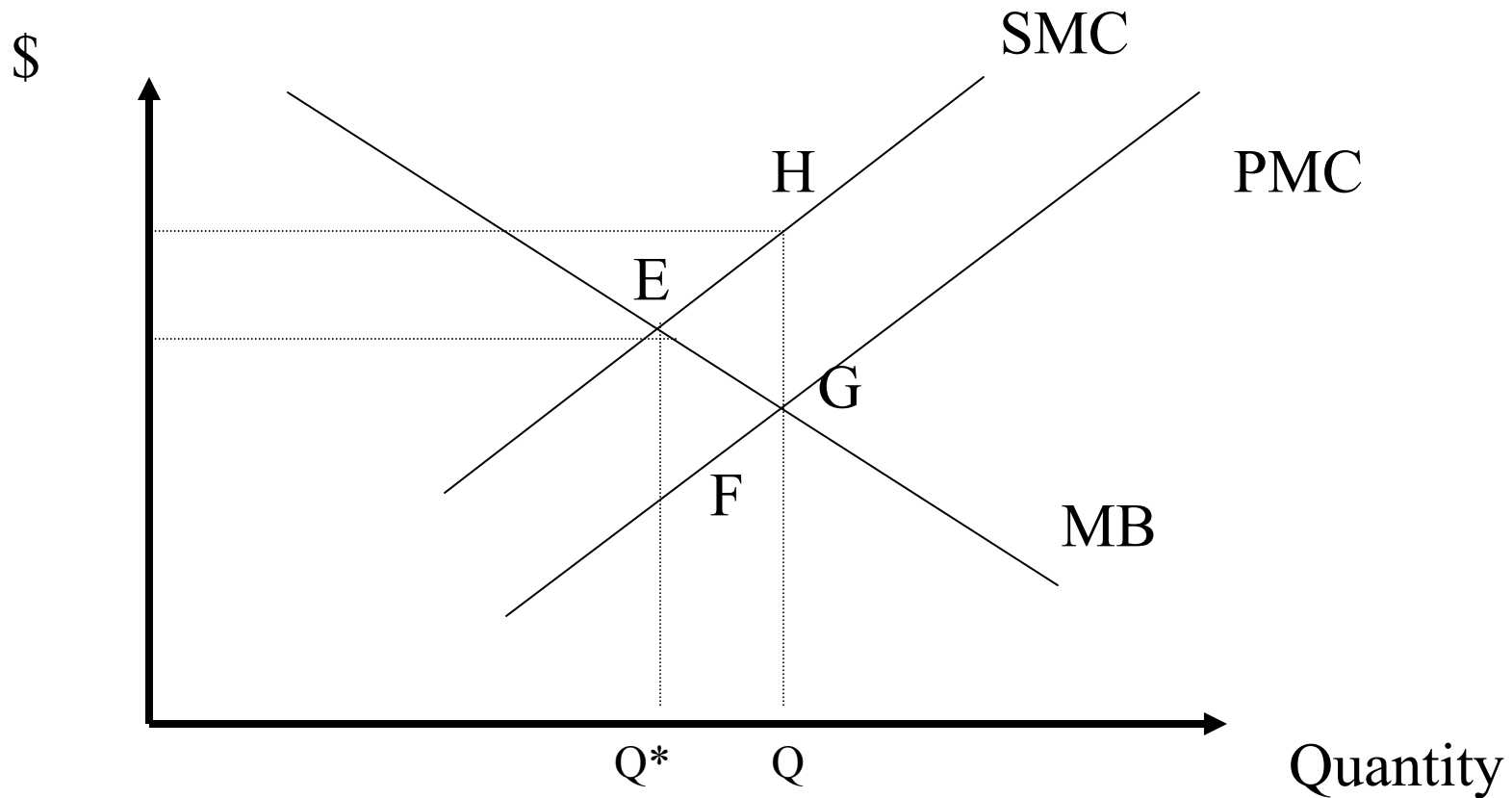


Environmental Policy

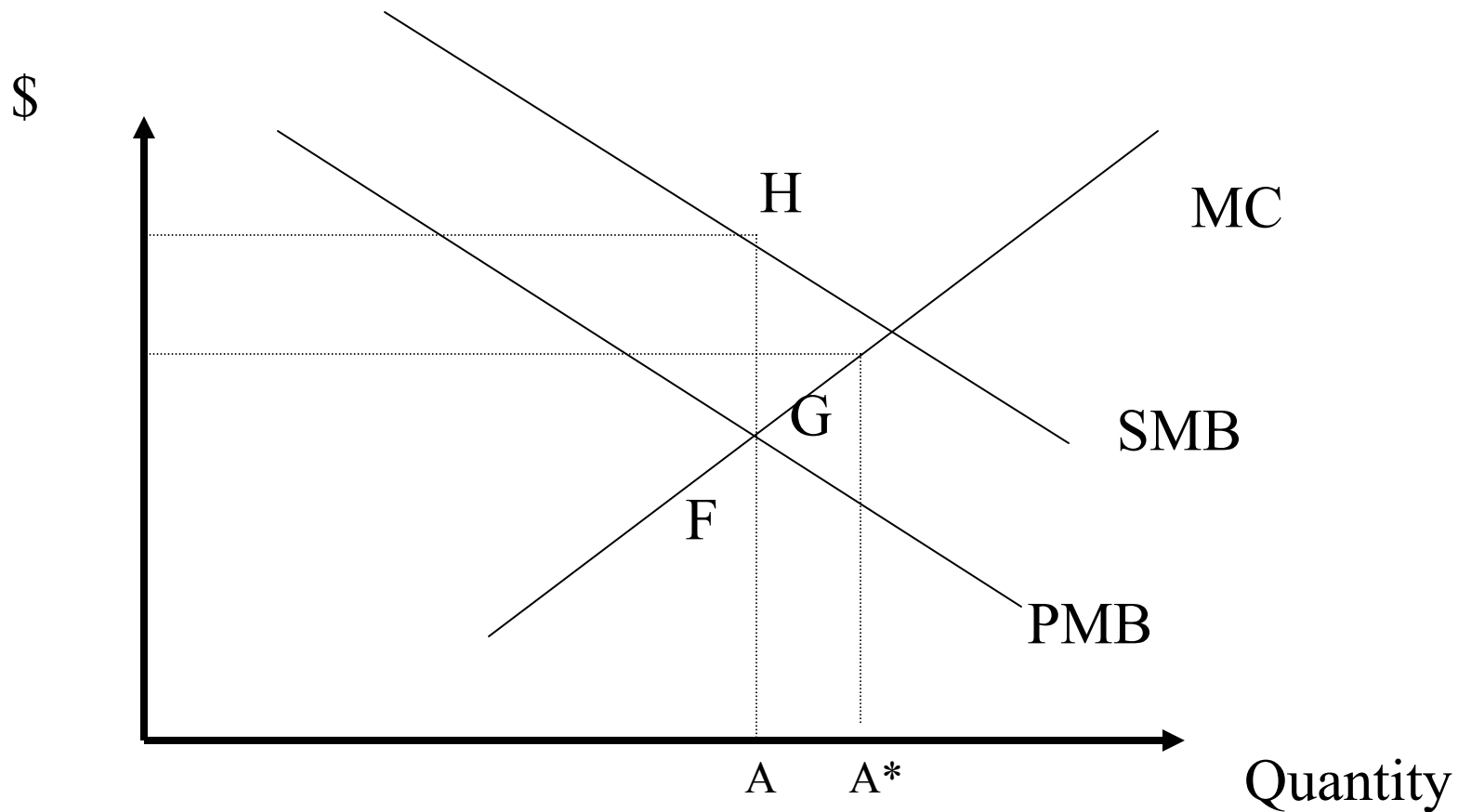
Externalities and market failure

- Definition:
 - “non-priced effect on a third party arising as a by-product of the actions taken by others”
- Examples
- Negative externality:
 - “Too much” and deadweight loss
 - Socially efficient level may not be zero
- Positive externality:
 - “Too little” and deadweight loss

Negative externality: paper production



Positive externality: abatement activity



Externalities?

- Externalities arise because of no pricing:
 - Paper manufacturer up the river and fisheries
- If it operates through prices, no problem!:
 - Paper manufacturer and furniture manufacturer

Policy solutions (1)

- Internalize the externality:
 - Place generating and affected parties under one management
 - Firm would have incentives to reduce emissions
 - Feasible? Other costs?
- Quantity controls or standards:
 - Limit to certain levels of pollution
 - No incentives to go beyond, difficult to set and compliance problems

Policy solutions (2)

- Taxes and subsidies:
 - Continuous incentive to reduce pollution
 - Generate revenue
 - Moral problems
- Market creation:
 - Assign property rights and create markets
 - Costs of creating it may be high
- Mixed solutions:
 - Set a target and allow trade of property rights
 - Minimize cost of achieving the target

Air pollution

- Coming from...
 - Exhaust from motor vehicles
 - Industrial emissions
- Large problems in cities around the world
- Externality!
- Taxes on gas
- Emission standards

Acid rain

- Description:
 - Coal burning electric plants produce SO_2
 - Electricity generation and cars produce NO_x
 - They react with water to form sulphuric and nitric acid
 - Fall with the rain and damages the earth
- Externality between (states in the) US and Canada
- Emissions standards: 40% of 1980 by 2010

Ozone depletion

- Ozone protects from ultraviolet radiation
- Hole in ozone layer above the South Pole
- Causes skin cancer and cataracts
- CFC main culprit
- Montreal protocol in 1987: cut 50% by 1998
- Slow regeneration because of slow decline in worldwide use of CFC

Global warming

- The earth may be warming up
- Substantial damages:
 - Temperatures: increase by 0.5% in 20st and by 1 or 2% in 21st centuries
 - Sea level: increase by 15-20cm in 20st and by 40-55cm in 21st centuries
 - Desert expansion, floods and droughts,...
- Externality problems again!