

The Economic and Environmental Impact of the US Withdrawal from the Kyoto Protocol

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Background

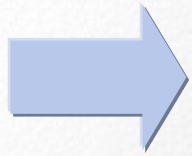
- **George W. Bush, the US President, announces the withdrawal from the Kyoto Protocol.**
- **The Kyoto Protocol would become effective at the Johannesburg Earth Summit this Autumn (August-September 2002).**

Japanese industrial sector is already energy effective and the US withdrawal from the Kyoto Protocol would harm Japanese economic activity and stultify the Kyoto Protocol.

-Japan Business Federation (Keidanren)

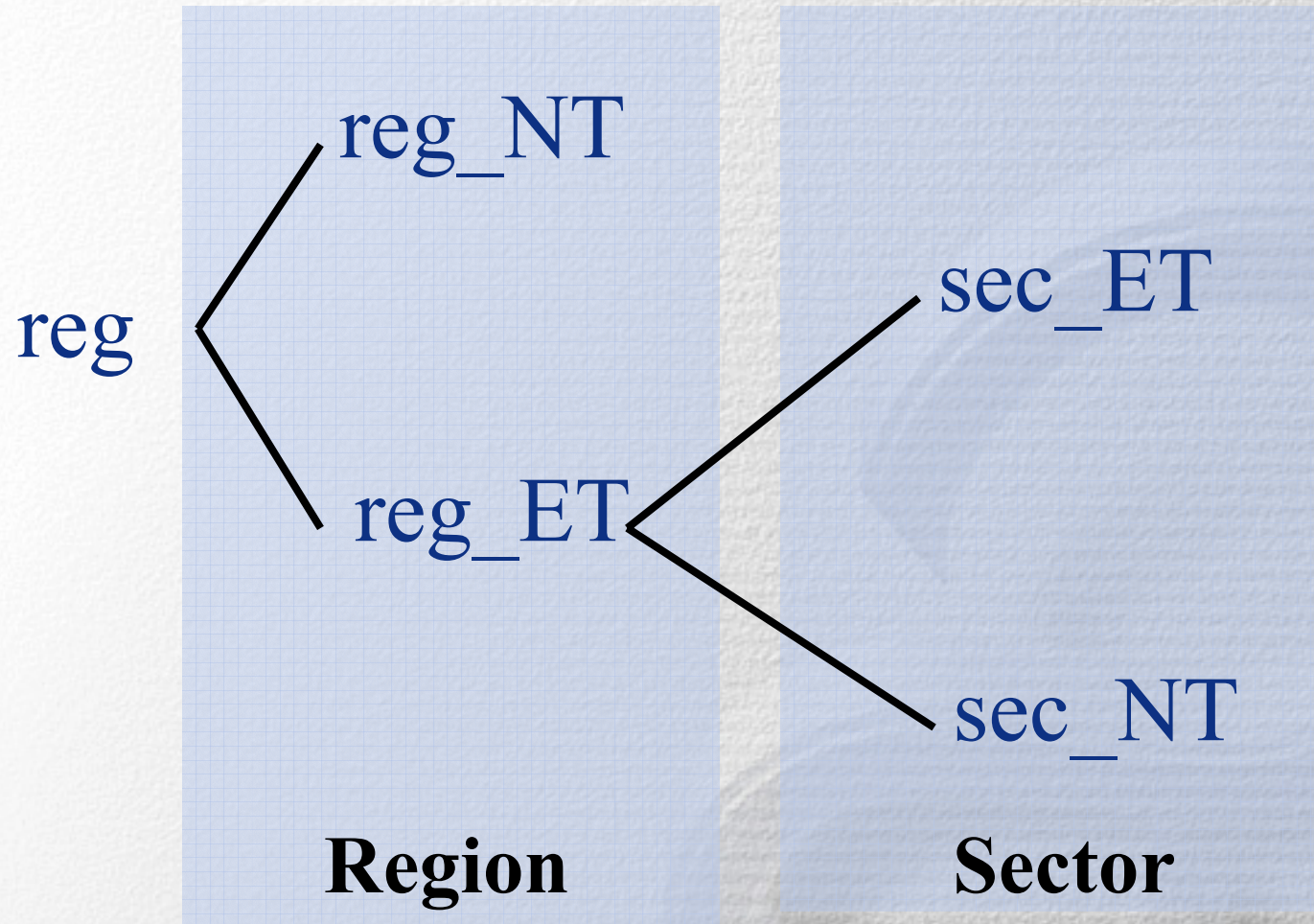
Purpose

- This research aims to evaluate the impacts of the US withdrawal from Kyoto Protocol from **economic** and **environmental** point of view.



Is the Kyoto Protocol dead?

GTAP-E Modification

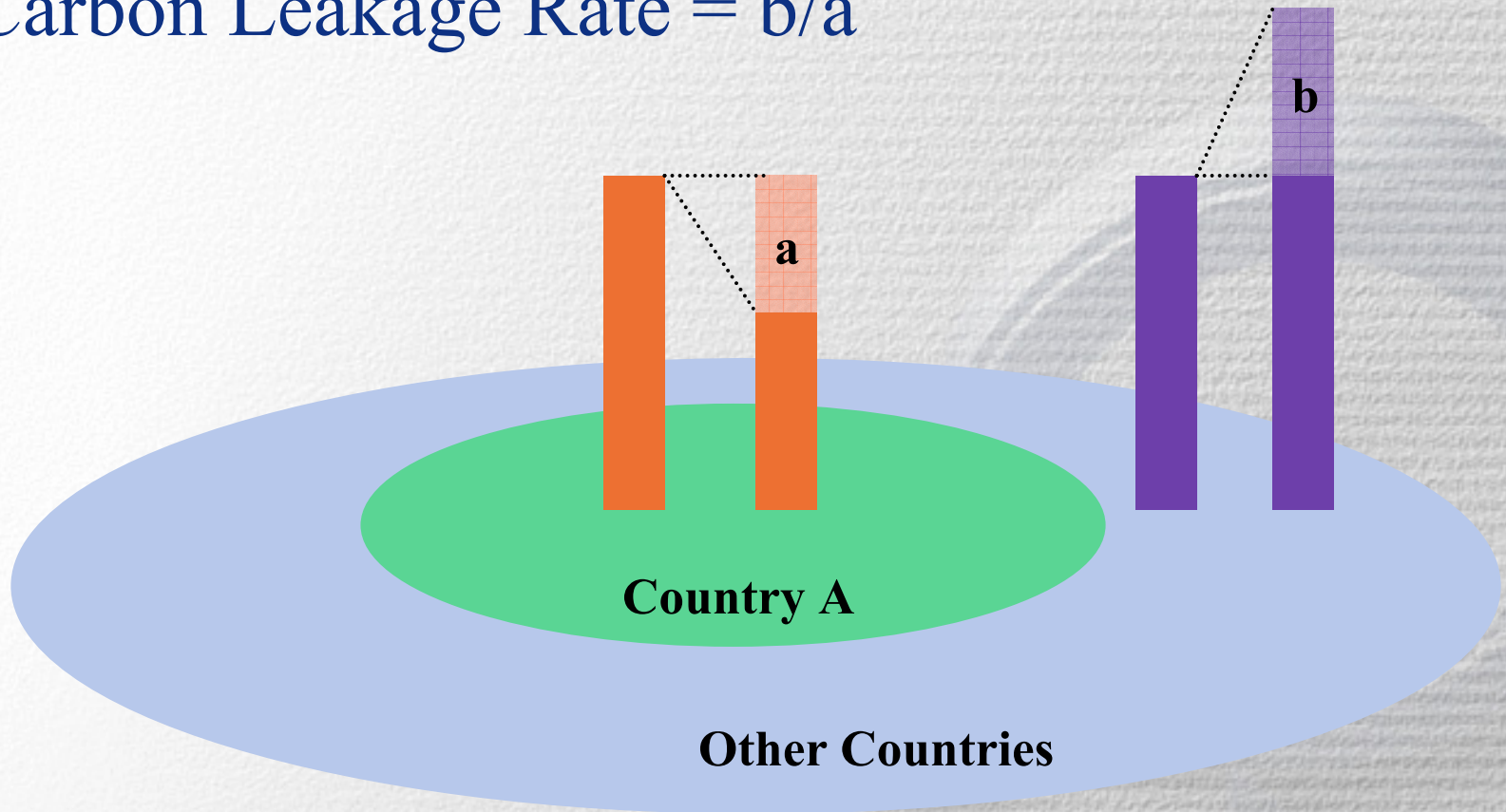


ET: Emission Trading

NT: No Emission Trading

Environmental Impact

Carbon Leakage Rate = b/a



Country A: Country which has emission reduction target

Other Countries: No emission reduction target

Database

10 Sectors

Sector	Description
COL	Coal
OIL	Crude oil
GAS	Gas
P_C	Petroleum, coal products
ELY	Electricity
IS	Ferrous metals
CRP	Chemical, rubber, plastic products
OMN	Metals nec, Mineral products nec, Paper products and publishing, Other manufacturing, Trade and transport
AGR	Agriculture, forestry and fish
SER	Commercial/public

8 Regions/Countries

Region	Description
USA	United States of America
CHN	China
FSU	Former Soviet Union
JPN	Japan
IND	India
E_U	European Union
NEX	Net Energy Exporters
NEM	Net Energy Importers

Emission Reduction Target

Kyoto Target

	Limits of removal by sinks ¹ % of 1990	Kyoto Target % of 1990	Net Redution Target % of 1990
USA	1.7%	7.0%	5.3%
JPN	3.9%	6.0%	2.1%
EU	0.5%	8.0%	7.5%

Source: Ministry of Environment, Japan and IPCC

¹ Limits of GHGs removals by sink in Marrakech Accord

Actual Reduction

	1990 MT-CO ₂	2010 MT-CO ₂	Traget MT-CO ₂	Necessary reduction	
				MT-CO ₂	% of 2010
USA	4,932	6,903	4,671	2,232	32.3%
JPN	987	1,212	966	246	20.3%
EU	3,409	3,820	3,152	668	17.5%

MT-CO₂: Million Tonne CO₂

Source: Energy Information Administration (EIA), U.S.DOE

Experiment Set

Experiment 1: The US ratify the Kyoto Protocol

Experiment 2: The US withdraw from the Kyoto Protocol

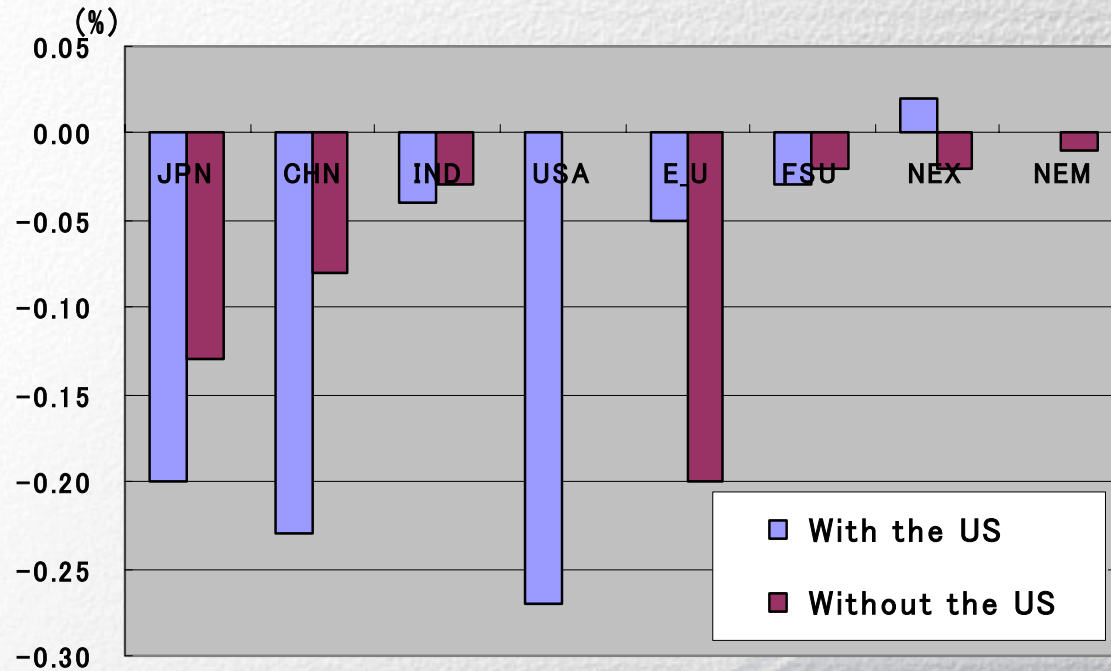
Region	Experiment 1		Experiment 2	
	K	IET	K	IET
USA	✓	✓		
CHN				
FSU				
JPN	✓	✓	✓	✓
IND				
E_U	✓	✓	✓	✓
NEX				
NEM				

K:Kyoto Target

IET:International Emission Trading

Macro-economic Impact

GDP Change (%)



Impact on each sector (Annex)

	With the US ratification			Without the US ratification			Direction of Change		
	JPN	USA	E_U	JPN	USA	E_U	JPN	USA	E_U
COL	-9.43	-33.50	-20.12	-3.50	-1.93	-11.74	+	+	+
OIL	-3.24	-5.41	-3.95	-0.61	-0.34	-0.48	+	+	+
GAS	5.33	-29.93	-11.11	6.22	-0.14	-7.28	+	+	+
P_C	-4.84	-16.17	-0.18	-4.20	0.55	-1.37	+	+	-
ELY	-0.12	-3.09	-6.31	-0.09	0.26	-4.25	+	+	+
I_S	-0.42	-3.91	-2.90	-0.63	0.65	-2.53	-	+	+
CRP	0.03	-2.47	-1.19	-0.32	0.57	-1.44	-	+	-
OMN	-0.11	-1.31	-0.64	-0.26	0.12	-0.62	-	+	+
AGR	0.48	-3.17	-0.17	-0.24	0.21	-0.62	-	+	-
SER	-0.42	0.49	0.19	-0.06	-0.10	0.17	+	-	-

- The US energy sectors receive huge benefit by the US withdrawal. (e.g. -33.5 to -1.93 (Coal))
- Japan industrial sectors decrease the output.

Impact on each sector (non-Annex+FSU)

	With the US ratification			Without the US ratification			Direction of Change		
	CHN	IND	FSU	CHN	IND	FSU	CHN	IND	FSU
COL	-2.71	-1.3	-4.2	-1.61	-0.76	-2.45	+	+	+
OIL	-2.55	-3.1	-3.1	-0.36	-0.4	-0.36	+	+	+
GAS	0	0.26	-2.41	0.25	0.27	-2.73	+	+	-
P_C	2.65	4.25	-0.47	0.38	0.44	-0.74	-	-	-
ELY	0.16	-0.4	2.03	0.27	0.06	1.32	+	+	-
I_S	1.29	1.7	7.32	0.69	0.93	3.74	-	-	-
CRP	1.74	1.91	3.26	0.6	0.57	1.32	-	-	-
OMN	0.96	0.79	0.88	0.31	0.26	0.37	-	-	-
AGR	0.28	0.17	1.07	0.03	0.02	0.26	-	-	-
SER	-1.9	-0.84	-0.53	-0.61	-0.29	-0.17	+	+	+

- **Non-Annex countries' industrial sector decrease the output.**
- **Lowered carbon abatement cost (from 25.4 to 17.1 US\$/tonne-CO₂) increase Annex countries competitiveness against non-Annex countries.**

Impact on CO₂ reduction

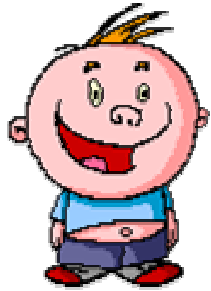
(% Change)

	With the US	Without the US
JPN	-22.00	-18.02
CHN	2.83	1.58
IND	0.88	0.17
USA	-30.37	1.11
E_U	-21.59	-18.26
FSU	3.24	2.03
NEX	4.16	1.94
NEM	4.09	1.62

- Carbon leakage is doubled (from **0.16** to **0.32**).
- Sum amount of CO₂ reduction decrease.

Conclusion

- The US, especially energy sector, receive huge benefit by the withdrawal from the Kyoto Protocol.
- Carbon abatement cost decreases by the withdrawal, because the US is the biggest buyer of GHGs credits. Japan and EU increase competitiveness against non-Annex countries, while Japan and EU lose competitiveness against the US.
- Sum of CO₂ reduction will decrease and efficiency of CO₂ reduction decrease as well.
- The US participation in the Kyoto Protocol is essential to harmonise sustainable economic development and GHGs reduction.



Thank You ! !
謝謝 ! !


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THE POSSIBILITIES ARE INFINITE