

Strategic Impact Assessment of Development Policies: Economic Analysis and their Applications

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Contents



- Market failure and policy failure
- Environmental impacts of development policies
- Economic modeling for policy EA and their applications

Why Policy? Market Failure

Market failure – the market fails to lead to an optimal allocation of resources and production of optimal welfare.

Main causes of market failure:

- ◆ Externalities (pollution)
- ◆ Lack of ownership
- ◆ Insufficient information
- ◆ Monopoly

Therefore, policy interventions are necessary

Types of Development Policies



- Macro-economic policies (fiscal, monetary, and trade)
- Sectoral policies
 - Non-environment sector: urban development, transport, industry, water, energy, agriculture, forestry and so on)
 - Environmental policies

Policy Failure

A policy intervention fails to correct market failure and generate net welfare gain and may even worsen the market performance.

Forms of policy failure:

- Fail to intervene while necessary
- Unnecessary or excessive intervention
- Wrong direction of intervention
- Incomplete or poorly-designed intervention

Sectoral Policies and Environment: Examples of Policy Failures



- Industrial composition and location
- Energy pricing and clean fuels
- Water tariff
- Public transit, transport planning and traffic management
- Road pricing, license fee, gasoline tax, parking fee

Main causes of policy failure



- Poor understanding of the problems
- Driven by non-economic or other interests
- Unforeseen, unprepared or underestimated factors
- Bad timing or out of date
- Complex interactions of various policies

*Environmental Impacts of
Development Policies: Economic
Analysis*

Types of Policy Instruments



- Command & control measures (CAC) vs. market-based instruments (MBI)
- Voluntary vs. involuntary

Command & Control vs. Market Based



- **C&C = directly requires outputs, e.g., emissions permits and standards aiming at the levels of pollution emissions and control efforts**
- **Market-based instruments = provide financial incentives through price adjustments for ideal outputs; e.g., taxes, fees, and tradable permits**

Advantage of Market-based Instruments

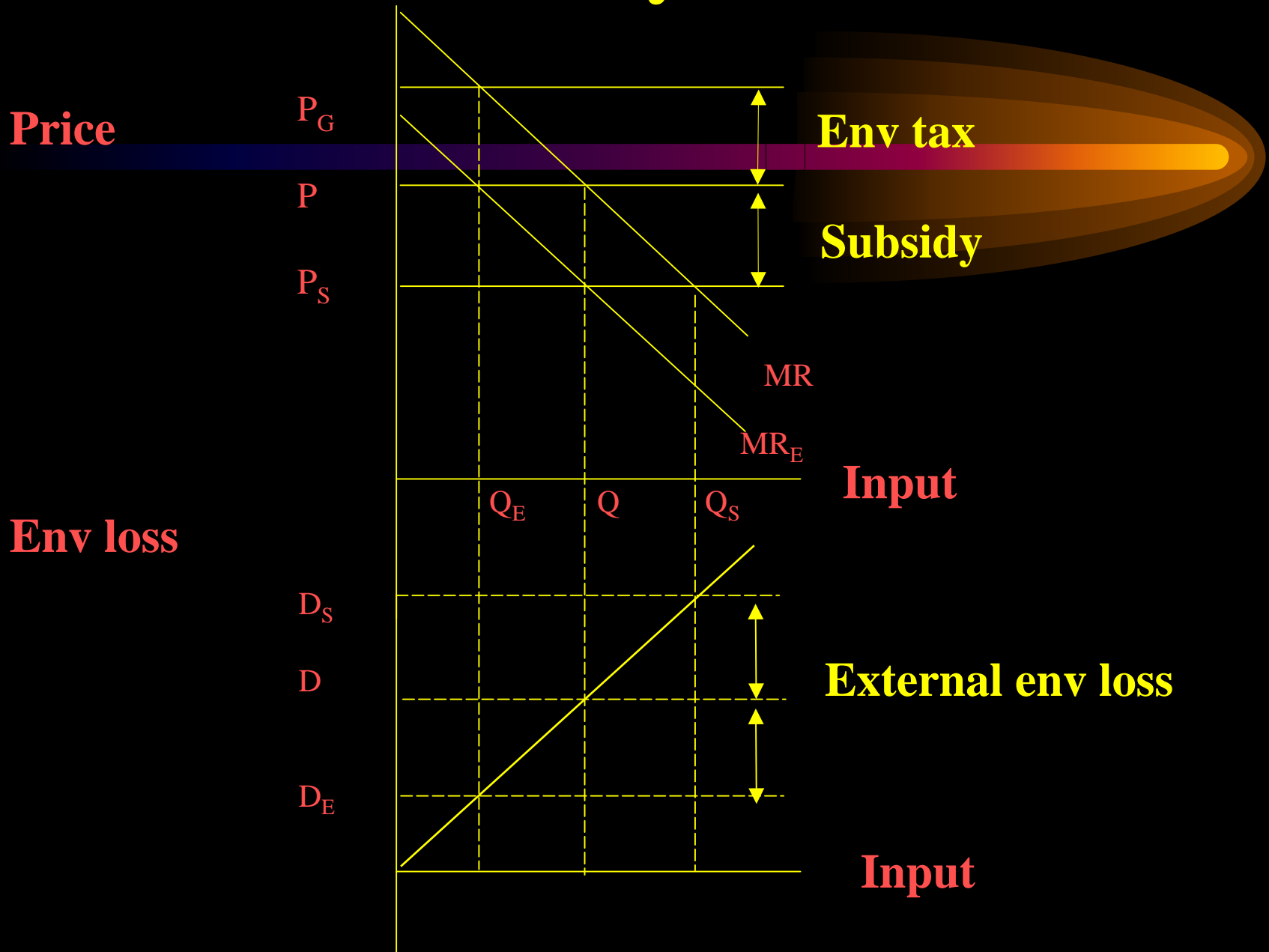


- Cost effective
- Encouraging technologic innovations
- Flexible

Why CAC popular?

- Political economics
- Direct and immediate results
- Low monitoring costs sometimes

Economic Analysis of Policies



Economic Models for Policy Analysis



- Input-output model -I/O
- Social Accounting Matrix - SAM
- Computable General Equilibrium Model
- Others (e.g., Econometric models)

Major features of CGE models

- **Endogenous prices determined by the "market"**
- **Focusing on an economy where supply and demand for either goods or production factors are equated by adjusting prices based on Walrasian general equilibrium theory**
- **Supply and demand functions derived from the behavior of profit-maximizing producers and utility-maximizing consumers**
- **Usually multi-sectoral and non-linear, and with resource constraints**

Introduction to An Environmental CGE Model

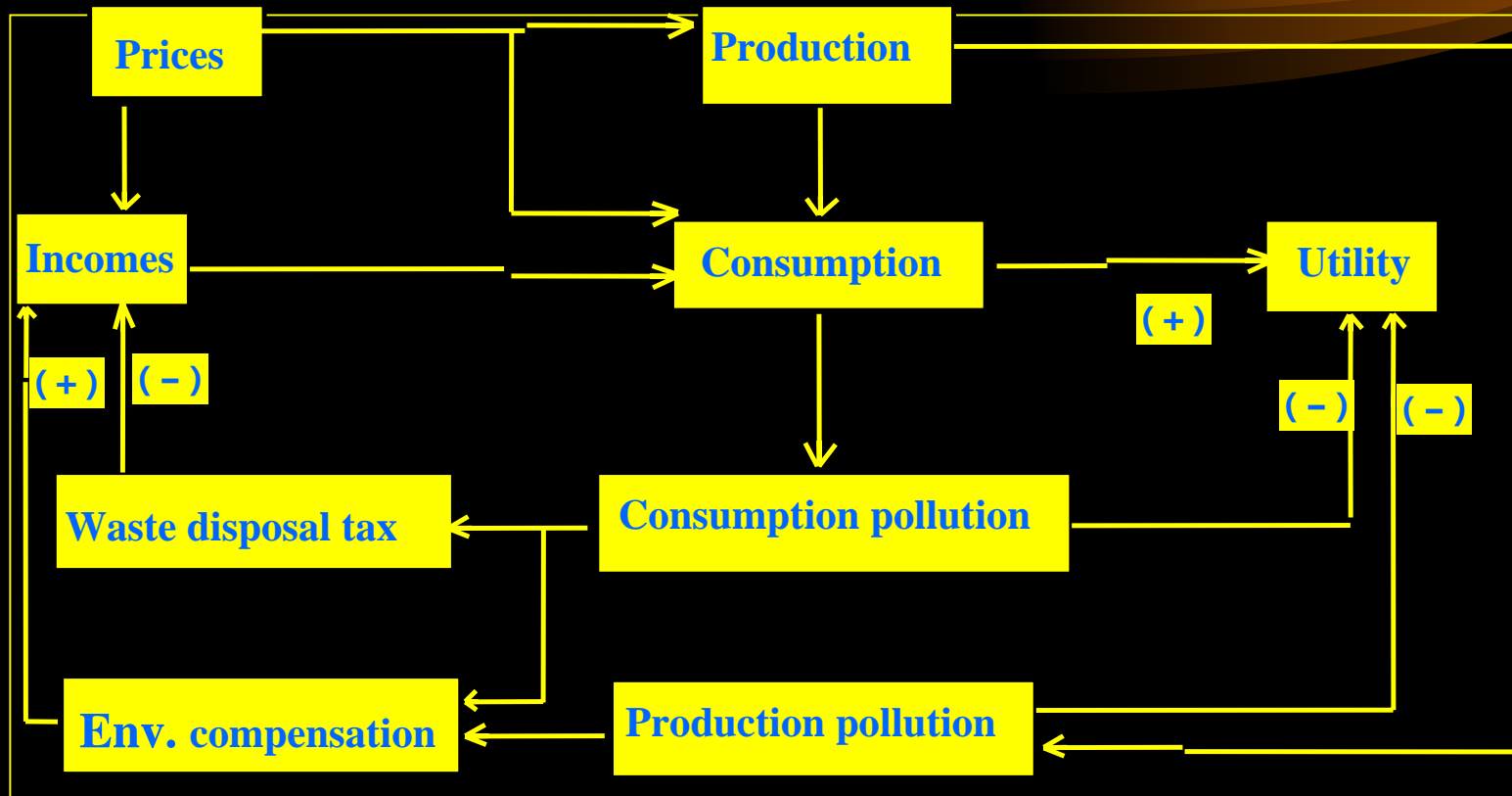


The model incorporates various environmental components, including pollution taxes, subsidies, and cleaning activities, into a standard CGE framework.

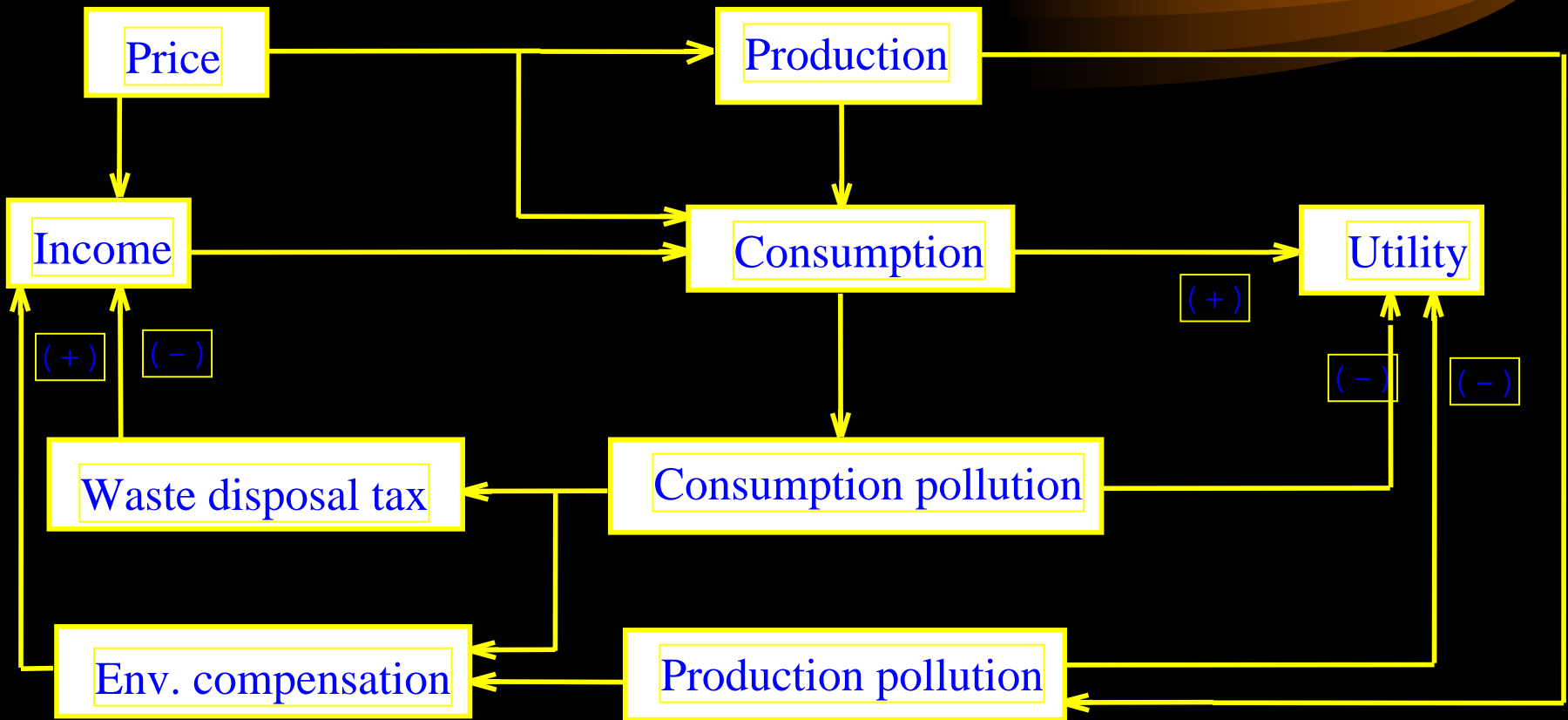
Reference:

Jian Xie, 1996, *Environmental Policy Analysis: A General Equilibrium Approach*, Avebury, UK.

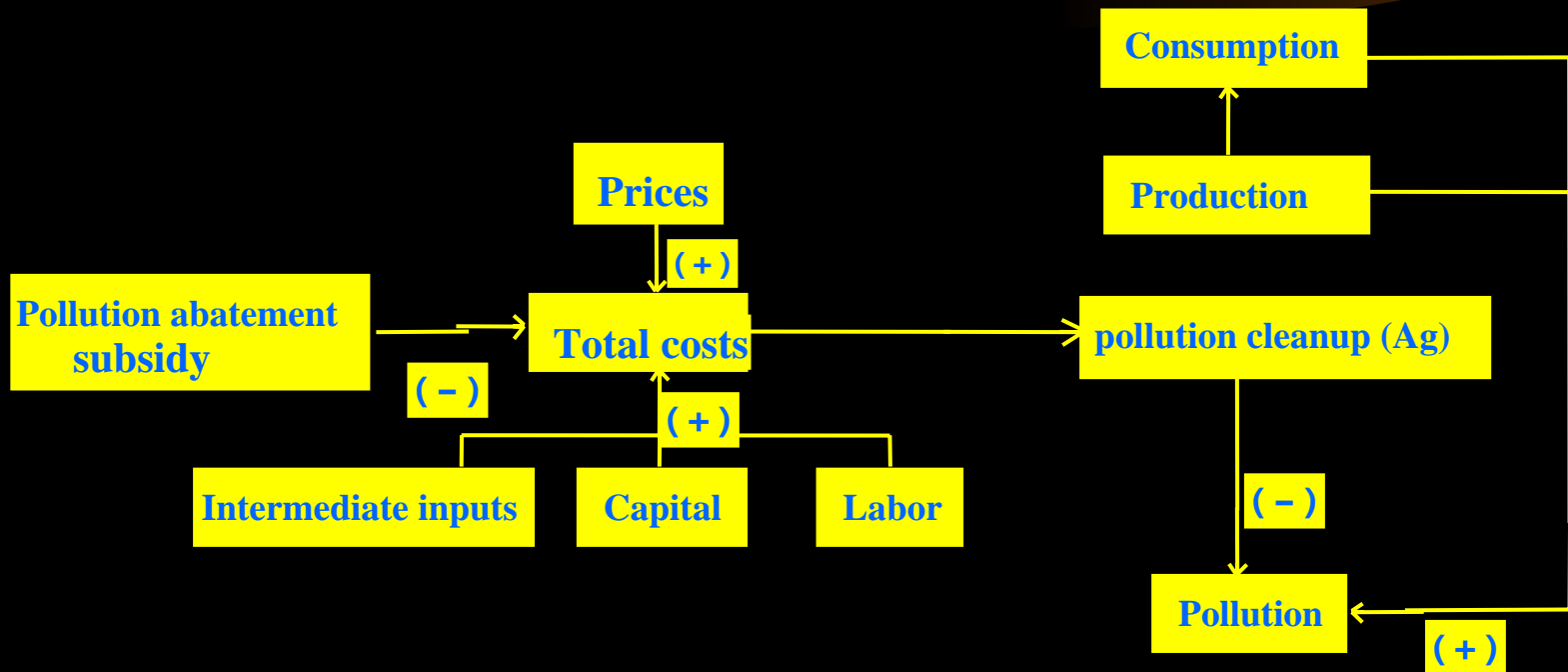
The Pollution-Production Interactions



The Pollution-Consumption Interactions



A Pollution Abatement Sector



The Feature of the China model

- **7 production sectors: agriculture, mining, light industry, energy, heavy industry, construction and services.**
- **2 production factors: labor and capital, and intermediate inputs.**
- **3 general types of pollution: waste water, smog dust and solid waste; and thus, three corresponding pollution abatement sectors**
- **289 endogenous variables in total**

Policy Control Variables



The exogenous or policy control variables of the model include various types of tax rates, subsidies, government expenditures, government borrowings, the average wage rate and the foreign exchange rate.