_1-J-K$
 $-L-M-T$

Net social benefit $A+B+E+$ $A+B+E+F+G_1$ $M+N$.

(private consumer surplus + producer surplus)

+ benefit from externality

- government cost)

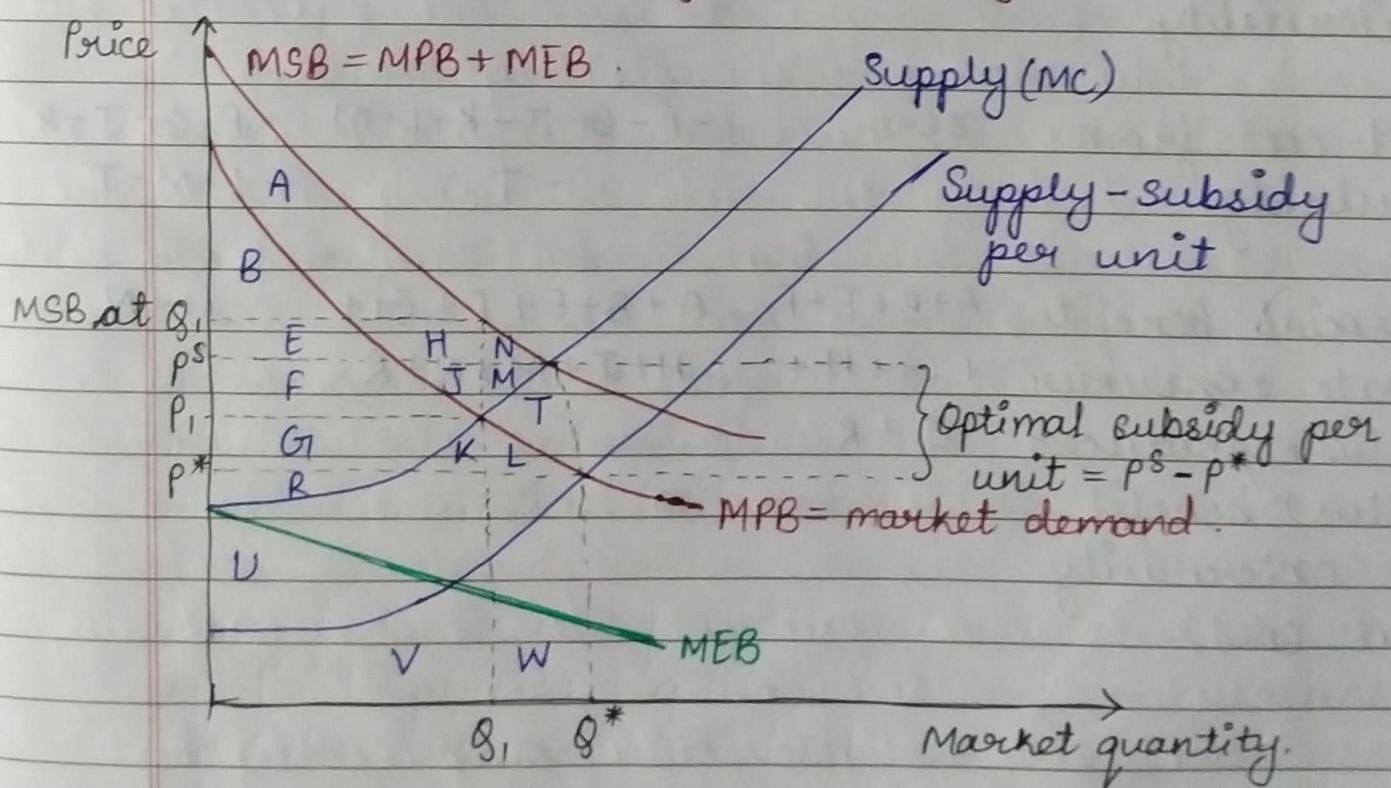
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when there is a negative externality, people do not try to internalise the cost, instead the market tends to produce more
 $\therefore Q_1 > Q^*$.

And when there is a positive externality, people do not consider the social benefit, they only consider their private benefit &
 \therefore they end up producing less.
 $\therefore Q_1 < Q^*$.

If there is a negative externality, taxation decreases the production & brings it to the social optimum.

* Positive externality & subsidy



If there is positive externality, then the good is subsidised and marginal cost comes down so that production increases & reaches the social optimum.

Equilibrium Social
(no subsidy) optimum

Diff. in benefit
b/w Social

(eq. with subsidy) optimum &

eq. with no
subsidy.

Private consumer
surplus.

$B + E + F$

$B + E + F + G + K + L$

$G + K + L$

Producer surplus

$G + R$

$F + G + R + J + M$

$F + J + M$

Benefit from
externality

$A + H + J$

$A + H + J + M + N + T$

$M + N + T$

-govt. cost from
subsidy

zero

$-F - G - J - K - L - M$

$-F - G - J - K$

$-T$

$-L - M - T$

Net social benefits
(private consumer
surplus + producer
surplus + benefit
from externality
- govt. cost).

$A + B + E + F$

$+ G + H +$

$A + B + E + F + G +$

$H + J + M + N + R$

$M + N$

..

* Public Good

- Non excludable
- Non rival

Example: A cup of coffee owned by an individual, no one else except for that person can have it, ∴ it's a rival.

Amazon Prime subscription → All the subscribers can watch it but there is no rival. But all the non-subscribers are excluded, ∴ it is an excludable.

Street, Street light → Non excludable, Non rival.

But if there is toll on the road, it is still non-rival, but the people who cannot pay the toll are excluded, ∴ it's excludable.

Rival good: A rival good is a type of product or service that can only be possessed or consumed by a single user. These items can be durable, meaning they may only be used one at a time, or nondurable, meaning they are destroyed after consumption, allowing only one user to enjoy it.

E.g. Fishing in a lake, if one person catches n fishes, those n fishes are not available for others ~~any~~ anymore.

- Common property: Resource anyone can access but rival. (Rival, Non-excludable).
E.g. → Fishing in lake. (Common Pool resources)
- Club goods
 - Common ~~pool resources~~: Excludable, Non-rival.
E.g. → Amazon Prime subscription, Toll gate.
~~also called~~
 - Pure private resources: Excludable, rival.
 - Public good: Non-excludable, non-rival.

E.g. Empty street is a public good but a congested street is a common pool resource as there may arise some rival

- Free-Riding
People have right to use the property but nobody takes responsibility for it.
Right is defined but responsibility is not defined. Enjoy the side of using it to the extent of abusing it but no responsibility of maintenance over it.
E.g. Park.

* Property Rights

The exclusive control over the use of an asset or resource.

⇒ Exclusive right over a property but also full responsibility of maintaining it.

Why are property rights important in dealing with externalities?

Firm A → cattle } on the same? Common property
Firm B → crop } property } resource.
cattle destroys crop.

Should cattle from A roam in B?
Fence?

Who pays?

Coase Theorem.

Regardless of how property rights are assigned with an externality, the allocation of ~~resource~~ resources will be efficient when the parties can costlessly bargain with each other.

If the owner of A has the property right, the right to let his cattle roam on B's land, B's owner will pay A's owner to build a fence when the damage to B's crop exceeds the cost of the fence. If the cost of the fence exceeds the damage to the crops, it will not be in the interest of owner B to pay for the fence, and the cattle will roam.

If the owner of B has the property right, either A would have ~~the right~~ to erect the fence or if A's cattle destroys the

crops, B would have the right to capture the cattle. A's owner will pay B's owner to build a fence when the loss of cattle exceeds the cost of fence. If the cost of fence exceeds the damage due to loss of cattle, it will not be in the interest of owner B to pay for the fence, and the cattle will roam.

Externality: Negative externality on B due to A.

In other words, when it is socially efficient to construct the fence, the fence will be built to eliminate the externality (when benefit from fence exceeds cost of fence, fence will be erected).

Costless bargain: If one of the firms have the property right than the other one acknowledges that right. If A has the property right, then B should acknowledge that right & A should not oppose if B ~~not~~ erects the fence to protect its crop. If one does not acknowledge the property right of the other, then there would be rival & then it would be a costly bargain.

Then for eg., cost of fence & that of bargain would have to be taken into account.