Modelación Macroeconómica: Análisis de Co-Beneficios

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Revisión del Estudio

Overview

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III. General Equilibrium Modeling
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Annex 2. Parameters of the Model
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Energy-Related Scenarios

- Scenario 0. The Benchmark Case
- Scenario 1. Oil production at 2004 level
- Scenarios 2-5. Oil production at 2004 level and technological change in production sectors
- Scenarios 6-7. Oil production at 2004 level, technological change in production sectors AND a carbon tax

Tradable Permits Scenarios

- Scenario 0-TP. The Benchmark Case
- Scenario 1-TP. Oil depletion and investment in NG
- Scenario 2-TP. Sc 1-TP, AND emissions trading: forestry and extractive sectors
- Scenario 3-TP. Sc 1-TP, AND emissions trading: forestry and emitters
- Scenario 4-TP. Sc 3-TP, AND emissions trading: forestry and emitters, PLUS elimination of subsidies to electricity.

Table IV. 1.1 Results of CGE model for 2015, Scenarios 0 - 7

(trillion pesos)

Scenarios	0	1	2	3	4	5	6	7
% growth in emissions	53.53	39.90	40.25	40.01	48.66	60.60	49.59	61.56
Emissions, million tons of CO2	4.3478	3.9617	3.9716	3.9649	4.2067	4.4868	4.2329	4.5135
% change relative to benchmark	0	-8.87	-8.65	-8.80	-3.24	3.19	-2.64	3.81
GDP, calculated by CGE model	2.3948	2.3771	2.3799	2.3904	2.4036	2.6540	2.4056	2.6557
% change relative to benchmark	0.0000	-0.7391	-0.6222	-0.1837	0.3675	10.8235	0.4510	10.8944
Capital stock	6.7673	6.6666	6.6774	6.6337	6.6622	5.6235	6.6748	5.6335
% change relative to benchmark	0.0000	-1.4880	-1.3284	-1.9742	-1.5531	-16.9019	-1.3669	-16.7541
Balance of Payments	-0.1231	-0.1327	-0.1330	-0.1328	-0.1263	-0.1231	-0.1264	-0.1231
% change relative to benchmark	0.0000	-7.7985	-8.0422	-7.8798	-2.5995	0.0000	-2.6807	0.0000
Government expenditure	0.3736	0.3772	0.3776	0.3788	0.3781	0.4300	0.3783	0.4302
% change relative to benchmark	0.0000	0.9636	1.0707	1.3919	1.2045	15.0964	1.2580	15.1499
Welfare								
Agent 1, poorer 20%	0.9304	0.9295	0.9299	0.9335	0.9347	0.9996	0.9348	0.9997
Agent 2, next 30%	2.7802	2.7774	2.7787	2.7895	2.7932	2.9891	2.7935	2.9894
Agent 3, next 30%	4.2990	4.3012	4.3021	4.3165	4.3190	4.6023	4.3189	4.6022
Agent 4, richest 20%	7.1335	7.1512	7.1506	7.1682	7.1664	7.6387	7.1647	7.6375
% change relative to benchmark								
Agent 1, poorer 20%	0.0000	-0.0967	-0.0537	0.3332	0.4622	7.4377	0.4729	7.4484
Agent 2, next 30%	0.0000	-0.1007	-0.0540	0.3345	0.4676	7.5138	0.4784	7.5246
Agent 3, next 30%	0.0000	0.0512	0.0721	0.4071	0.4652	7.0551	0.4629	7.0528
Agent 4, richest 20%	0.0000	0.2481	0.2397	0.4864	0.4612	7.0821	0.4374	7.0653

Summary Table IV.2.1. Quantities: Summary CGE Results Data for Mexico for 2015

	0	1	2	3	4	5
	Base level 2000	**INE 2**	**INE 3**	**INE 4**	**INE 5**	**INE 6**
GDP, trillions pesos	3.42000	5.25107	5.20683	5.22117	5.23442	5.22232
Oil output, trillions pesos	0.13080	0.20080	0.14900	0.14590	0.14950	0.14930
Power output	0.06010	0.09230	0.09340	0.09320	0.09380	0.09330
Consumption	2.28630	3.51080	3.55180	3.55070	3.54820	3.54800
Imports	1.00780	1.54740	1.54740	1.54740	1.54740	1.54740
Exports	1.09580	1.68260	1.63950	1.63680	1.64010	1.63830
Exports oil	0.11840	0.18190	0.13480	0.13170	0.13500	0.13480
BoP surplus	0.08800	0.13520	0.09210	0.08940	0.09270	0.09090
Cumulated welfare agent 1	1.62680	1.62680	1.63260	1.63300	1.63320	1.63250
Cumulated welfare agent 2	4.86090	4.86090	4.87660	4.87750	4.87810	4.87630
Cumulated welfare agent 3	7.52070	7.52070	7.57630	7.57490	7.57290	7.57330
Cumulated welfare agent 4	12.48600	12.48600	1.26085	1.26003	1.25904	1.25987
Terminal capital stock	13.78780	13.78780	1.34460	1.34994	1.35594	1.35076
Cumulated Govt. revenue from PEMEX	0.01930	0.02970	0.02740	0.02870	0.02740	0.02750
Cumulated Govt. revenue from CFE	0.00250	0.00380	0.00380	0.00380	0.00380	0.00380
Cum. Govt revenue from other sources	0.02542	0.39020	0.38960	0.38830	0.38820	0.38820
CO2 Emissions, million tons	3.147943	4.833775	3.738845	3.640458	3.753635	3.74789

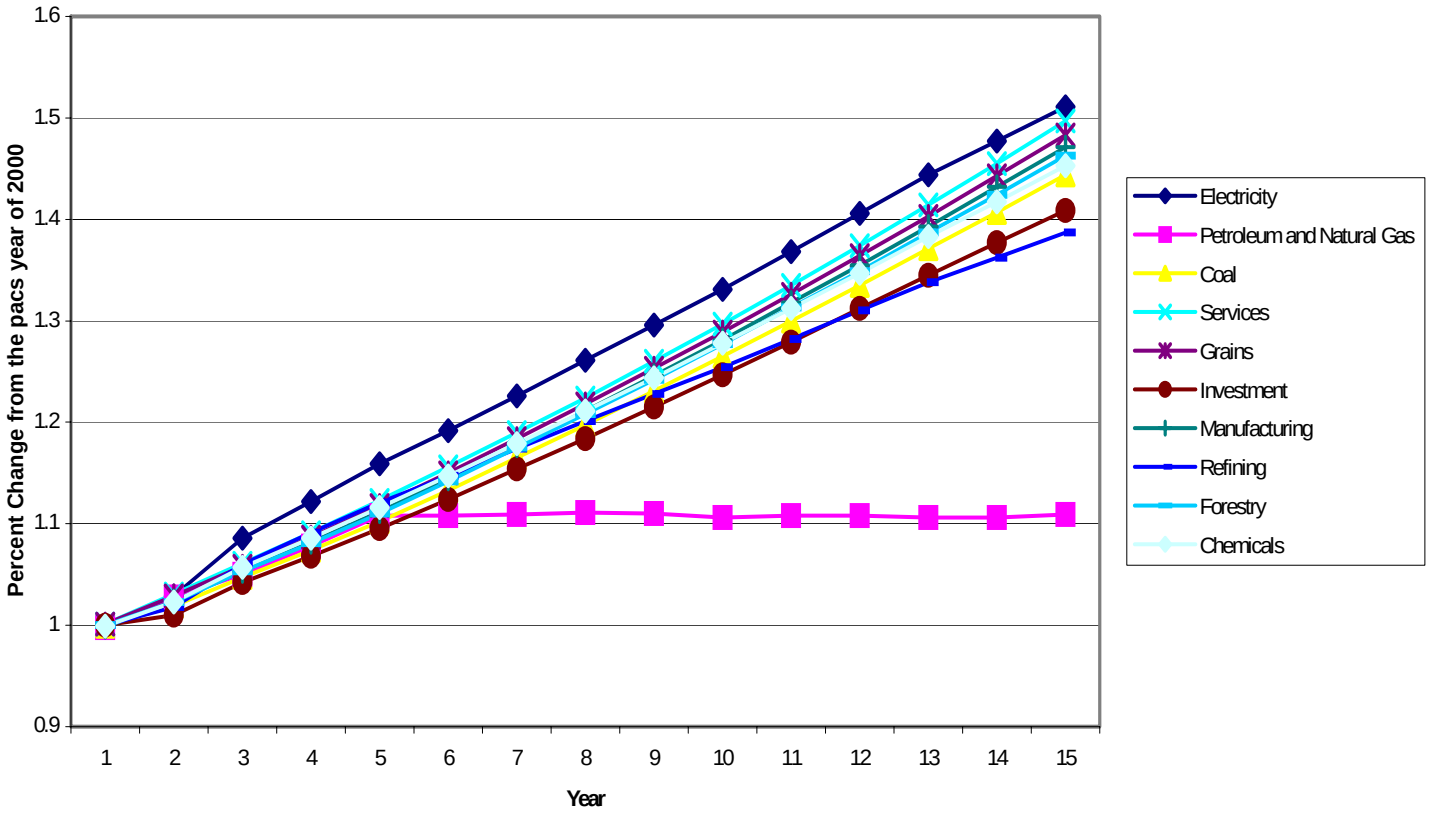
Summary Table IV.2.2 Results for Mexico 2015

(Percentage changes from respective scenarios compared to Scenario 0)

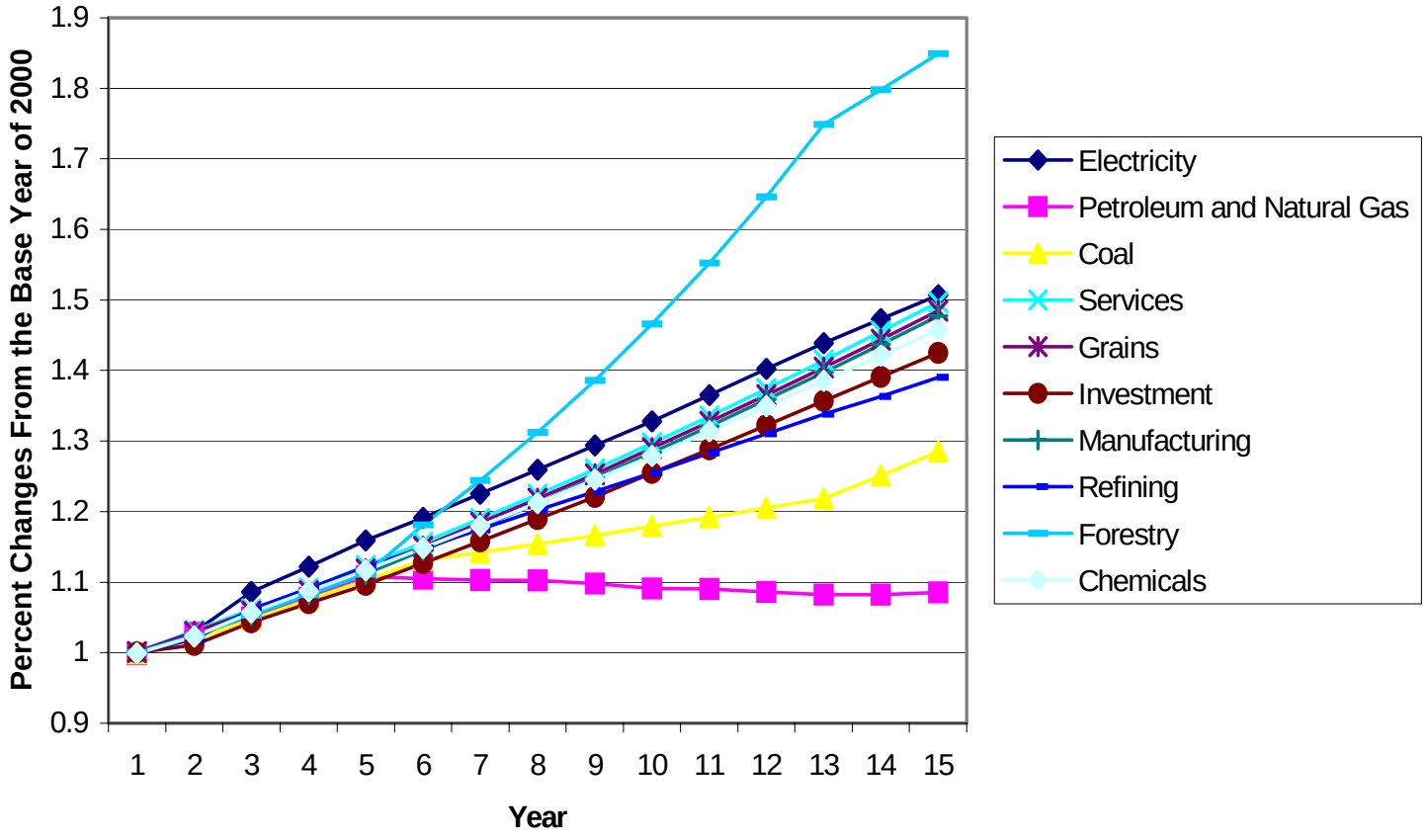
	Scenario1	Scenario2	Scenario3	Scenario4
GDP, trillions pesos	-5.771%	0.275%	2.020%	-0.231%
Oil output, trillions pesos	-25.797%	-2.081%	0.336%	-0.134%
Power output	1.192%	-0.214%	0.428%	-0.533%
Consumption	1.168%	-0.031%	-0.288%	-0.006%
Imports	0.000%	0.000%	0.000%	0.000%
Exports	-2.562%	-0.165%	0.037%	-0.110%
Exports oil	-25.893%	-2.300%	0.148%	-0.148%
BoP surplus	-2.562%	-0.165%	0.037%	-0.110%
Cumulated welfare agent 1	0.357%	0.025%	0.037%	-0.031%
Cumulated welfare agent 2	0.323%	0.018%	0.031%	-0.025%
Cumulated welfare agent 3	0.739%	-0.018%	-0.045%	-0.021%
Cumulated welfare agent 4	-89.902%	-0.065%	-0.144%	-0.013%
Terminal capital stock	-90.248%	0.397%	0.843%	0.061%
Cumulated Govt. revenue from PEMEX	-7.744%	4.745%	0.000%	-7.407%
Cumulated Govt. revenue from CFE	0.000%	0.000%	0.000%	0.000%
Cum. Govt revenue from other sources	-0.154%	-0.334%	-0.513%	-0.513%

Scenario1:	INE 3 is compared to INE2
Scenario2:	INE 4 is compared to INE3
Scenario3:	INE 5 is compared to INE3
Scenario4:	INE 6 is compared to INE5

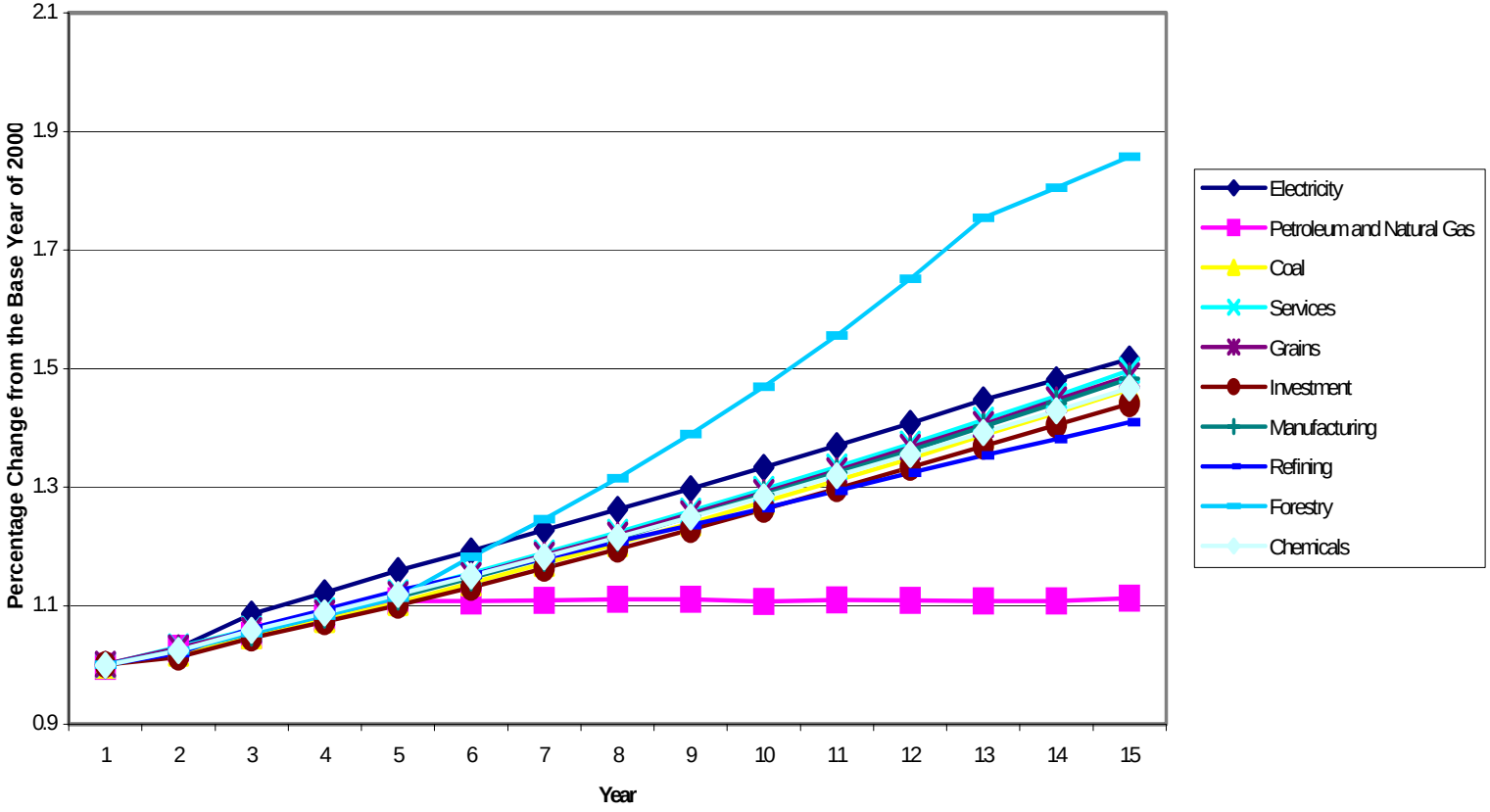
Economic Growth By Sector with Depletion in Oil and Investment in Natural Gas



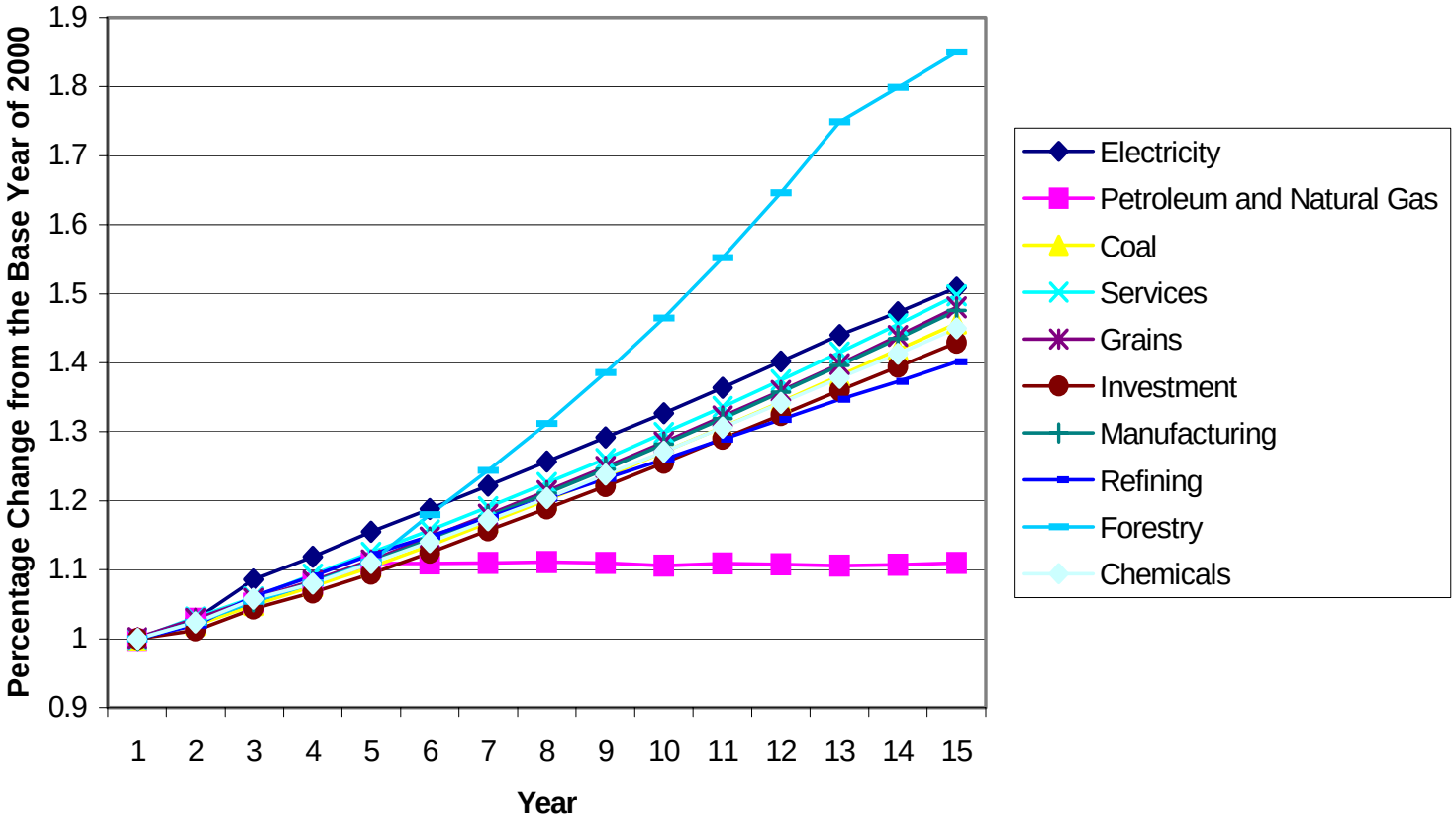
Sectoral Changes Following Issuance of Emission Permits for CO2 Between the Forestry and Extractive Sectors

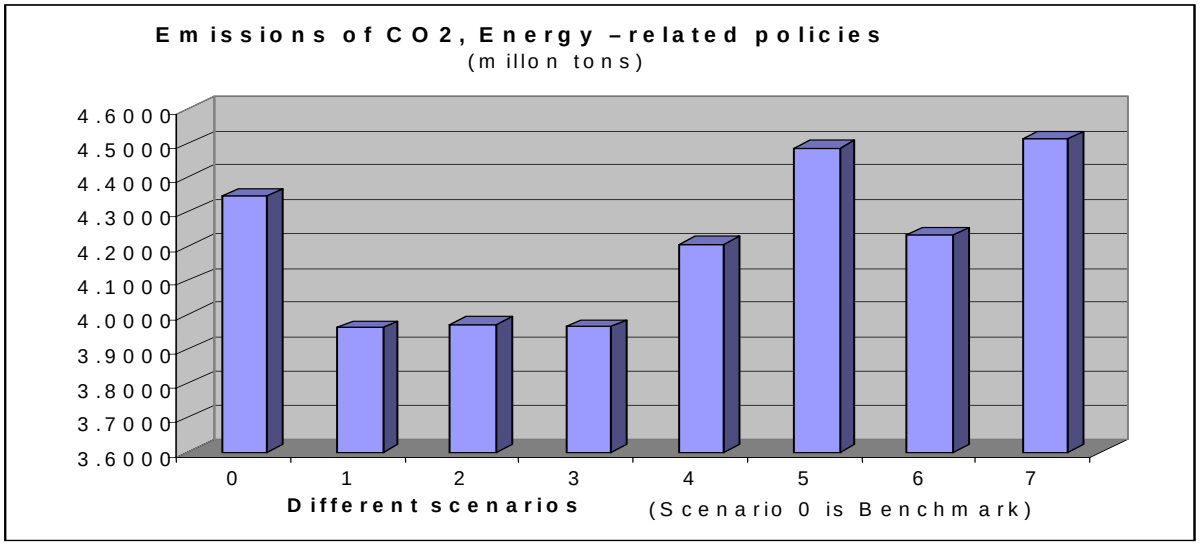


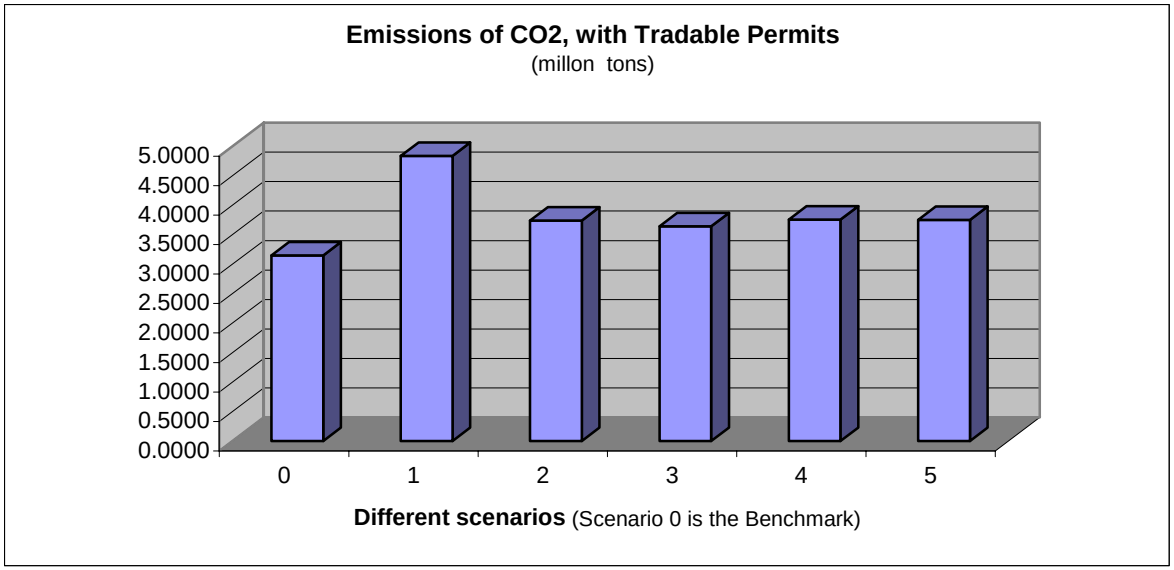
Sectroral Changes Following the Issuance of Emissions Permits for Trade Between the Forestry and Emmiting Sectors



Sectoral Changes Following the Issuance of Emissions Permits for Trade between the Forestry and Emitting Sectors, with deregulation of Electricity




Emissions of CO2, Energy –related policies
(millon tons)
4.6000
4.5000
4.4000
4.3000
4.2000
4.1000
4.0000
3.9000
3.8000
3.7000
3.6000
0
1
2
3
4
5
6
7
Different scenarios
(Scenario 0 is Benchmark)


Emissions of CO2, with Tradable Permits
(millon tons)
5.0000
4.5000
4.0000
3.5000
3.0000
2.5000
2.0000
1.5000
1.0000
0.5000
0.0000
0
1
2
3
4
5
Different scenarios (Scenario 0 is the Benchmark)

Conclusions

- Emissions trading gives better results than any energy related policy in terms of emission reductions.
- If other indicators considered, no scenario is unambiguosly a winner.
- Policy-simulation tool: workshop.