

# Poverty, inequality, and climate policy

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- SDG1 and SDG10 on SDG13: Greater poverty and inequality levels might damages worse, leading to increased urgency on climate action.
- An important factor determining these two way interactions is the way in which climate damages will accrue across the income distribution.

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  - if  $\xi = 0$ , A loses \$110 (27.5%) and B loses \$110 (2.75%)
  - if  $\xi = -1$ , A loses \$200 (50%) and B loses \$20 (0.5%)

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- As a result, the effect of climate damages on measures of the income distribution are relatively small

	US	EUR	JAP	RUS	Eurasia	CHN	IND	ME	AFR	LtAm	OHI	OTH
$\xi = 0$	0.2	0.4	0.2	0.2	0.3	0.7	0.4	0.5	1.0	0.3	0.4	0.5
$\xi = -1$	0.5	0.8	0.4	0.3	0.5	1.4	0.7	0.9	1.8	0.6	0.7	0.8

Table: Change in Gini due to temperature increase from 1.5 to 2.5 degrees

	US	EUR	JAP	RUS	Eurasia	CHN	IND	ME	AFR	LtAm	OHI	OTH
$\xi = 0$	0.3	0.6	0.3	0.3	0.4	1.2	0.5	0.7	1.4	0.4	0.6	0.7
$\xi = -1$	0.7	1.3	0.7	0.5	0.8	2.3	0.9	1.3	1.5	0.9	1.1	1.2

Table: Change in Gini due to temperature increase from 2.5 to 3.5 degrees

# Damage distribution on optimal policy

But the effect on optimal policy is quite significant

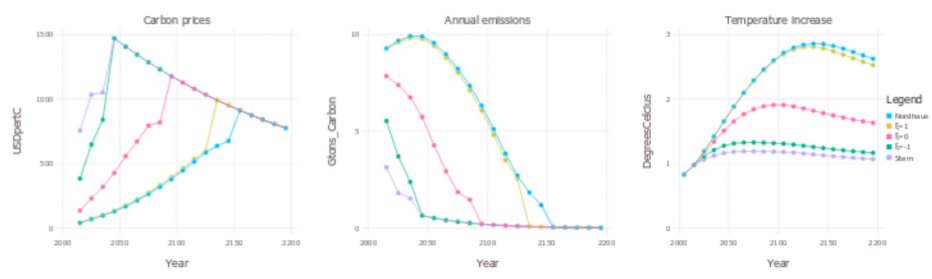


Figure: Optimal mitigation for different elasticities of damage  
Source: Dennig et al. 2015

# Impact on poverty

	US	EUR	JAP	RUS	Eurasia	CHN	IND	ME	AFR	LtAm	OHI	OTH
$\xi = 0$	-1.8	-4.3	-1.3	-1.1	-3.3	-5.7	-1.5	-3.8	-15.8	-3.8	-2.1	-3.3
$\xi = -1$	-5.0	-13.6	-3.5	-2.9	-10.7	-16.6	-3.4	-9.9	-57.1	-12.1	-5.6	-8.6

Table: Percentage change in share of bottom quintile due to temperature increase from 1.5 to 2.5 degrees

	US	EUR	JAP	RUS	Eurasia	CHN	IND	ME	AFR	LtAm	OHI	OTH
$\xi = 0$	-2.8	-6.9	-2.0	-1.7	-5.1	-9.7	-2.0	-5.6	-28.1	-5.8	-3.4	-5.0
$\xi = -1$	-8.1	-24.4	-5.5	-4.5	-18.2	-31.9	-4.7	-15.7	-100.0	-20.4	-9.2	-14.0

Table: Percentage change in share of bottom quintile due to temperature increase from 2.5 to 3.5 degrees



# What about simply reducing inequality?

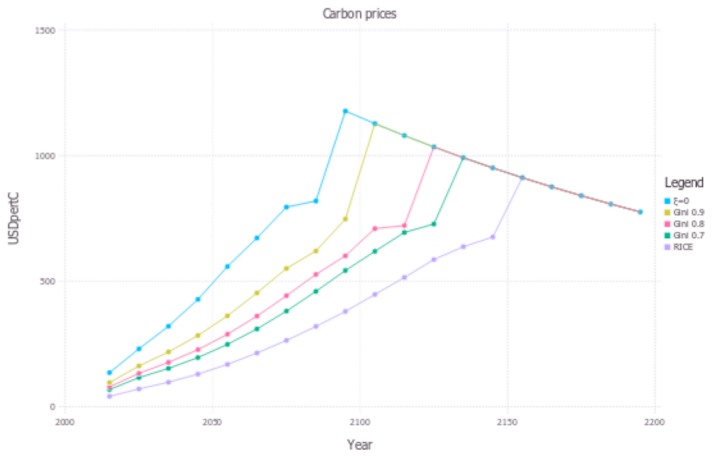


Figure: Optimal prices if the Gini coefficient is reduced to different fractions by end of century