

Auctioning vs. Freely Allocating Emissions Allowances: Implications for Industry Profits and Overall Economic Cost

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Issues:

What is the impact of cap-and-trade on profits of various U.S. industries?

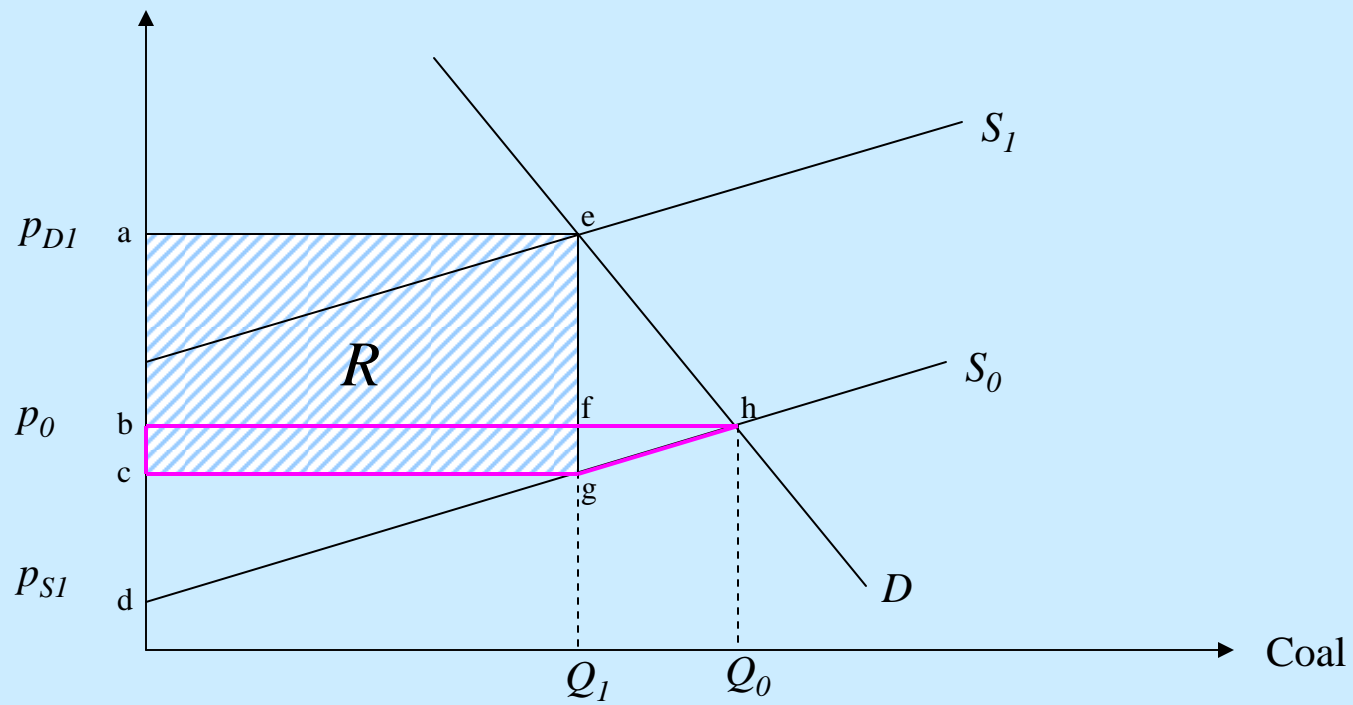
How does this impact depend on how allowances are allocated (free, via auction, or both)?

Results from 12-industry U.S. energy-environment-economy model

- cap-and-trade introduced in year 2000
- cap achieves 17% reduction in emissions
- allowance prices start at \$6.75 and rise to \$13.50 / ton CO₂ by tenth year

	<i>100% Auctioning</i>
<i>Equity Values of Firms, Year 2000 (percentage changes from reference case)</i>	
Agriculture and Non-Coal Mining	0.1
Coal Mining	-54.6
Oil&Gas	-20.0
Petroleum Refining	-2.1
Electric Utilities	-4.2
Natural Gas Utilities	4.3
Construction	1.5
Metals and Machinery	-0.9
Motor Vehicles	3.3
Miscellaneous Manufacturing	-0.8
Services (except housing)	1.1
Housing Services	0.6
Total	-0.7

Free Allocation of Emissions Allowances Can Prevent a Profit Loss



Results from 12-industry U.S. energy-environment-economy model

-- cap-and-trade introduced in year 2000

-- cap achieves 17% reduction in emissions

-- allowance prices start at \$6.75 and rise to \$13.50 / ton CO₂ by tenth year

	<i>100% Auctioning</i>	<i>Partial Free Allocation</i>
<i>Equity Values of Firms, Year 2000 (percentage changes from reference case)</i>		
Agriculture and Non-Coal Mining	0.1	0.0
Coal Mining	-54.6	0.0
Oil&Gas	-20.0	0.0
Petroleum Refining	-2.1	-2.3
Electric Utilities	-4.2	-4.3
Natural Gas Utilities	4.3	4.1
Construction	1.5	1.0
Metals and Machinery	-0.9	-0.8
Motor Vehicles	3.3	3.2
Miscellaneous Manufacturing	-0.8	-0.9
Services (except housing)	1.1	1.0
Housing Services	0.6	0.4
Total	-0.7	-0.9

Results from Numerical Model of U.S.

(emissions caps introduced in 2000)

	<i>100% auctioning</i>	<i>Partial auctioning</i>	<i>100% free allocation</i>
Coal industry			
% change in output (2002, 2025)	-20.1, -38.7	-20.1, -38.7	-20.1, -38.7
% change in profit	-54.6	0 (7.8%)	611.0
Oil&Gas industries			
% change in output (2002, 2025)	-5.5, -5.4	-5.4, -5.3	-5.1, -5.2
% change in profit	-20.0	0 (14.0%)	124.2
Economy-wide emissions reduction (%)	17.2	17.2	17.5
Economy-wide cost per ton CO₂ reduced	\$85.9	\$92.3	\$160.5

Conclusions

Free allocation of a small share of allowances can preserve profits of major industrial stakeholders

However, free allocation involves higher overall economic costs than does auctioning

Good news: Only a small share of allowances need to be allocated free to preserve profits. Most can be auctioned. Hence the cost-sacrifice involved in preserving profits to key stakeholders can be fairly small.