Economic Incentives and Wildlife Conservation

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Outline of Talk

- Background of study + objectives
- Economic efficiency and failures: why intervene?
- Wildlife and regulation: instruments
- Regulating harvesting and habitat conversion
- Implementation issues
- Conclusions
- Suggestions for further research

Background

Wildlife management often involves intertemporal external effects and spatial external effects.

Theory: all these costs and benefits should be taken into account for a globally optimal outcome. In **practice** they are not – many costs of harvesting are ‘ignored’.

Focus: to what extent can economic incentives (EI) contribute to conservation? Background paper from standard economics view.

Constraint: little time and money, no ‘new’ research.

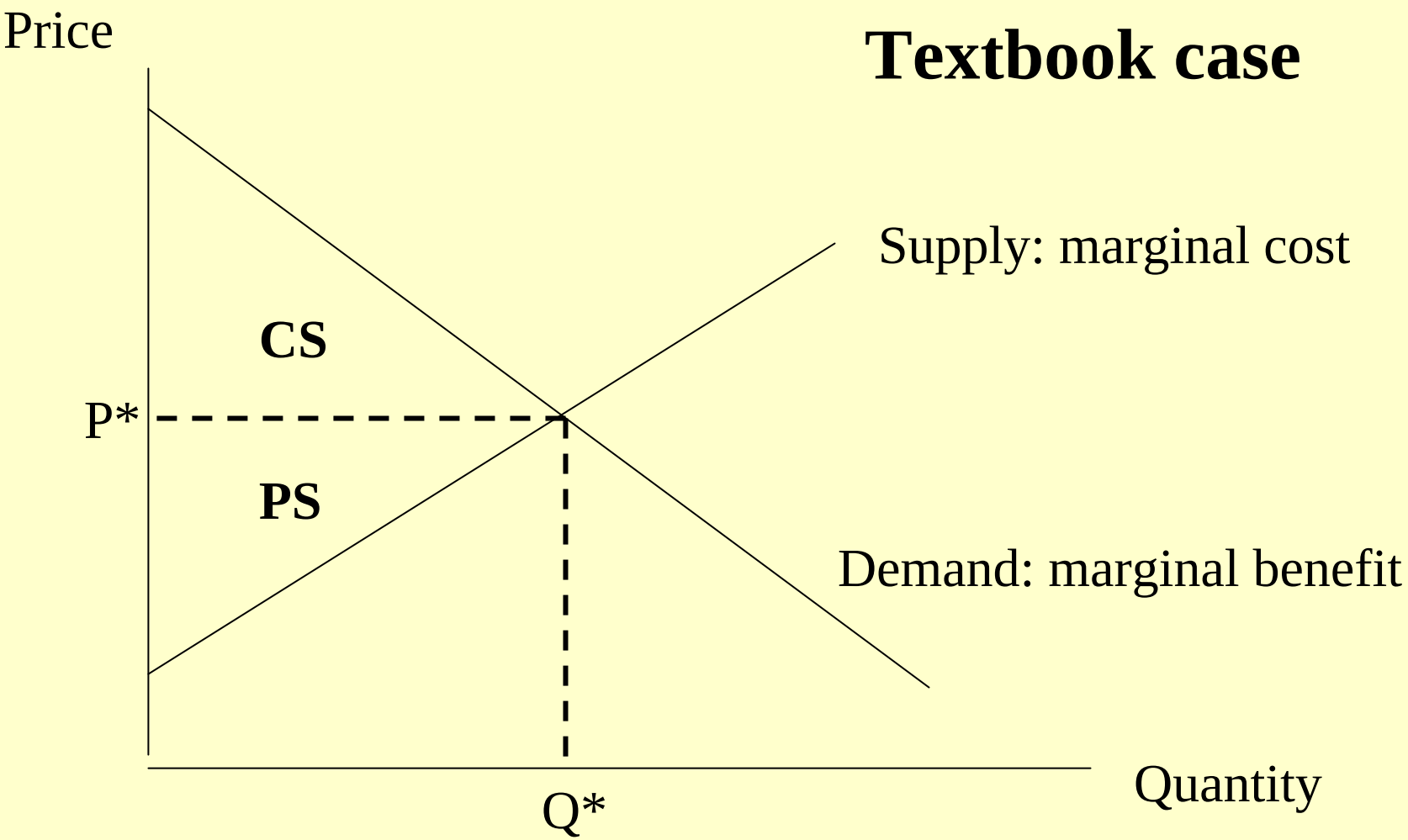
Terminology

Economic instrument: any method used by the government that affects behavior

Economic incentives (EI): subset of economic instruments. Leaves considerable freedom at the decentralized level, where supposedly superior information about costs and benefits is available – allocation through markets…

Wildlife: all biotic resources (including fish and trees, etc).

1: Why intervene in markets?



Failure 1: Insecure tenure rights

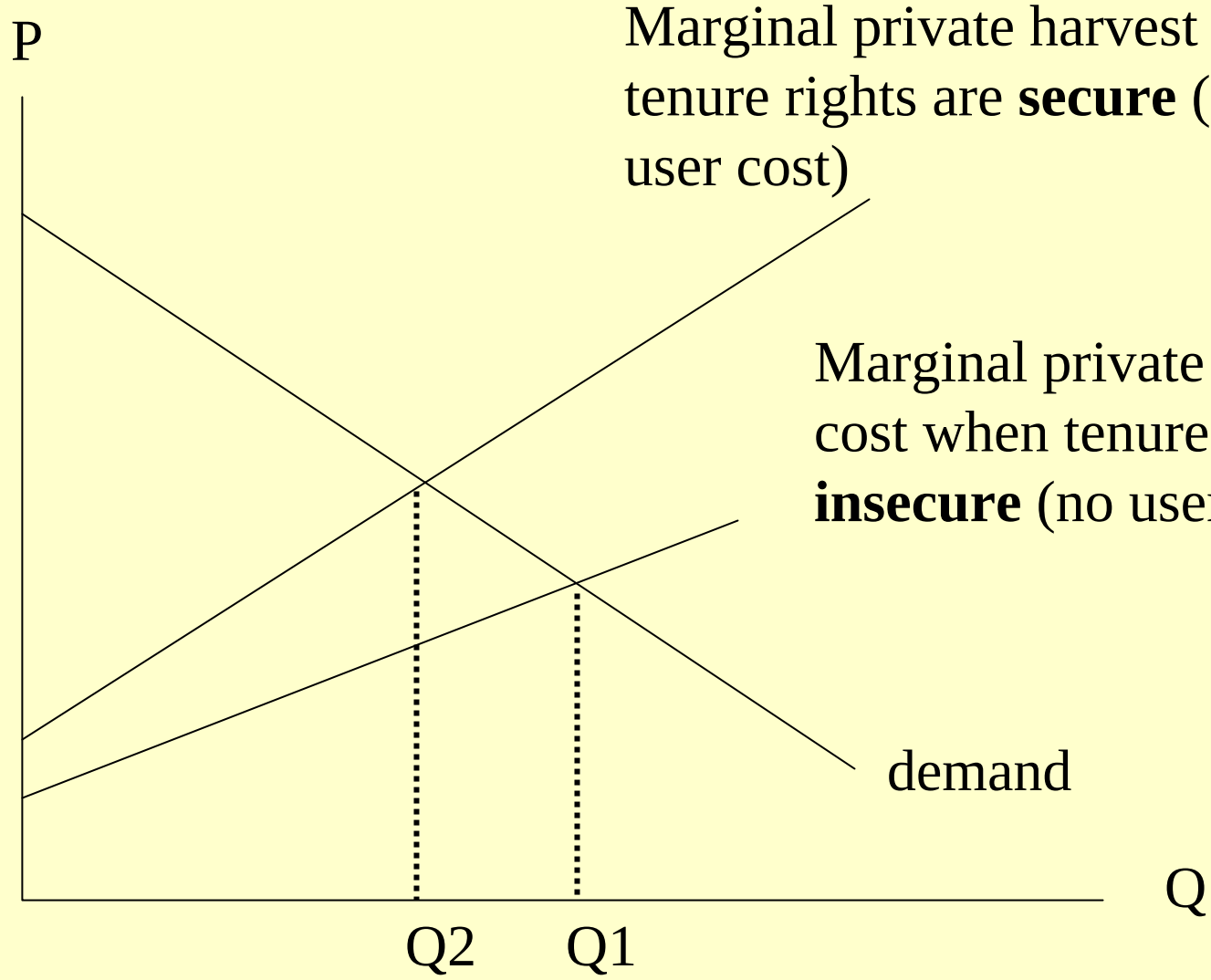
(e.g. open access, unregulated common property)

True cost of harvesting consists of two components:

- (marginal) private **extraction cost**

- **user cost** of harvesting (harvesting today lowers prospects for harvesting tomorrow). Tradeoff benefit of current versus future harvesting; akin to an investment decision… (asset management)

When tenure rights are insecure, the user cost will be ignored. "You cannot be sure that you will be the one to reap the benefits of the investment decision." $\rightarrow$ underestimate **true** MC…



Short-term: harvest quantities will go up (stocks go down)

Long-term: harvest quantities will go down.

Observation 1

Establishing secure tenure rights (property rights or otherwise) will lower the harvest pressure.

$\rightarrow$ **reduction in short-term harvesting** from Q1 to Q2.

We don't need complex regulatory mechanisms to accomplish this.

But we do need enforcement and monitoring to keep non-owners out. Costs can be shared with "owners"?

Failure 2: External benefits

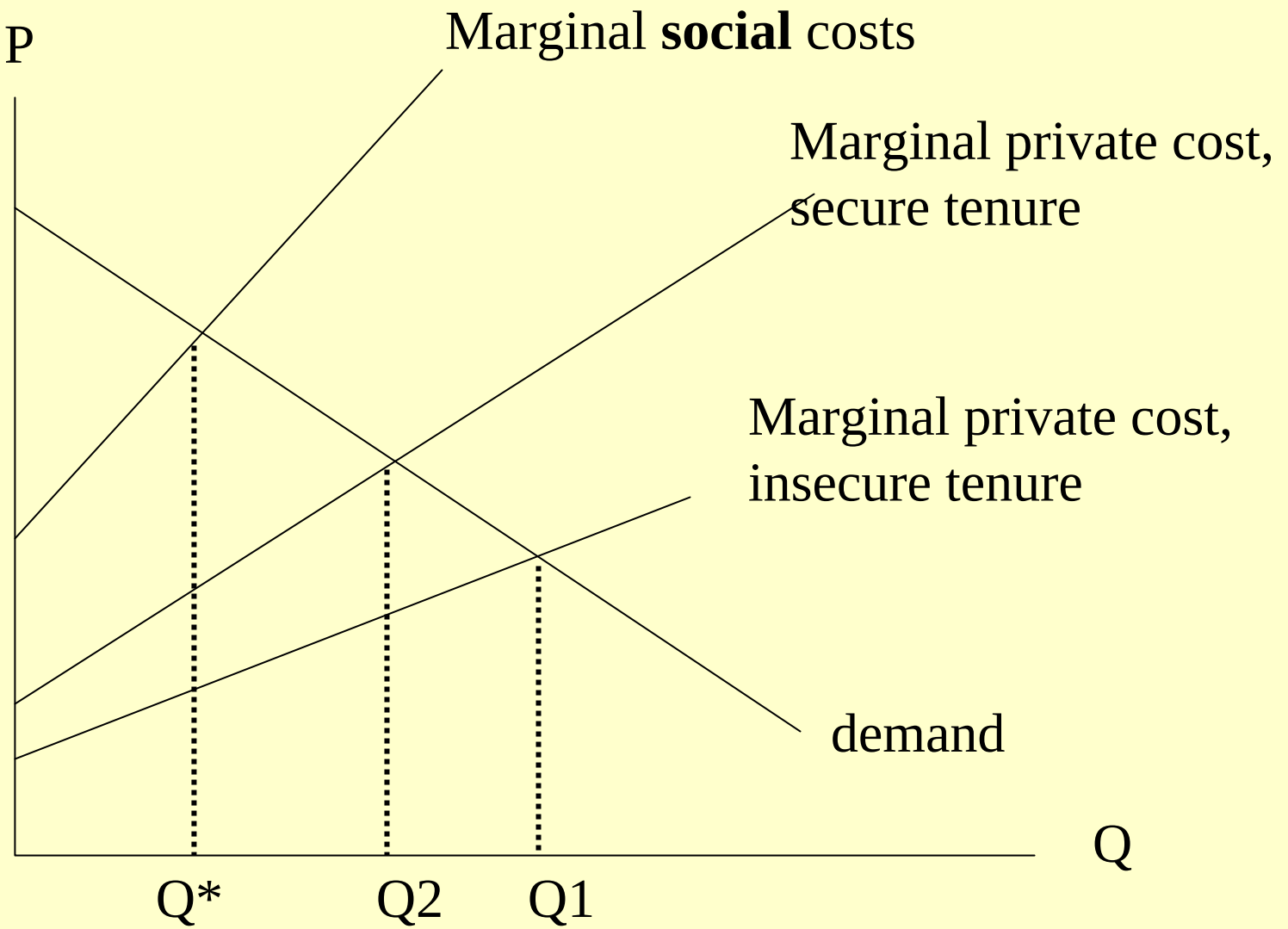
(nonuse values, ecological services)

There are people who derive ‘utility’ from knowing that species like pandas, tigers and elephants exist, even if they will never see them, or buy their wildlife commodities. **Nonuse values**.

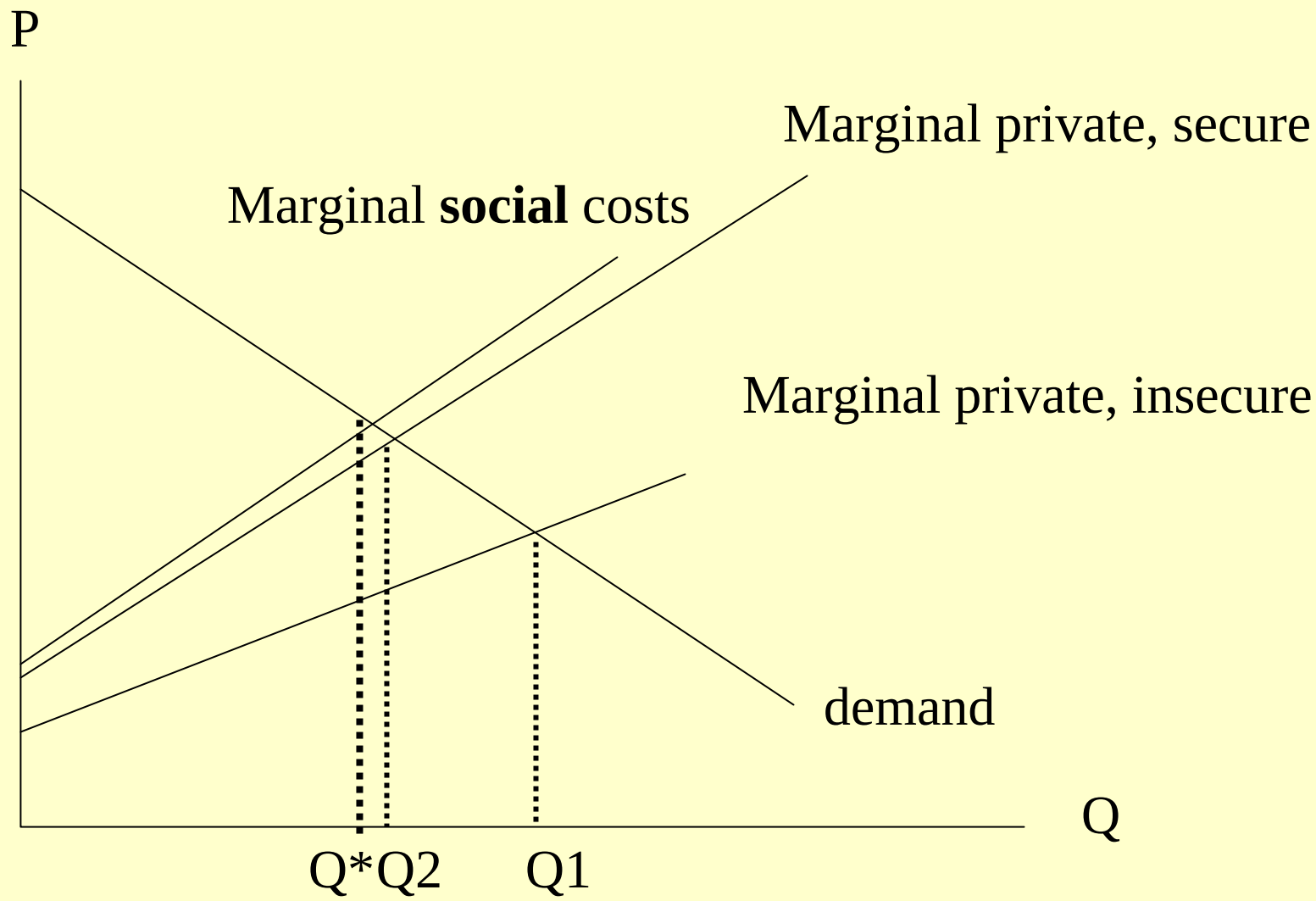
There is no market for nonuse values.

Result: divergence between private and social cost of provision. Harvesting lowers the wild stock and makes ‘nonusers’ worse off.

Similar argument for **ecological services** provided by wildlife.



Case 1: incorporating external effects will further lower harvest (from Q2 to Q*). *This is why **EI**'s may be useful*…



Case 2: For some species, gains of regulation may be small…

Observation 2

For some species, the benefits of regulation will be small, and possibly do not outweigh the costs of regulation.

This applies to both regulation through Command and Control and regulation through Economic Incentives.

Failure 3: Policy failure

Rather than correcting for market failure, there are cases where **government intervention makes matters worse**. Wasteful subsidies, etc.

Effect in graph: further lower the marginal cost curve, and further increase short-term harvesting.

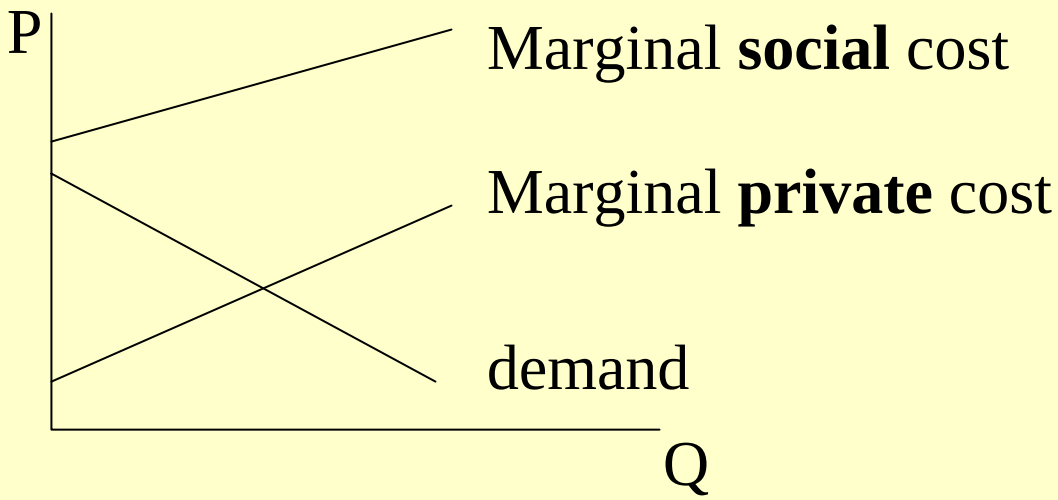
(This is another matter, not addressed here).

Summing up…

For an optimal outcome: address tenure security and external effects – sometimes the latter is small.

Some use **Q>0** is often 'economically optimal.' **Exception:** when the marginal social cost curve is above the demand curve, such that there is no intersection for positive Q*.

Trade ban may maximize welfare.



Observation 3

Thus far: take ecology (habitat) as given.

Allowing positive harvest levels provides incentives for the allocation of base resources (land as habitat). Encourage sustainable development of the resource. Wildlife should be viewed as an **asset** by local users, not a **liability** or constraint.

Very stringent regulation (through either EI or C&C) makes sustainable wildlife management less competitive as an activity. **Threat**: habitat conversion or agricultural expansion.

→ *if **nonuse values** are large and (near) 'bans' are optimal, they should be **captured and channeled** to local people.*

2: Wildlife and economic instruments

Who Bears the Costs?	*Private Party Control*		*Government Control*
	Price Based	Quantity Based	
Gov/ Society	Subsidy, transfers	Grandfathered (tradable) quota Contracts	Public provision
Private Party	Taxes, fees, charges, tariffs	Auctioned (tradable) quota	C&C regulation Harvest quota

Note:

- These policies can be used to complement secure tenure rights

- The range of instruments is not exhaustive (e.g. bond & deposit);

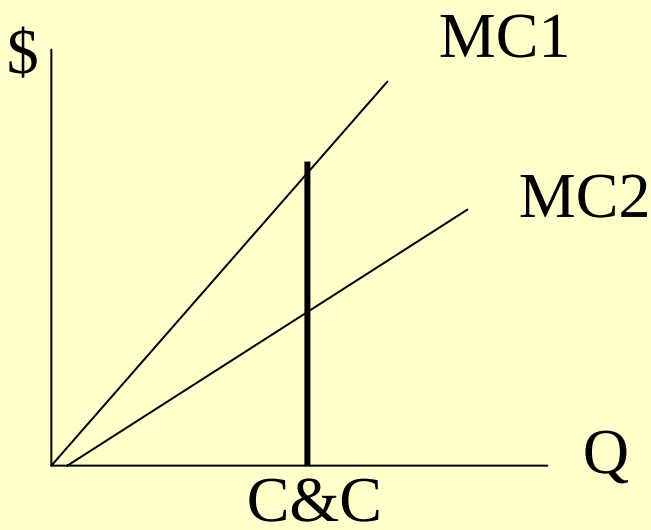
- Economists are generally not supportive of **subsidies**, as they encourage **entry** in the sector that is regulated – individual firm's behavior can be regulated but aggregate response is unpredictable. Main EI to regulate harvesting will be **tradable permits and taxes**.

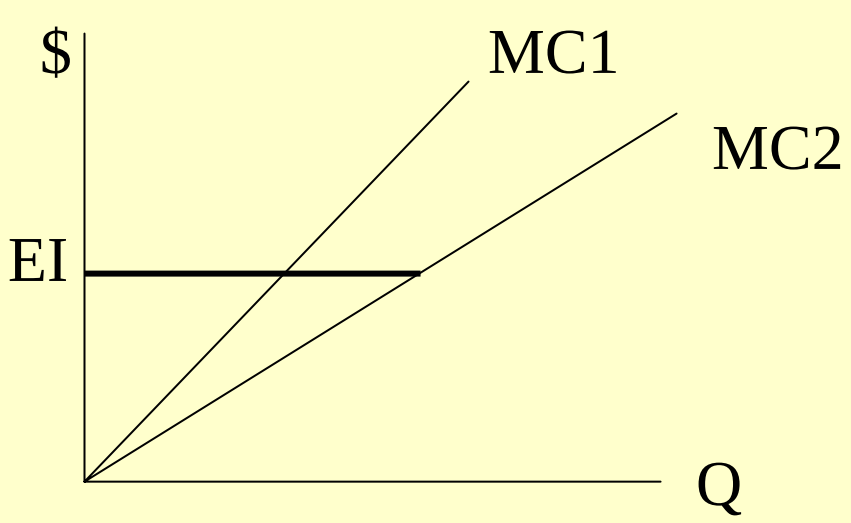
Subsidies should not be used to regulate harvesting, but could be effective and efficient when promoting conservation of ***habitat****.*

Why economists prefer EIs

1. **Production / harvesting takes place at lowest cost**. Market allocates resources, the gov't only sets the rules.

When firms are heterogenous and when there is asymmetric information between firm and regulator (gov does not know 'type' of firm), then EI are more efficient than C&C.





→ With EI: low cost firms produce more than high cost firms. At margin, production costs are equal. *Static efficiency.*

2. EI are known to spur technical change – they promote *dynamic efficiency*.

Theory: innovations allow firms to save on taces or sell excess permits. E.g.: applies to abatement and pollution control.

3. EI may raise revenues for the regulator.

Tax revenues and income from auctioning off quotas. One reason for ecotaxing in many OECD countries…

Relevant for wildlife case?

1. The “minimize cost” argument applies when harvesters are “different” (use different methods, access different habitats, etc). Gains from trade do not exist for identical harvesters – they are context dependent.

   Significant cost savings have been recorded in commercial fisheries and abatement of air pollution, but...

   Open question: To what extent are harvesting techniques uniform? If all harvesters use same low-tech, labor intensive, capital-extensive mode of production; gains from trade are negligible.

Observation 4

Cost savings from EI are **context dependent**. These benefits will be significant for regulation of some species, and likely negligible for regulation of others. **Case-by-case** approach.

Surplus labor?

2. The case for dynamic efficiency may not apply here.

Invent new abatement technology: sell pollution permit

Invent new harvest technology: ?? No new incentives…

3. Is raising revenues important?

Economists: Distributional issues are of secondary importance.

Political Experience: tax schemes are unpopular. Tradable permit schemes are typically based on grandfathered rights. The revenue raising argument is not fully exploited in practice…

But: when raising revenues is hard, this could be helpful.

Observation 5

The benefits from implementing EI as complementary policy (when compared to simple command-and-control regulation) is context-dependent, but could be more modest than anticipated.

(Compare to observation 2, which said that benefits of regulation per se may be modest….)

EI: harvesting and habitat

Regulation and harvesting ('fishery model')

Theory: C&C and EI both protect the stock (when backed by monitoring and enforcement).

But EI more "efficient:" minimize harvest cost. Input substitution? Capital stuffing?

Distributional effect of regulation may be different.

Practice: optimal regulation (tax or quota) is hard to determine. Also: taxes are often 'politically unacceptable' (grandfathered quota are fine).

Internationally traded quota for harvesting some species? More scope for trade, larger efficiency gains

Regulation and habitat (‘terrestrial concerns’)

Wildlife often occurs on private lands, or public lands that can be converted by private agents if doing so is profitable.

Regulation affects the value of the harvest, and the **value of the land as habitat**. When regulation reduces the value of the harvest, it may inadvertently trigger habitat **conversion**.

Distribution matters for conservation! Grandfathering could be better than taxing. Importance of benefit sharing, etc.

How can we promote habitat conservation? Suppose habitat conversion pays for individuals, but not for society as a whole (e.g. external effects, insecure property rights).

- **strict regulation** (C&C). Risk: "*shoot, shovel and shut up.*"

- **tradable development rights**. Regulator sets cap and allows trade such that habitat conversion takes place at lowest cost. Wildlife habitat banking (cash in on conservation efforts – sell "rights")

- **transfers –** this is where subsidies might work! Transboundary external effects should be balanced by transboundary transfers and compensation for habitat conservers. Efficiency and equity. Are current transfers (NGO, GEF) sufficient? Are funds spent well?

However: sometimes habitat conversion raises welfare…

Observation 6

It is uncertain whether international transfer flows for transboundary benefits are sufficiently large to internalize external effects. Full compensation for externalities (ecological services and generation of nonuse values) is recommended. Efficient and “fair.”

How to increase transfer flows? Capture nonuse values.

How to allocate the money if this works? Are the appropriate institutions in place to deal with this?

Implementing EI: Institutions

Experience: There can be **no** successful tradable permit system without extensive **monitoring** and **enforcement** (high penalties and transparancy)

Transaction costs (traders, regulatory authority) can be high, and can cripple a tradable permit program.

Not a panacea. (many Wildlife harvesters versus few large firms?)

Kyoto: Lack of appropriate institutions is one of the main obstacles to using tradable permits.

What scope for EI in biodiversity-rich developing countries?

World Bank published measures of **institutional quality** (Rule of Law, Government Effectiveness, Voice and Accountability, Regulatory Quality, Control of Corruption, etc).

Many wildlife/biodiversity rich countries score badly. EI can probably not be implemented across-the-board.

Tietenberg et al: "*without the appropriate administrative structures …. a tradable permit scheme could make matters worse*" (p54).

Scope for **taxing wildlife** harvests instead? Likely considerable **transaction costs –** many people may be involved in harvest of some species, each taking small quantities. Again, not a good idea 'across-the-board.'

Easy but probably not applicable in all contexts:

Auction off hunting rights.

(Note: still need monitoring and enforcement)

Conclusions & Recommendations

Theory: Economists like EI.

• Least cost approach to harvesting/conservation (efficiency). Flexibility and low cost are nowhere more important than in LDC.

• Might help raising revenues (to support provision of public goods).

• Information requirements modest (auction). Market allocates…

Practice: Not a panacea.

EI are **not a substitute for monitoring and enforcement**. Without monitoring and enforcement, they cannot work. This appears to be a key problem.

Even if monitoring and enforcement problems have been addressed:

• **benefits of regulation** may be small for some species (depending on the magnitude of the external effects). Opting for private optimum (after securing tenure rights) may be OK.

• **benefits of regulation through EI** may be small (depending on the diversity between harvesters, surplus labor, etc)

• **Cost of regulation** through EI, via administrative structures and economic institutions that sometimes need to be built, may well be considerable.

• But: defining and **securing tenure rights** is always a good idea. Create value rather than take it away. Certification, etc.

• And: thinking about EI to **capture and channel external benefits** of wildlife conservation seems like a good idea. (IQ matters too)

Research priorities…

How large are the **efficiency gains** from EI in wildlife harvesting? Consistent with fisheries experiences?

What are minimum **institutional requirements** to implement EI? Different requirements for taxes, tradable permits and subsidies?

CBA of implementing EI for a few key species.

What is scope for **global use** of EI? (role of CITES?)

How important are **international external effects** for various species (at the margin), and how can these values be captured?

Operational issues: how can one define and implement an EI scheme? Key differences and commonalities with tradable sulphur or carbon permits?

What role for **ecolabeling and certification**? Add value to resource conservation. Willingness to pay for such matters? (price premium for sustainable timber and biodoversity friendly coffee is modest)