

Carbon Taxes Vs Tradable
Permits: Efficiency and equity
effects for a small open economy

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Reduce Greenhouse Gas Emissions

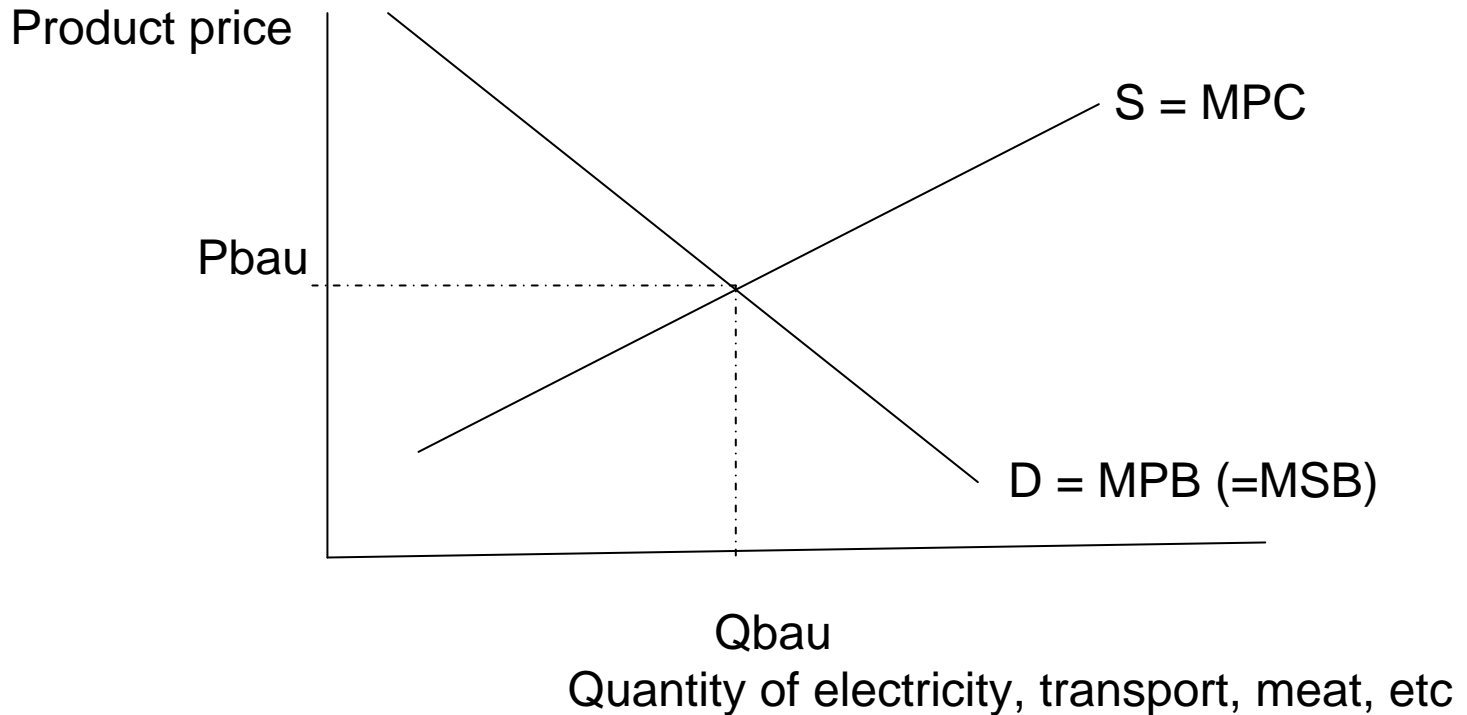
- A global externality market failure
- Policy intervention options
 - Carbon tax
 - Tradable permit
 - Auction permits
 - Gift permits
 - Other
- Economic analysis and comparison
 - Effects on market outcomes
 - Efficiency
 - Distribution and equity
- Focus on small open economy as an early mover

Policy Context and Challenges

- Global pollution
- Long time lags
- Uncertainty and change
- Absence of a global government

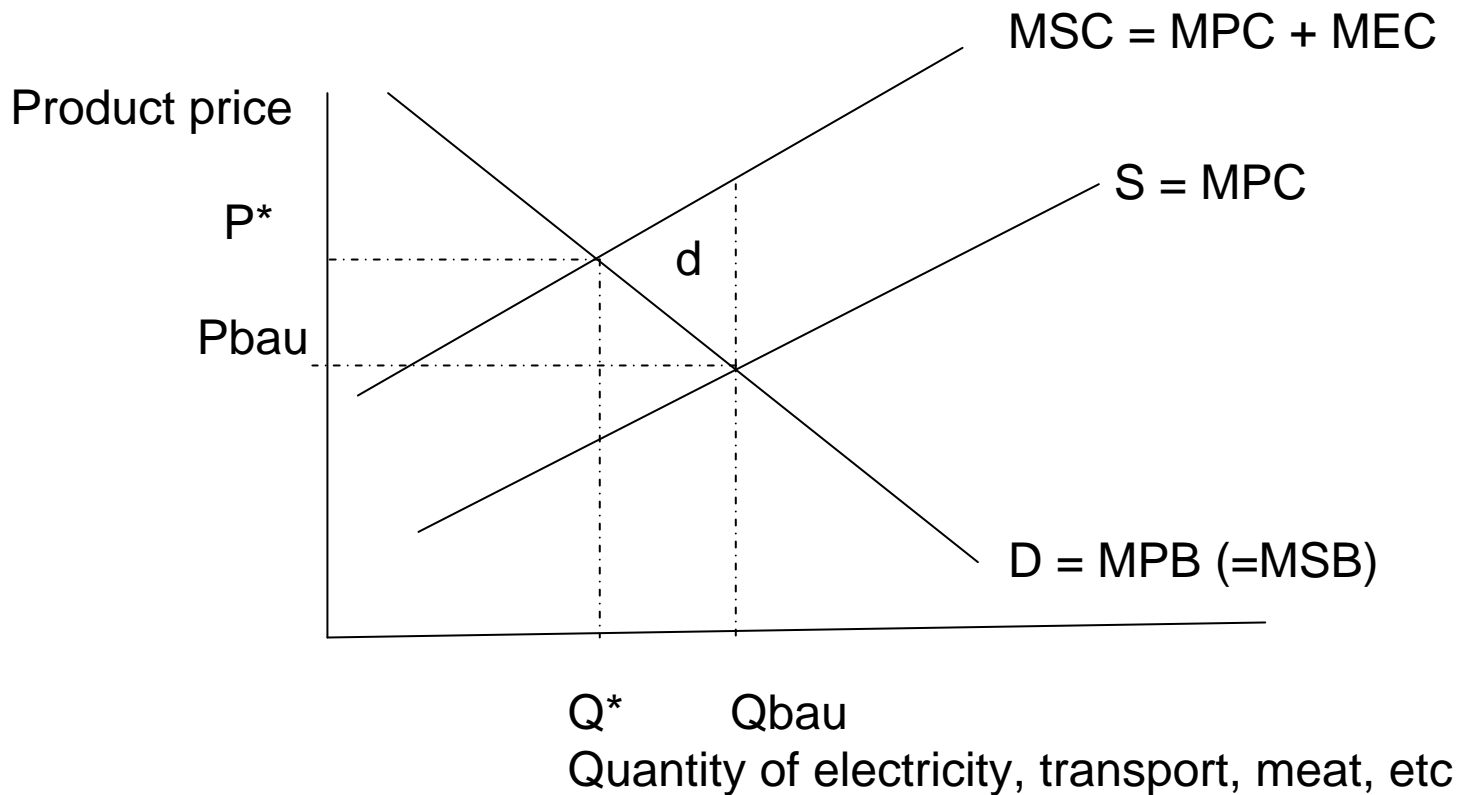
Single Product, eg electricity, meat

- Market solution

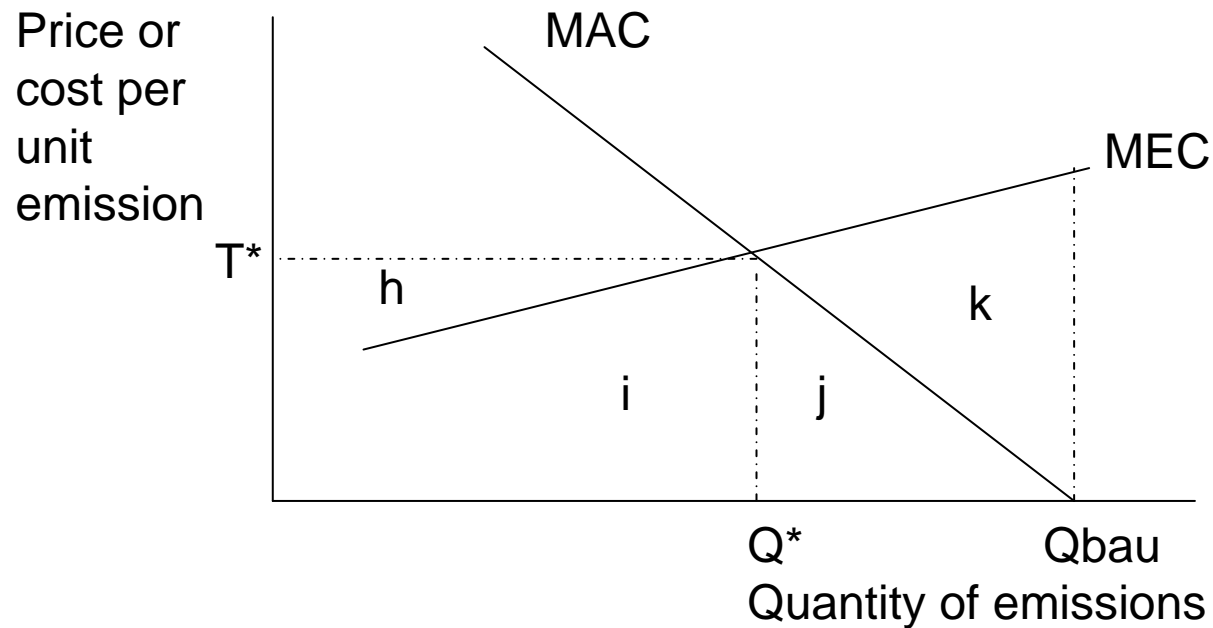


Single Product, eg electricity, meat

- Society solution with pollution cost



Pollution Product, and Aggregate Consumer Products



Tax Vs Tradable Permit: Perfect Knowledge

- Tax at T^*
 - Extra production cost
 - Pollution falls to Q^*
- Tradable permit for pollution quota at Q^*
 - Extra production cost
 - Market price T^*
- (Absolute and relative) Consumer prices and production costs rise for the pollution intensive
- Efficiency gain of area 'k'

Tax Vs Tradable Permit: Perfect Knowledge

- Distributional effects (of effectively an additional and new indirect tax)
 - Government gains area 'h + i'
 - Distribution between producers and consumers depends on relative demand and supply elasticities
 - Supply perfectly elastic: all passed on to consumer
 - Producer price taker: all passed back to fixed resource owners
 - Inter-country distribution favours free riding

Tax Vs Tradable Permit: Imperfect Knowledge and Shifts of MAC and MEC Functions

- Imperfect knowledge of MAC and MEC
 - Decision errors
 - Favour price if MAC less elastic than MEC
 - Unclear story in long run for greenhouse case
- (Short term and cyclical) Shifts over time of MAC
 - Tax: stable price, variable quantity
 - Tradable permit: stable quantity, variable price
 - Decision advantages for stable price

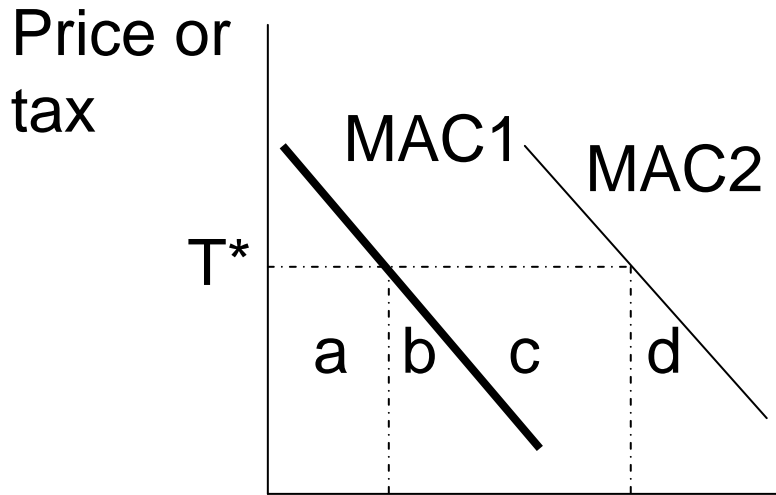
New Zealand Example: Base and Economic Incidence

- Petroleum products
 - Destination base
 - 100% pass through to buyers
- Electricity
 - Non-traded product
 - < 100% pass through
- Agriculture
 - Production base
 - Negligible pass forward if early mover
- Users of petroleum and electricity inputs
 - Production base
 - Close to 100% pass forward for non-traded
 - Close to 0% pass forward for non-traded if early mover

Global Policy Challenge

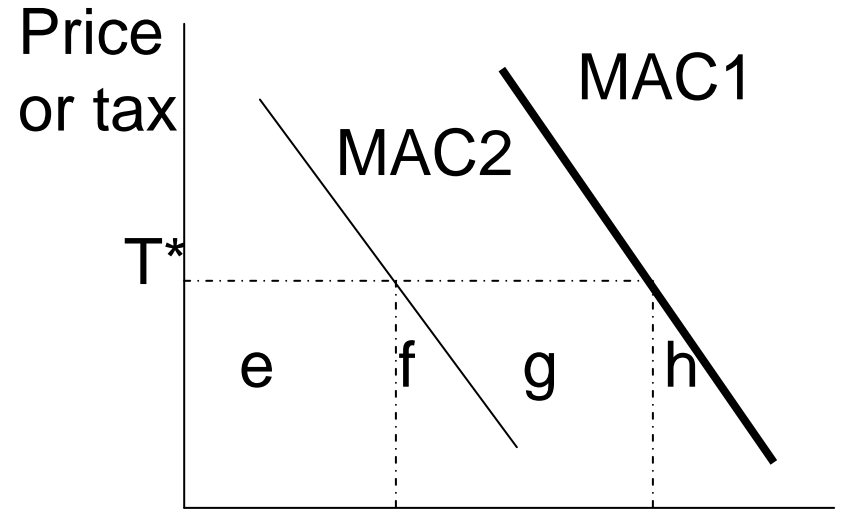
- Need a cooperative global agreement
- Tax Vs Tradable Permit
 - In principle, harmonised tax and open trade in permits would have similar desired effects
 - In reaching a political agreement, tax option
 - Recycles most revenue within each country and minimises inter-country redistribution
 - Better isolates administrative failures to individual country
 - Current policy impetus on permits

Country C



Quantity of emissions

Country E



Quantity of emissions

Assisting the Trade Exposed Energy Intensive Industries

- Early mover with production base
 - Increase imports, lose exports, currency depreciation, but
 - Change country comparative advantage
 - Carbon leakage
 - Unnecessary industry restructuring and reversal
- Destination base corrects these problems. Tax seems more amenable
- All countries sign global agreement
 - Back to non-traded model, with no case for assistance

Assisting the Trade Exposed Energy Intensive Industries

- Australian and New Zealand proposals
 - Exempt imports, import substitutes and exports
 - With undesired effects of:
 - Narrows effective base for reduction of emissions
 - Distorts decisions between the traded and non-traded sectors for no market failure reason

Conclusions: Tax Vs Tradable Permits to Reduce Greenhouse

- Similar effects:
 - Raise costs to tap broad set of options to change consumption, production and R&D to reduce pollution
 - Base points of application, and administrative challenges
- Some advantages for tax option:
 - Price stability, at cost of quantity volatility, favours decision making
 - More natural consumption base for assisting TEEI when early mover
 - May help global agreement making
- Some advantages for tradable permit option:
 - Has the political initiative