

BROOKINGS

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Border Carbon Adjustments

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What are the problems?

- Deleterious cross-border effects
 - » Emissions shifts that reduce environmental effectiveness and/or raise costs
 - » Production shifts that reduce welfare of actors
- Want to incentivize non-actors to participate
 - » Counteract incentive to free ride that may increase with size of action or actors

Empirical Questions

- How big are the problems?
 - » What are the channels of leakage and what is their relative size?
 - » How big is the loss of welfare in abating countries?
 - » How big is the efficiency loss?
 - » How big is the incentive to not participate?
 - » What do the answers depend on (e.g. stringency of coalition policy, size and composition of coalition, timing)?
- What can actors actually do about it?
 - » Empirical results for various policy prescriptions: costs, benefits, and distributional effects.
- What are the answers for the US in particular?
 - » Revenue/spending implications?

Empirical Questions: Emissions

- Emissions **increases** in non-coalition countries
 - elasticities of substitution and relative policy stringency
- Emissions **increases** from fall in traded fuel prices
 - Climate policy in both coalition and non-coalition countries (fixed C price vs. fixed domestic emissions goal vs. fixed collective goal)
 - Size and composition of coalition
 - Cartel behavior
 - Fuel substitutions and effect of policy on fuel use and trade
- Emissions **changes (+ or -)** from general equilibrium effects
 - Exposure of non-coalition economies to coalition economies
 - Size and composition of coalition plus policy stringency

BCA targets
part of this

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Current US Policy Debate

- Cap and trade is dead.
- Policy default is Clean Air Act plus ancillary subsidies, standards, and other dogs and cats
- Main alternative: **Carbon tax in fiscal reform package**
- Essentially no concern expressed about welfare outside US
- Some concern about emissions leakage, but probably unwilling to compensate at US expense
- Averse to transfers of all kinds, e.g. from offsets
 - » Offsets become tax expenditures
- Political significance of trade outpaces empirical significance

US Carbon Tax Policy Questions

- What are US options for cross-border issues?
 - » Do nothing
 - » BCA, OBR, exemptions
 - » Tax swaps that improve competitiveness
 - » Targeted distributional programs
- How could our policies be used against us?

US Policy Questions

- How should we design a BCA?
 - » Continuous variable across countries, sectors, firms, products?
 - » Phase out or transition to some other measure? Contingencies?
 - » How do we determine the magnitude?
 - » Administrative questions
- How do we determine the magnitude of a BCA?
 - » What determines whether $BCA > 0$?
 - » How do we determine comparable action?
 - » If emissions leakage is the issue, what about command and control countries? Existing energy taxes?
 - » What about varying effective carbon price across economies?
- How could our policies be used against us?

Effects of carbon tax on firms and welfare

- Firms aren't people; shareholders and workers are.
- Carbon tax and tax reforms will affect different firms differently
 - » How energy intensive?
 - » Abatement costs?
 - » Ability to pass along costs?
 - » Existing effective marginal corporate tax rate?
- What matters is net effect of all tax and spending reforms
- Could favorable corporate income tax reform help energy-intensive trade exposed industries?



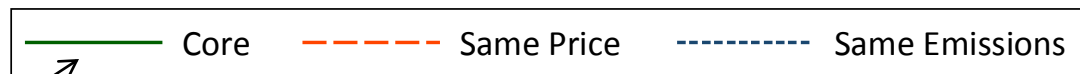
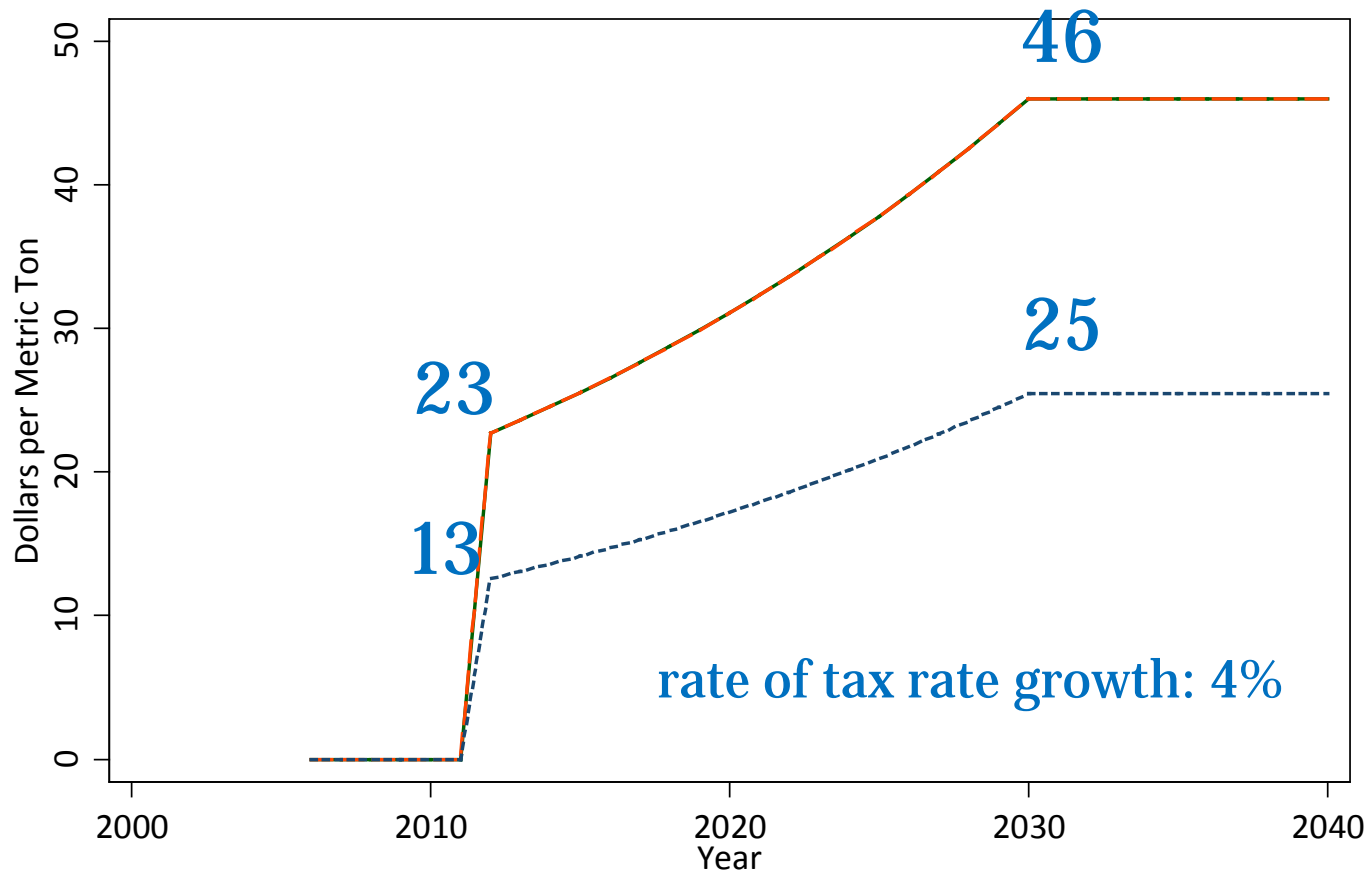
- Declines in consumption depend on long run general equilibrium
 - » Lower wages, fewer jobs in EITEs – but labor markets adjust
 - » What if dollar strengthens?
- Decline in shareholder value
 - » How much loss will accrue to US holders of US assets?
- How to partition welfare loss across carbon-based competition and other forces?
 - » Long run trends (e.g. driven by exogenous changes in input prices)
 - » Energy intensive industries shrink independent of trade exposure
 - » Larger coalition reduces competitiveness problem; also reduces overall demand for energy intensive goods
- Carbon tax is regressive.
- US has a welfare issue independent of EITE. Need something like trade adjustment assistance?

Recent evidence from Brookings on Employment Part 1:
“Pricing Carbon in the US: A Model-Based Analysis of a
Power-Sector-Only Approach”

Warwick McKibbin, Adele Morris, and Pete Wilcoxon

- Modeled policy similar to Bingaman 2010 proposal for power sector and compared to analogous economy-wide measures
- Used G-Cubed CGE Model
- Linearly declining emissions targets for U.S. electricity generation
 - » 17 % below 2005 levels in 2020
 - » 42 % below 2005 levels in 2030
- Calculate carbon tax
 - » Revenues go lump sum to households
- Labor markets adjust

CO₂ Tax Trajectory

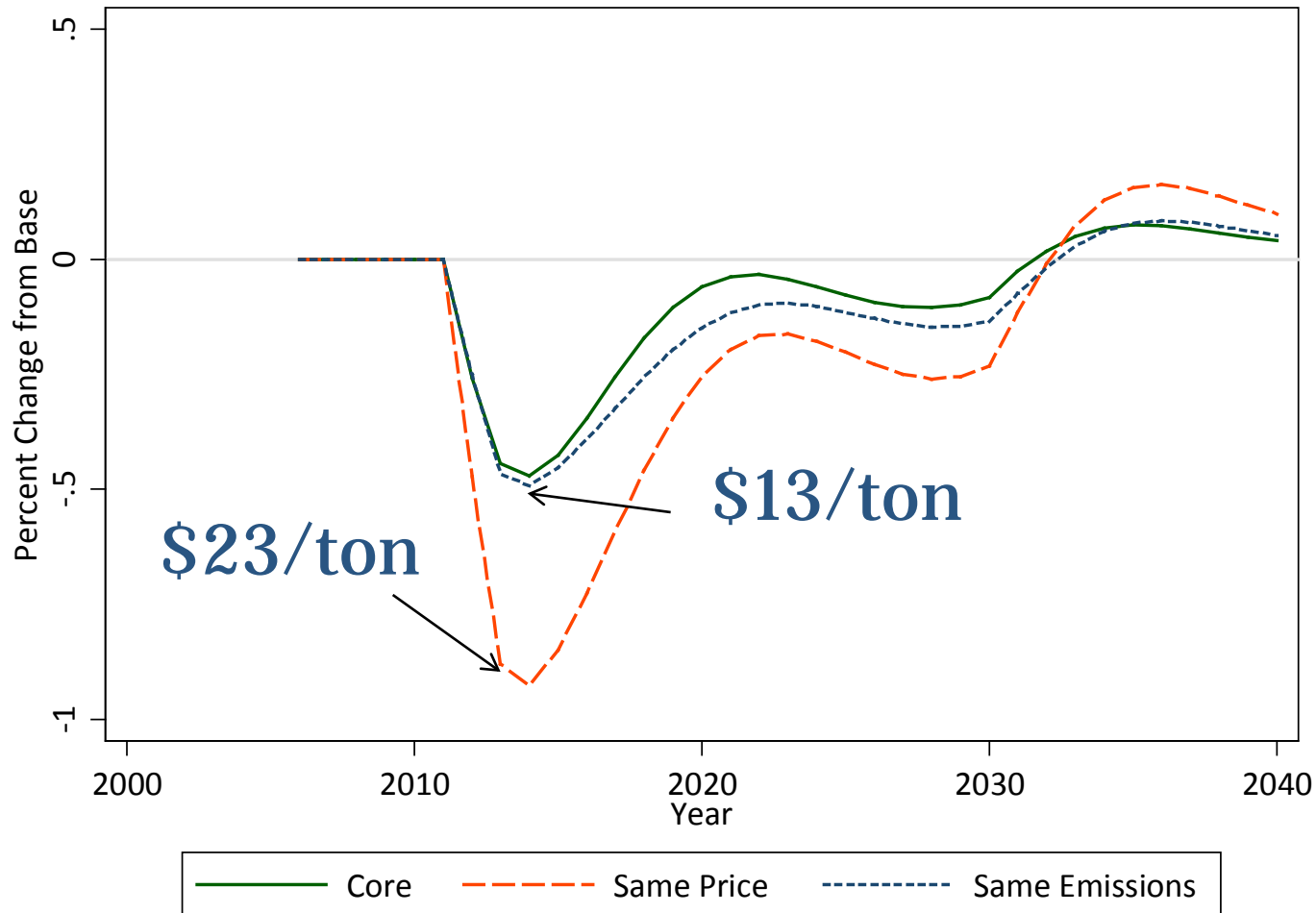


Electricity only

Economy wide

Effects on US employment

are probably negative, but small and temporary.



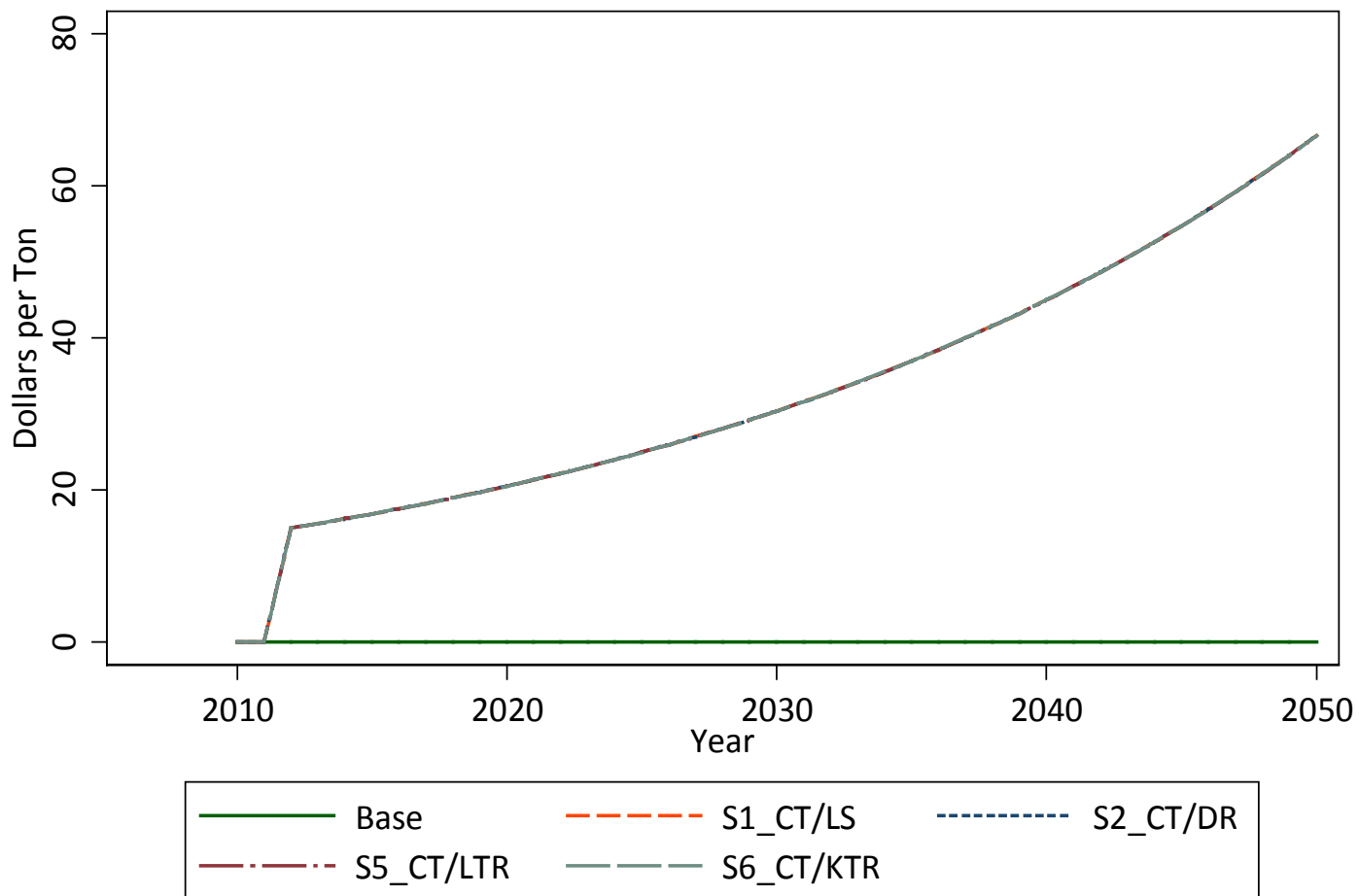
Recent evidence from Brookings on Employment Part 2:
**The Potential Role of a Carbon Tax in U.S.
Fiscal Reform**

Warwick McKibbin
Adele Morris
Peter Wilcoxon
Yiyong Cai

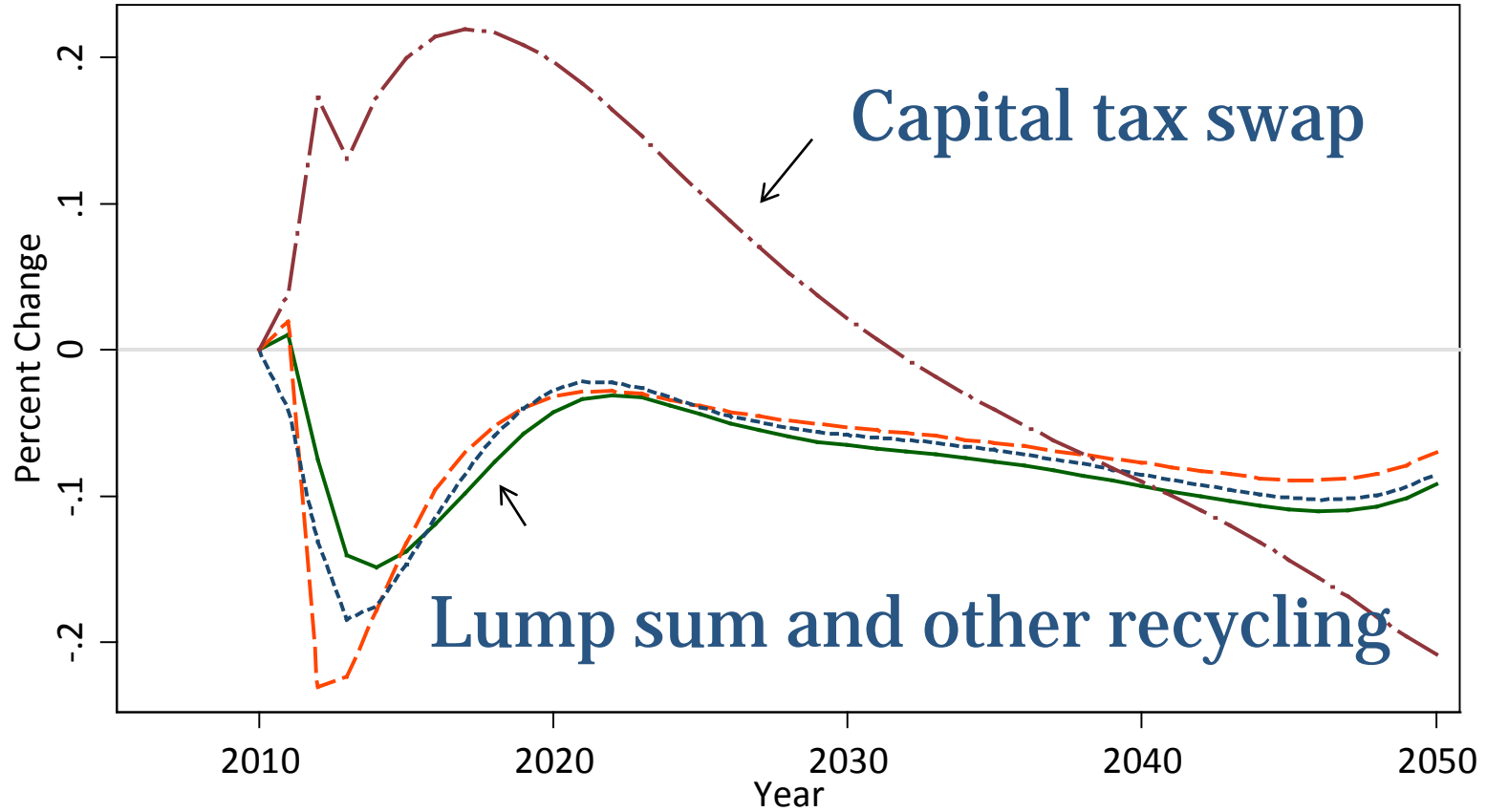
Brookings, Australian National University
Brookings
Brookings, Syracuse University
Australian CSIRO

- Modeled carbon tax of \$15/ton rising at 4% over inflation
- Used G-Cubed CGE Model
- Modeled different disposition of revenues
- Tax swaps as border measures?

Tax Rate on Carbon Dioxide



Changes in Employment



Before-Tax Profits Required to Pay \$1 to Investors Across Sectors:

Industry-specific tax breaks incentivize investment in specific industries.



Slide source: The Hamilton Project, *A Dozen Facts About Tax Reform*, May 2012

Source: Blouin, Core, and Guay (2010); Marginal Tax Rate Database from Standard & Poor's Compustat.

Note: After-financing marginal tax rates, fiscal year 2007.

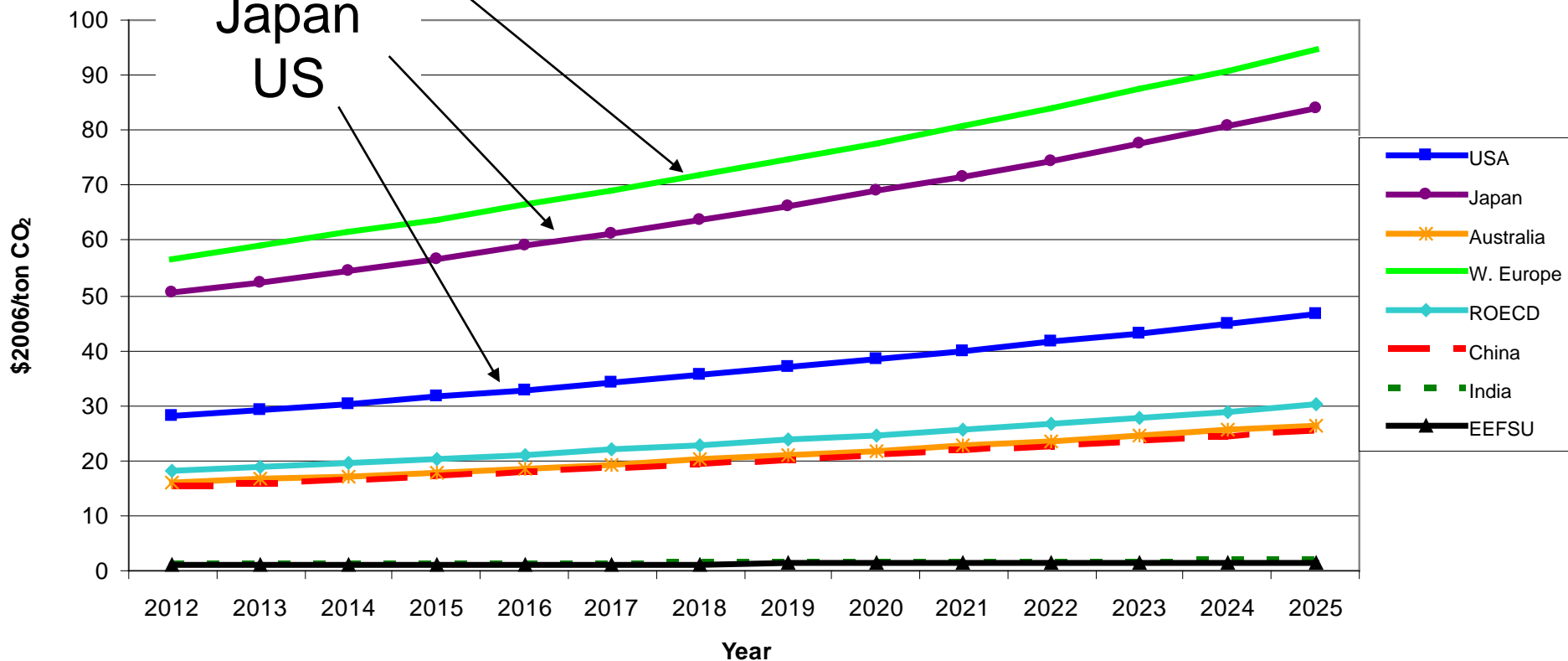
Other Brookings results confirm

- The burden of the agreement is importantly different than the effort required to meet domestic targets.

Copenhagen Accord: The top three countries by carbon price...

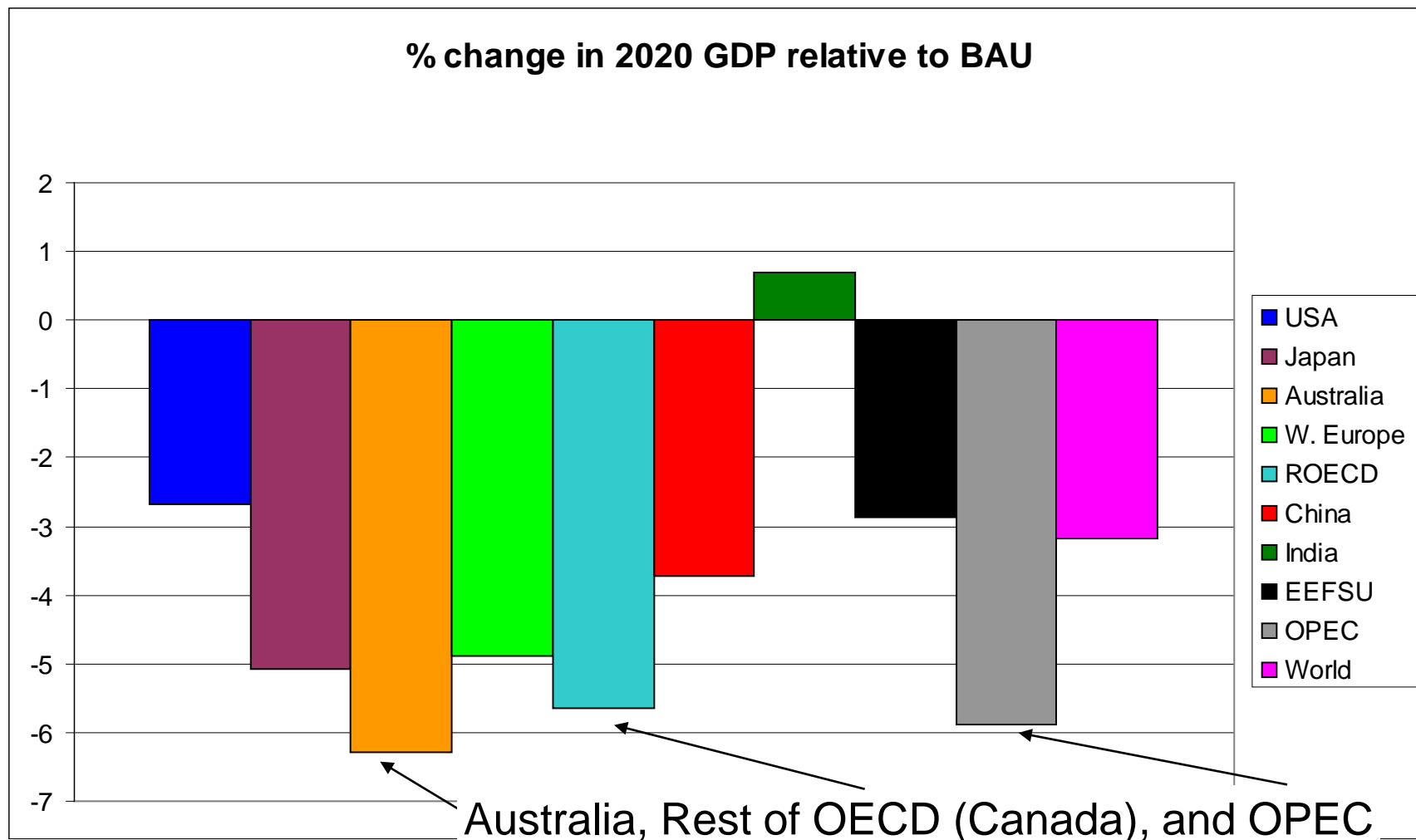
Figure 6: Price per Metric Ton of CO₂

W. Europe
Japan
US



Source: W. McKibbin, A. Morris, and P. Wilcoxon, "Comparing Climate Commitments: A Model-Based Analysis of the Copenhagen Accord," Brookings Institution, 2010

...are not the top three by largest GDP losses.



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