ISEG /Universidade de Lisboa

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Regulation

Command and Control Instruments / Direct Regulation

Economic Instruments/ Indirect Regulation

- Potentialities/ Limits and risks
- PigouvianTaxes / ITQs

ANATOMY OF MARKET FAILURE

"The **'anatomy of market failure'** refers to the study and analysis of the conditions and circumstances in which markets fail to allocate resources efficiently. A market fails when the allocation outcomes of goods and services are not optimal from a societal perspective.

This can occur for various reasons, including:

Externalities: When the actions of an individual or company affect third parties who are not directly involved in the transaction. Externalities can be **positive or negative.**
Public goods: These are goods that are **non-excludable** (one cannot prevent someone from using them) and **non-rivalrous** (one person's use does not reduce availability for others).
Asymmetric information: Occurs when one party in a transaction **has more or better information** than the other. This can lead to adverse selection and moral hazard.
Market power: When **one or few firms dominate a market**, they can exercise pricing power that leads to higher prices and lower production than would be ideal from a societal perspective. This is known as a monopoly (when there is only one seller) or oligopoly (when there are few sellers). Or from the perspective of environmental degradation."

Bator, Francis (1958). The Anatomy of market failure.

As market failures disrupt the efficient allocation of resources, they also pose significant barriers to achieving sustainability.

TRAGEDY OF THE COMMONS (Hardin, 1968) : illustrate the potential negative outcomes when individuals act solely based on their self-interest without considering the broader community or environment.

Video tragedy of the commons

https://www.youtube.com/watch?v=CxC161GvMPc

How can we define the best solutions?

Pigouvian Solutions

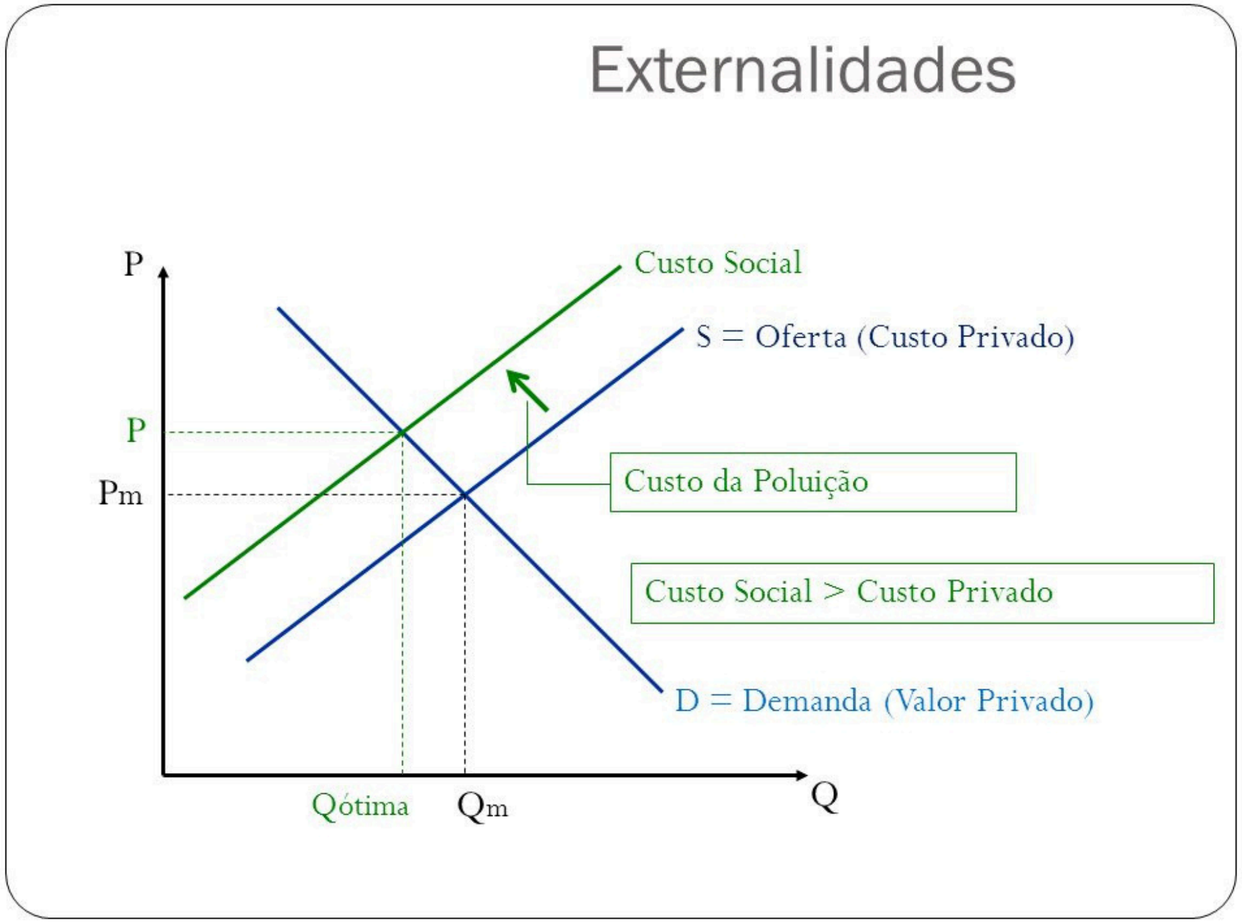
Theoretical Basis: Market Failure Theory

Proposed by the economist **Arthur Pigou** in the early 20th century.

Pigouvian solutions involve **direct government intervention** to correct negative externalities. The most common instrument is the imposition of a **tax** on activities that generate negative externalities (Pigouvian taxes).

The goal is to **make the producer or consumer internalize the social cost of their actions**, bringing the private cost closer to the social cost.

Example: a tax on carbon emissions aims to incorporate the costs associated with air pollution and climate change into production and consumption decisions, thus encouraging the reduction of emissions.



Pigou's work on externalities highlighted the inefficiencies that arise when the social costs or benefits of an activity are not reflected in market prices.

Pigou, A. C. (2017). The economics of welfare. Routledge. (Trabalho original publicado em 1920).

Coase Solutions

Theoretical Basis: Property Rights Theory

Proposed by **Ronald Coase**, Coasean solutions suggest that under certain conditions, **economic agents themselves can reach an agreement to resolve the problem** of externalities without the need for government intervention.

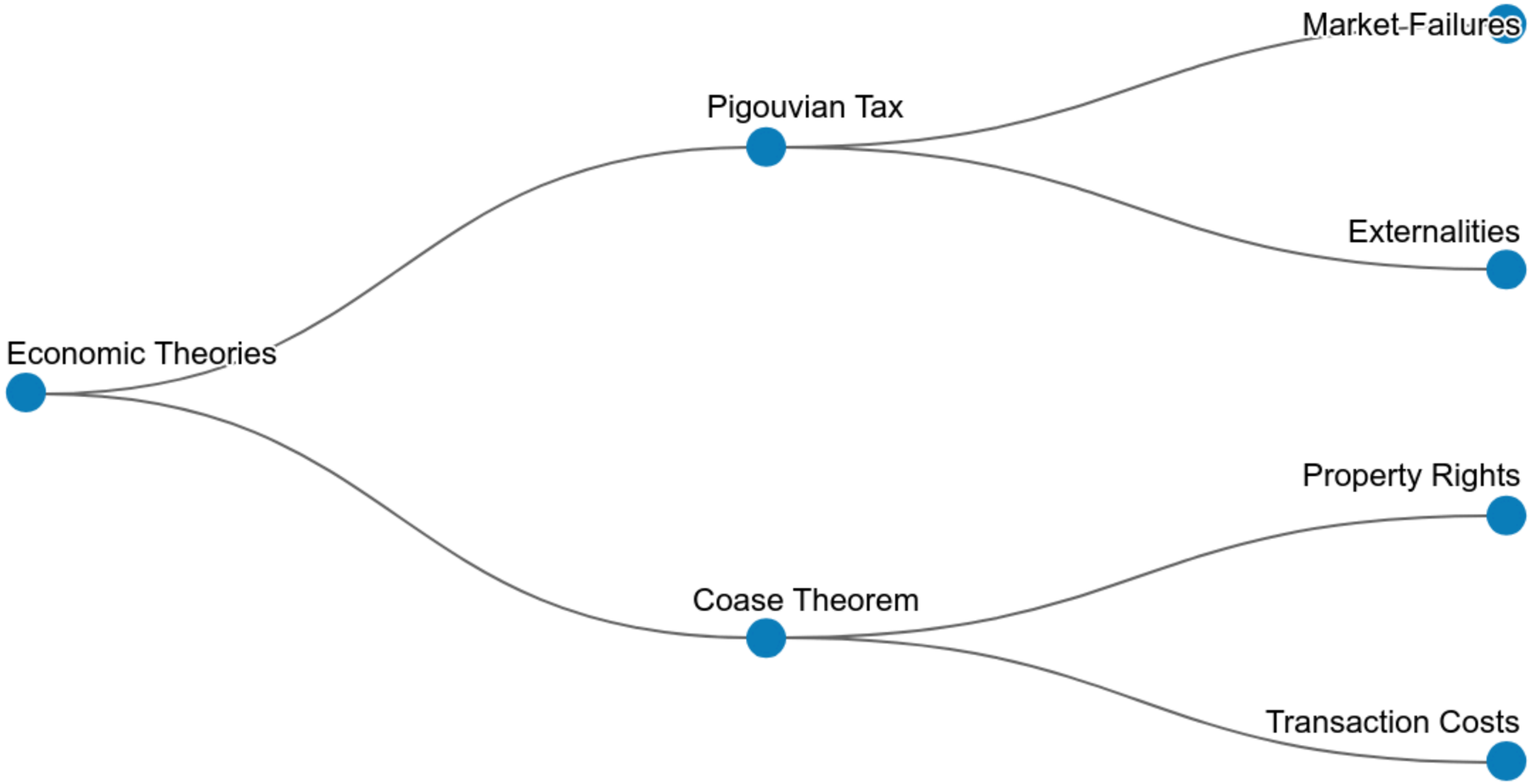
According to Coase, if **property rights** are clearly defined and transaction costs are low, the parties involved can negotiate agreements that lead to an economically efficient outcome. Coase is a more market-based solution.

Example: if a factory emits pollution that affects neighboring properties, the owners of these properties can negotiate with the factory to reach an agreement on compensation or reduction of the pollution.

Key Differences and Application

Aspect	Pigou	Coase
Intervention	Government intervention via taxes	Private bargaining with well-defined property rights
Focus	Correcting market failures	Minimizing transaction costs
Public Goods	Government provision	Market solutions with property rights
Policy Relevance	Emphasizes government role	Emphasizes private solutions and institutional design
Externalities	Taxes to internalize externalities	Bargaining to internalize externalities

Key Differences and Application



REGULATION

Regulatory measures are essential tools in the fight to protect and preserve our environment. As the world suffer with challenges like climate change, deforestation, and pollution, it becomes increasingly clear that voluntary actions alone are insufficient.

Regulatory measures set clear, enforceable standards for businesses, industries, and individuals, ensuring that environmental considerations are integrated into daily operations and long-term strategies.

These regulations not only safeguard our natural resources and ecosystems but also play a pivotal role in protecting public health, promoting sustainable practices, and fostering a future where humans and nature can coexist harmoniously.

WHAT REGULATION INSTRUMENTS FOR ENVIRONMENTAL PROTECTION PROVIDES?

SET STANDARDS

Establishing Clear Guidelines: Regulation provides clear and consistent standards that businesses and individuals must follow, ensuring that environmental protection measures are upheld across the board.
Protecting Public Health: Many regulations are put in place to limit the release of harmful pollutants and protect the quality of air and water, directly benefiting public health.

ENFORCEMENT

Holding Parties Accountable: Regulatory bodies have the authority to monitor, investigate, and take action against those who violate environmental standards, creating a strong deterrent against harmful practices.
Ensuring Compliance: Through inspections and monitoring, regulators ensure that industries are complying with environmental laws, helping to prevent and address pollution.

PROMOTE SUSTAINABILIY

Encouraging Responsible Practices: Regulations often encourage or mandate sustainable practices, promoting long-term environmental stewardship.
Supporting Innovation: By setting performance standards, regulations can drive innovation, leading industries to develop cleaner and more efficient technologies.

PROVIDE GUIDANCE

Offering a Roadmap: Regulations provide a structured framework for environmental protection, guiding industries, and communities in implementing best practices.
Facilitating Coordination: Regulatory frameworks help coordinate efforts across different sectors and levels of government, ensuring a unified approach to environmental protection.

Regulations can be categorized based on various criteria such as the sector, their purpose, or the way they seek to influence behavior.

Environmental Regulations:

Pollution Control: Regulating emissions to air, water, and soil.

Resource Management: Managing natural resources like forests, water, and wildlife.

Climate Change: Addressing greenhouse gas emissions and promoting sustainable practices.

Waste Management: Regulating the disposal and treatment of waste.

DESIGNING POLICY FRAMEWORKS TO ADDRESS MARKET FAILURES

COMMAND AND CONTROL INSTRUMENTS (CAC):

Command and control instruments are **traditional regulatory measures** that set specific standards and rules to guide behavior. These instruments dictate exactly what is allowed or prohibited, **providing clear guidelines for compliance.**

A government might establish emissions limits for factories, requiring them to reduce pollution to a certain level. While this approach ensures uniform adherence to environmental standards, it can sometimes lack flexibility and may not always encourage innovation or cost-effective solutions.

Enforcement typically involves monitoring and penalties for non-compliance, making it a straightforward but rigid method of regulation.

ECONOMIC INCENTIVES INSTRUMENTS (EI):

Economic incentives instruments, on the other hand, **leverage market mechanisms and financial incentives to guide behavior towards environmentally friendly practices.** Instead of dictating specific actions, these instruments make it more economically attractive to adopt sustainable practices.

Economic instruments provide flexibility, allowing businesses and individuals to find the most cost-effective ways to reduce their environmental impact. By aligning economic incentives with environmental goals, economic instruments encourage innovation and efficiency, often leading to more sustainable outcomes over the long term.

SUMMARY

Comand and control (CAC)

Clear Directives: This type of instrument involves the government setting specific rules that must be followed. It’s like a parent telling a child exactly what to do.

Rigid: Once the rules are set, everyone has to follow in the same way. There isn’t much flexibility.

Penalty for Non-Compliance: If the rules aren’t followed, there are clear and defined penalties.

Simple Example: A government might completely ban the use of a certain type of harmful chemical in products.

Economic Incetives Instruments (EI)

Incentives and Disincentives: Instead of telling exactly what must be done, the government uses prices and costs to encourage or discourage certain behaviors.

Flexible: Companies and individuals have the freedom to choose how they want to respond to the economic incentives. They can find the cheapest and most efficient way to comply with the objectives.

Financial Benefit for Compliance: Instead of just avoiding punishments, companies can actually make money or save costs if they follow what the government wants.

Simple Example: A government might put a tax on the emission of pollutants. Companies that reduce pollution pay less tax.

Command and Control: "You must do this, in the way we are telling you to do it."
Economic Instruments: "We will make it more expensive for you to do bad things and cheaper to do good things, and you decide what’s best for you."

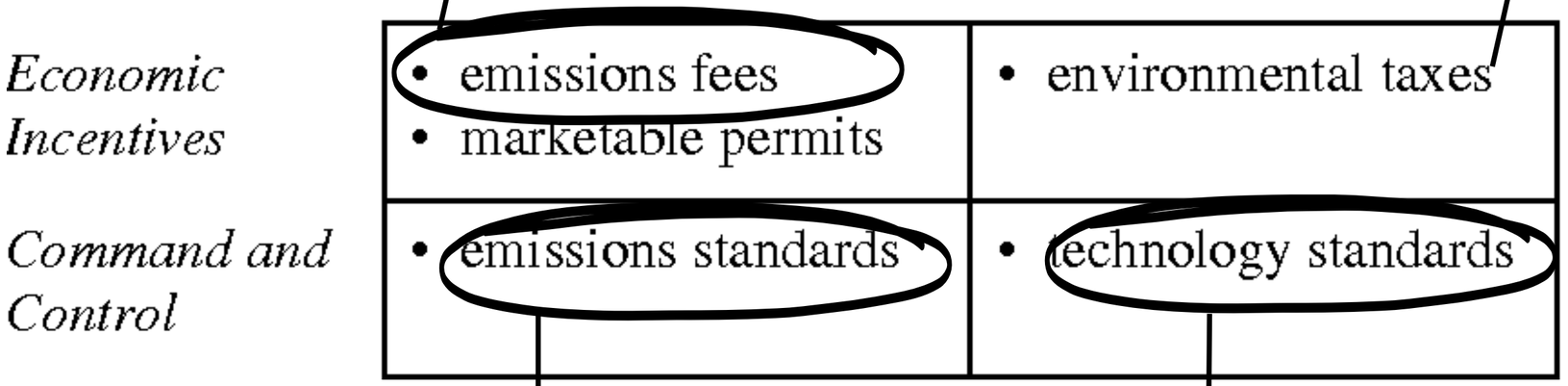
Policies that require the regulator to monitor emissions are called "direct" instruments;

policies that do not require the regulator to monitor are called "indirect" instruments.

	Direct Instruments	*Indirect Instruments*
Economic Incentives	• emissions fees • marketable permits	• environmental taxes
Command and Control	• emissions standards	• technology standards

Policies that create financial incentives for reduction by putting an explicit or implicit price on emissions.

There are three types of environmental taxes: taxes on final products associated with pollution (such as motor vehicles), taxes on goods which are generally used as inputs into a polluting activity (such as coal), and taxes on polluting substances contained in inputs (such as the sulfur contained in coal).



Impose norms and parameters to categorized some activity. Set the rule to be followed.

Stablish norms and parameters for the process

Source: P. McManus,2009

Comand and control (CAC)

1. **Emission Standards:** Governments often set specific limits on the amount of certain pollutants that facilities can emit.
2. **Technology Requirements:** Industries might be required to implement specific pollution control technologies.
3. **Product Bans:** Certain products that are deemed harmful to the environment or public health may be banned, such as asbestos or certain types of plastic bags.
4. **Land Use Regulations:** These can dictate how land can be used, protecting certain areas from development to preserve biodiversity or natural resources.
5. **Water Quality Standards:** Setting specific limits on the concentration of pollutants in bodies of water.
6. **Vehicle Emissions Standards:** Regulations that set limits on the amount of pollutants that vehicles can emit.
7. **Building Codes:** Requirements for energy efficiency and sustainable materials in construction.

Economic Incetives Instruments (EI)

1. **Carbon Pricing:** This can take the form of a carbon tax or a cap-and-trade system, where emitters pay for their carbon emissions or buy allowances.
2. **Subsidies for Clean Energy:** Financial incentives for companies or individuals to invest in renewable energy sources.
3. **Tax Credits for Energy Efficiency**: Providing tax breaks for homes or businesses that implement energy-efficient technologies.
4. **Deposit-Refund Systems**: Charging an upfront deposit on products like beverages containers, which is refunded when the item is returned for recycling.
5. **Green Certifications and Labels:** Offering certification programs that recognize and reward environmentally friendly products or practices.
6. **Pollution Charge Systems:** Charging fees based on the amount of pollution a facility releases.
7. **Payment for Ecosystem Services:** Providing financial incentives for landowners to maintain or improve ecosystem services, such as water purification or carbon sequestration.

EXEMPLES

Setting Standards
EU Water Framework Directive

This directive sets **standards for the quality of water** bodies across the EU, aiming to achieve "good status" for all waters by a **certain deadline.** It mandates member states to monitor water quality and take corrective actions when necessary.

Enforcement
Volkswagen Emissions Scandal Penalties (Europe)

After it was discovered that Volkswagen had been using software to cheat on emissions tests, European regulators imposed hefty fines and **penalties** on the company, **enforcing accountability** and demonstrating the importance of adhering to vehicle emissions standards.

Promoting Sustainability
EU Single-Use Plastics Directive

This directive aims to **reduce the impact** of certain plastic products on the environment, promoting sustainability by **banning** the use of single-use plastic cutlery, plates, straws, and other items, and encouraging the use of more sustainable alternatives.

Providing Guidance
EU Circular Economy Action Plan

This plan provides comprehensive guidance on how to **transition** to a circular economy, outlining **measures to promote sustainable products,** empower consumers, and focus on sectors with high resource use.

Building Public Trust
EU Ecolabel

This voluntary label **helps European consumers identify products** and services that have a reduced environmental impact throughout their lifecycle, building trust in sustainable options and empowering consumers to make environmentally friendly choices.

CATEGORIZED AS CAC OR EI:

EXEMPLES

CAC

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CAC+EI

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EI

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Share of plastic waste that is recycled, landfilled, incinerated and mismanaged, 2019

Our World in Data

Mismanaged plastic waste includes materials burned in open pits, dumped into seas or open waters, or disposed of in unsanitary landfills and dumpsites.

Table | Chart

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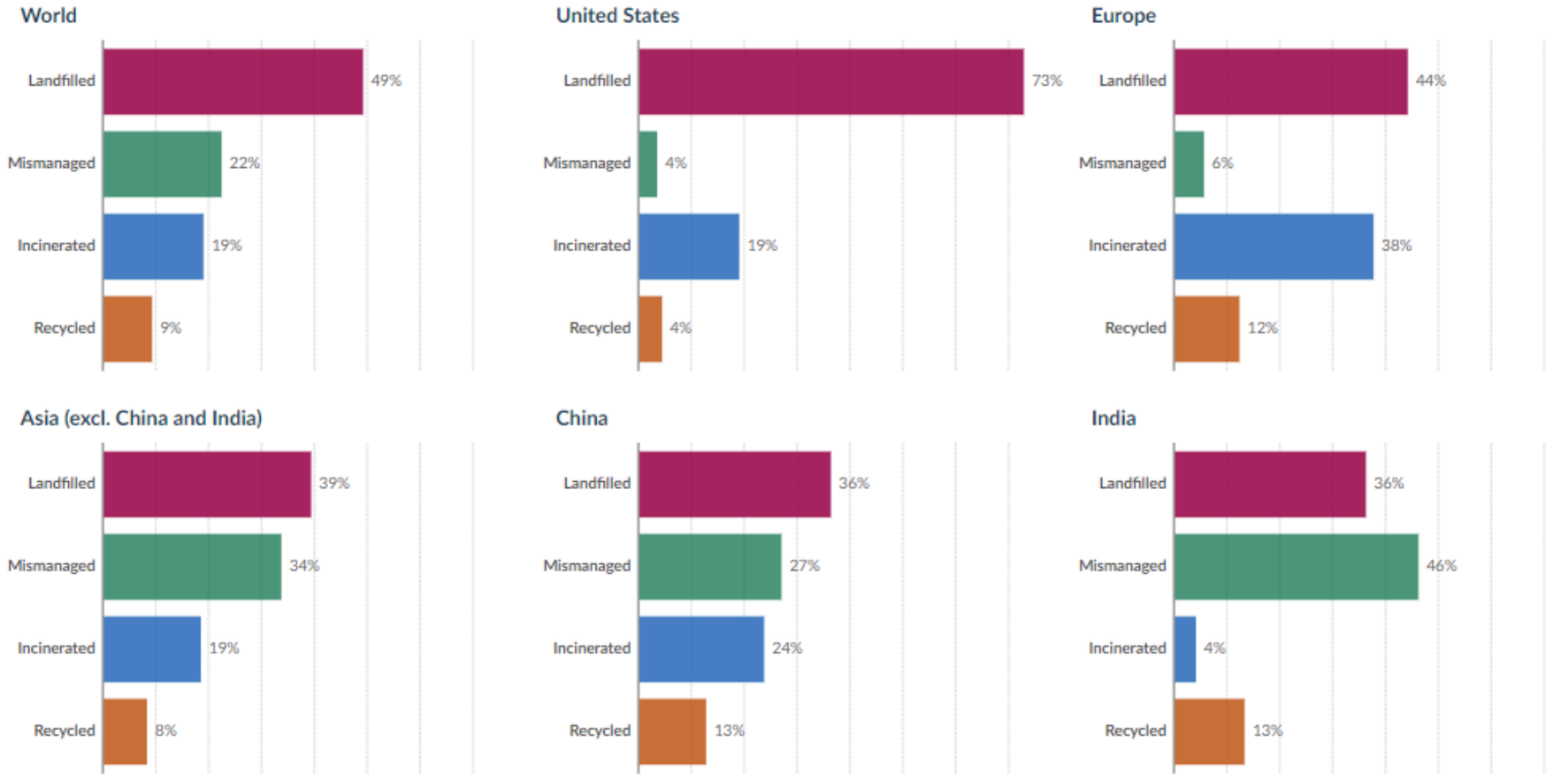


Command and Control Instruments

Positive Aspects	Negative Aspects
Clear and Specific Regulations: Precise guidelines and expectations are established.	**Inflexibility**: Lack of adaptability to different circumstances or industries.
Ease of Enforcement: Authorities can directly monitor and enforce compliance.	**High Compliance Costs**: Potential for increased costs for businesses to adhere to regulations.
Immediate Impact: Quick changes can be made to address urgent environmental issues.	**Limited Innovation**: Less incentive for businesses to exceed standards or innovate beyond them.
Accountability and Safety: Ensures a standardized level of environmental protection and public safety.	**Bureaucracy**: Potential for lengthy processes and red tape.

Economic Instruments

Positive Aspects	Negative Aspects
Cost-Effectiveness: Encourages finding the most economical solution to environmental problems.	**Complexity**: Can be complex to design and implement effectively.
Flexibility: Businesses can choose how to best meet environmental goals.	**Unpredictable Outcomes**: Market-based mechanisms can sometimes lead to unexpected or undesirable results.
Encourages Innovation: Provides economic incentives for developing new and more efficient technologies.	**Dependence on Market Conditions**: Effectiveness can be influenced by fluctuating market conditions.
Revenue Generation: Potential to generate public funds through taxes or permit trading.	**Potential for Exploitation**: Without proper monitoring, there can be potential for gaming the system.

CAUSE AND EFFECTS

Consider a tax on gasoline. If demand for gasoline is inelastic (i.e., price increases have little effect on demand), then the tax will generate revenue, but will not significantly reduce gasoline consumption or vehicular emissions.

But if demand for gasoline is elastic (i.e., price increases significantly reduce demand), the tax will generate relatively little revenue but will reduce gasoline consumption and (presumably) vehicular emissions.

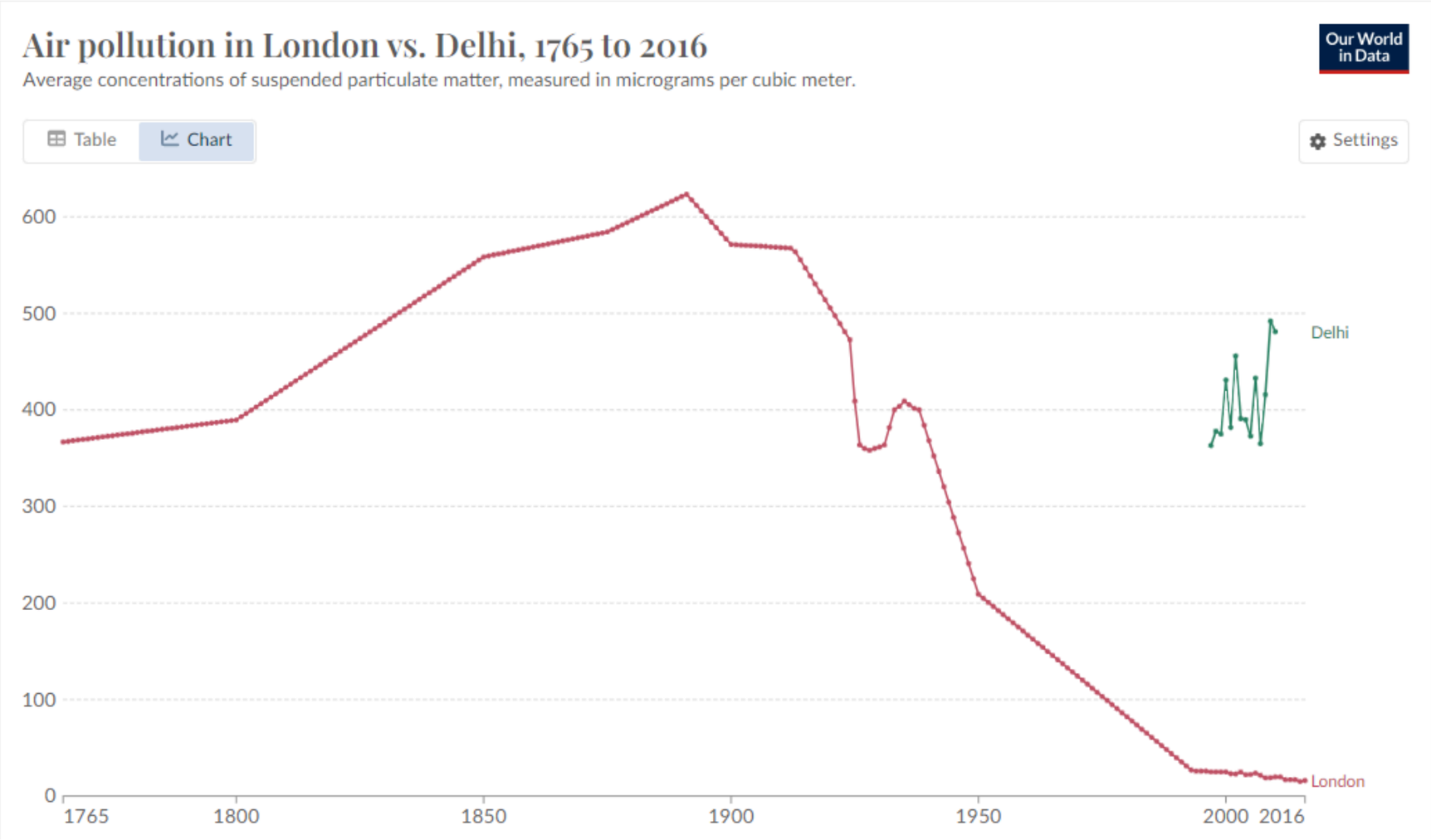
Source: Blackman and Harrington,1999

Discussion

Economic incentive instruments are praised for promoting innovation and providing cost-effective solutions for environmental protection. However, they can also be criticized for allowing companies to ‘**buy their way out**’ of taking substantial action. How can governments ensure that economic incentive instruments effectively drive real and meaningful environmental improvements?

The relationship between environmental performance and competitiveness: Do you think that the quality of a nation's environmental regulatory regime is strongly and positively correlated with its **competitiveness**?

CAUSE AND EFFECTS: THE SUCCESSFUL CASE OF LONDON



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