



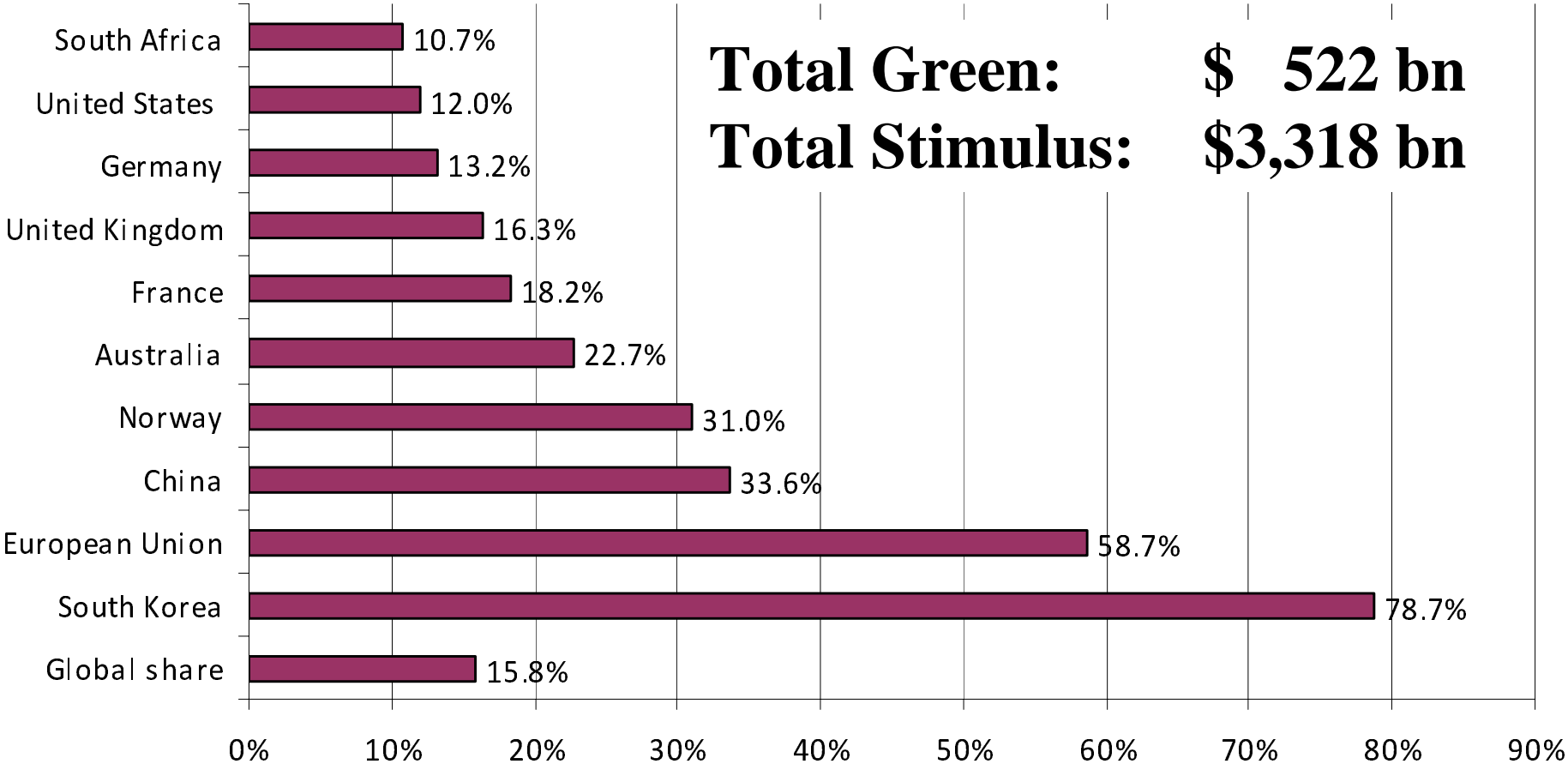
# Greening Competition

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*Resources for the Future*  
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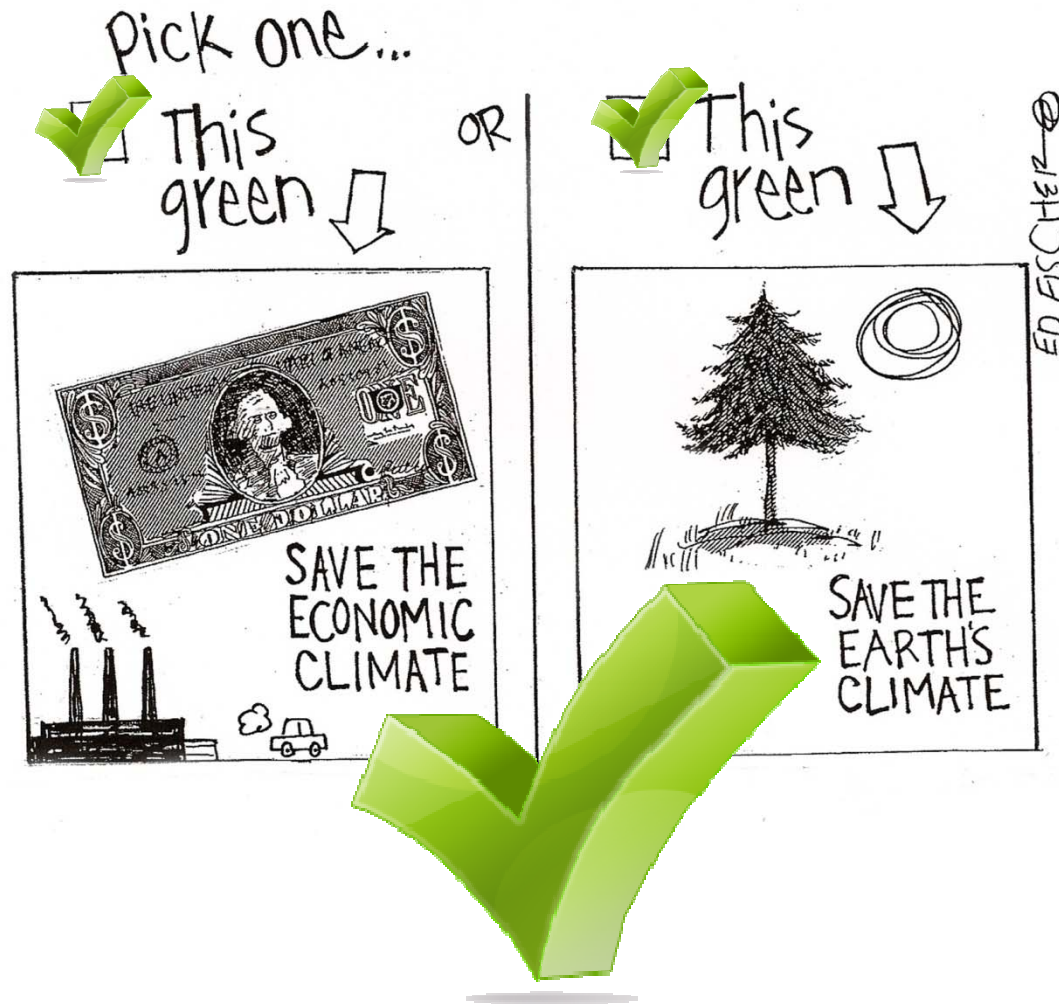


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# Green Stimulus as a Share of Total Fiscal Stimulus



# The Question



# Green Growth



- Strong version: environmental policies enhance overall economic growth
- Stimulus version: countercyclical public spending can be harnessed to pursue clean investments
- Standard version: well-designed environmental policies minimize economic costs, and are outweighed by the benefits

# How green policies might enhance growth

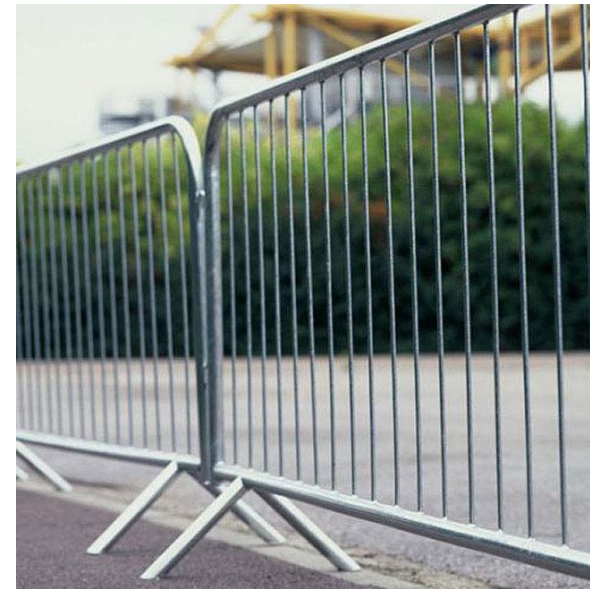
- Health improvements can enhance labor productivity
- Better management of natural resources assists sectors reliant on them
- Better management of land use and ecosystems can reduce vulnerability to risks
- Regulation can draw attention to opportunities for savings and innovation (Porter Hypothesis)
- Innovation in clean technologies can enhance productivity

# The Rule or the Exception?

- Cases in which environmental policy can enhance growth
  - More often in a particular sector (e.g., renewables)
- Typically, one would expect environmental regulation to entail economic costs
  - Imposing constraints on the market
  - Unless another market failure is present
- Still, those costs are outweighed by the benefits
  - Goal is not growth per se but societal welfare

# Role of Environmental Policy

- Remove distortions in the economy
  - Make sure market actors take into account the full societal consequences of their actions
- Key distortions
  - Damages from emissions
  - Spillover benefits of innovation
  - Behavioral or coordination barriers to adoption of cleaner technologies or energy efficiency
  - Labor and capital market distortions from fiscal policy



# Designing Cost-Effective Environmental Policy

- Use market-based instruments to address distortions
  - Correct incentives rather than dictating behavior
  - Foster innovation
- Broaden coverage to capture all opportunities
- Remove distorting subsidies (e.g., fossil fuels)
- Use revenues from pricing “bads” to offset taxes on “goods”
  - E.g., price on carbon (through a tax or ETS) and use revenues to lower payroll and capital tax rates
- Supplement with information, address barriers



# On Environment and Competitiveness

- Paul Krugman (1994):
  - “Competitiveness is a meaningless word when applied to national economies.”
    - “And the obsession with competitiveness is both wrong and dangerous.”



- Does “competitiveness” regain any meaning in an environmental policy context?
  - Political economy
  - “Carbon leakage”

# Environmental Regulations, Trade and Competitiveness

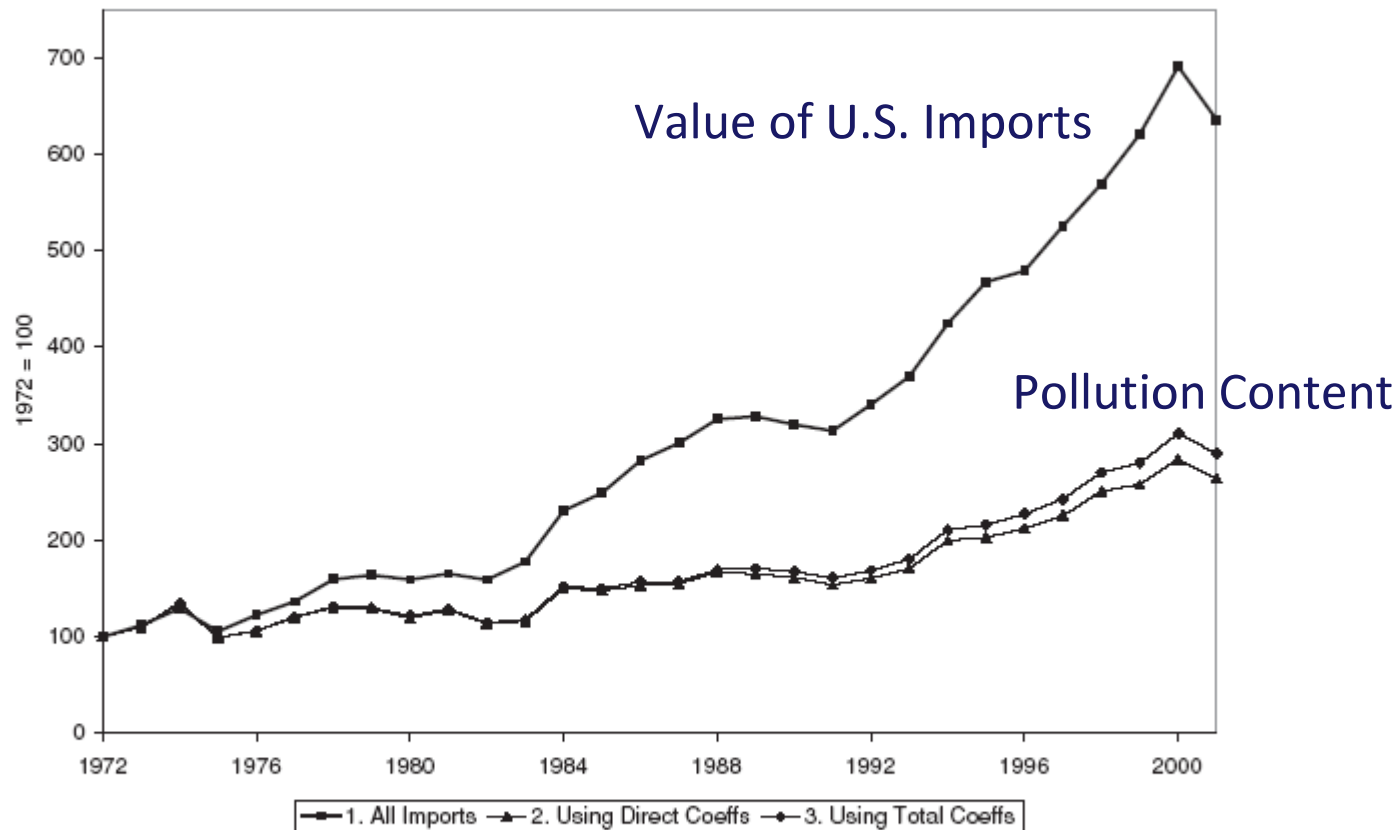
- Empirical studies find little evidence that environmental regulations harm competitiveness
  - Negligible effect on net imports or jobs overall
- But may be (statistically) significant within specific sectors
  - that are particularly pollution intensive
  - and “footloose”
    - Low transport costs, low capital intensity



# Trends in Imports and Conventional Pollution Content

Offshoring Pollution: Is the U.S. Increasingly Importing Polluting Goods?

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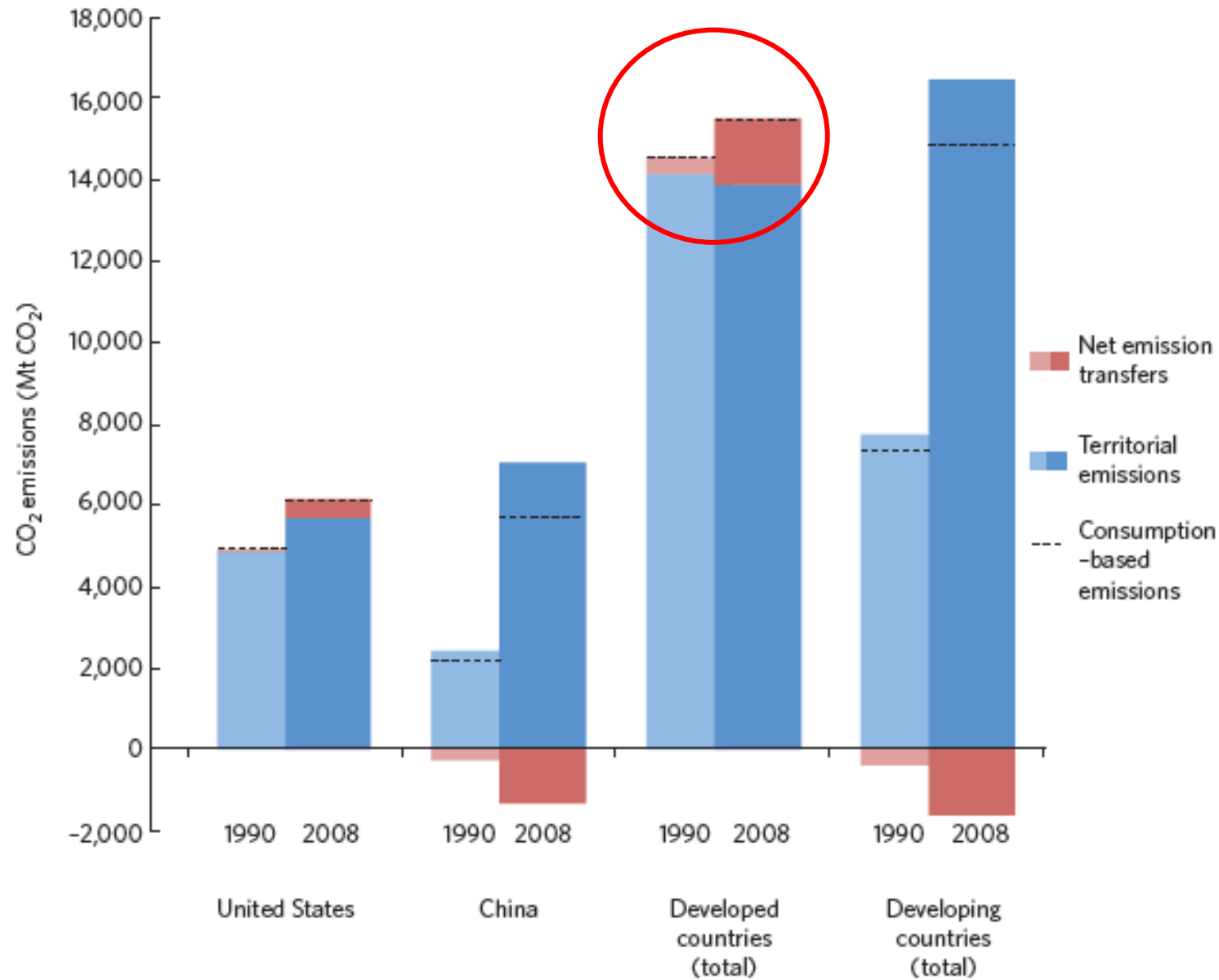


**Figure 1.** Trends in the value and pollution content of U.S. imports.

Source: Author's calculations based on World Bank's Industrial Pollution Projection System (Hettige et al. 1995), the U.S. Bureau of Economic Analysis benchmark input-output tables for 1987, and import data from Feenstra (1996).



# Trends in Carbon Content of Trade



# Carbon Leakage

- For local pollutants, competitiveness impacts are generally not an efficiency concern
  - Unless trade partners have problems managing their own environment
- For global pollutants, competitiveness impacts can (in theory) offset some environmental benefits
  - Climate policy presents most salient example
- Estimates of carbon leakage
  - Historically hard to detect
  - Modeling suggests modest overall but may become large for certain sectors



# Options for Coping with Leakage



- Global carbon pricing
  - Also addresses energy markets leakage
- Measures to address competitiveness-related leakage
  - Output-based rebates;  
Border carbon adjustments
  - Modest effects on overall leakage;  
Larger effects if useful as leverage
- Weakening policies
  - Lower carbon prices, exempting exposed sectors

# Option (1): Subsidies through Allowance Allocation

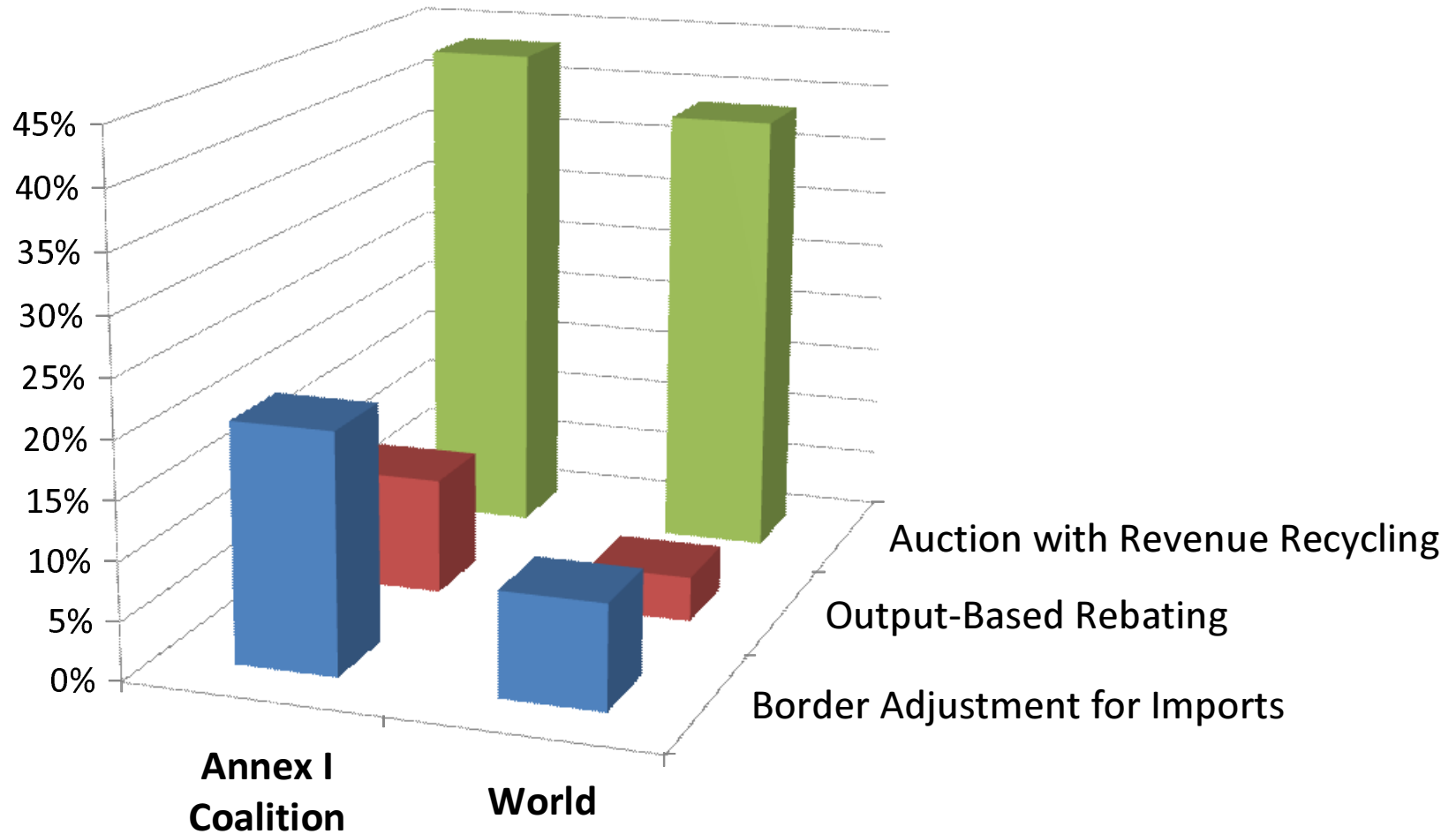
- E.g., output-based rebating: allocate allowances based on an industry average performance benchmark
  - Updated, not pure “grandfathering”
- Mitigates product price increase, which dampens leakage but also conservation incentives
  - Best applied narrowly to EITE sectors
  - Unable to distinguish among performance of trading partners; need to phase out as coalition expands

## Option (2): Border Carbon Adjustment

- Taxing imports based on a measure of their carbon content (and refunding for exports)
- Ensures consumers pay carbon-inclusive price, regardless of origin
  - Dampens leakage and maintains conservation incentives
- Also requires narrow scope of application
  - Can improve cost-effectiveness of carbon pricing if applied narrowly to sectors most vulnerable to leakage
    - E.g., cement, steel, aluminum
  - Costly if implemented too broadly
  - Controversial; WTO consistency untested



# Scale of Cost-Effectiveness Improvements Relative to Grandfathering



# On the Role of Technical Progress

- Growth comes from improving productivity
- Clean technology innovation necessary for a transition to a low-carbon economy
- But do clean technology stimulus policies promote growth more than other investments?
  - More likely to be efficiency-enhancing if addresses green market failures and barriers



# Example: Renewable Energy Policies as Innovation Policies

- Different sources have different needs
  - Different innovation stages, net emissions characteristics, capital cost structures, etc.
- Simple RPSs and production subsidies do not distinguish among sources
  - Benefit currently commercial options;
  - Less effective at promoting next-generation technology (unless differentiated mandates)
  - Empirical studies find FiTs more cost-effective (OECD 2010)
    - Value of certainty
- Need to balance RD&D push with market pull policies
- Must recognize tradeoffs between not picking winners and appropriately targeting specific innovation needs



# On Overlapping Goals and Instruments

- For emissions reductions, pricing emissions is the single most cost-effective policy
  - Once emissions are capped, additional policies do not generate additional reductions
- The goal of complementary technology policies is to spur innovation, lower future mitigation costs
  - Jobs and emissions reductions may be a byproduct, but likely not to fare well on those metrics
  - Unfortunately, little data to evaluate performance toward real goals

# Conclusion

- Growth and greenness are not mutually exclusive
  - but not necessarily mutually enhancing
  - Both are necessary for well-being
- Green growth buzz has been effective in leveraging economic crisis to pursue green objectives
  - Risk backlash if expectations unrealistic
- Well-designed environmental policies can have minimal economic costs and improve efficiency
  - Address market distortions
  - Combine broad-based emissions and innovation policies with a targeted portfolio for specific innovation needs

# Thanks!

For more information, see

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