What Drives Opposition to Carbon Taxes?

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Joint with Chloé Boutron, Erick Lachapelle, Matto Mildenberger and Kathryn Harrison

Let's put a price on carbon, they said

Carbon pricing is the most economically efficient way of reducing GHG emissions.

By making carbon-based energy sources more expensive, this will force producers to internalize the true social cost of carbon and incentivize consumers to make better decisions.

What could go wrong?

Political economy of carbon pricing

Carbon taxes have been the subject of intense political contestation.

Costs of climate mitigation are immediately visible and concentrated – while the benefits are diffuse and in the future.

Carbon fee-and-dividend schemes rebate the tax back to households → supposed to ameliorate the politics of carbon taxes.

What drives opposition to carbon taxes?

Material self-interest?

or

Ideological positions?

Are consumers reacting against the **actual costs** of carbon taxes, or against their **subjective perceptions of these costs**?

Data

7-wave survey of Canadians between 2019-2022 tracking public attitudes towards carbon pricing.

5 provinces which had some kind of carbon pricing policy in place.

Collect responses on subjective perceptions of price increases due to carbon pricing, as well as monthly household bills and other proxies for actual costs.

Key findings

Voting for the Conservative Party, relative to other parties, is associated with a **31-percentage point increase in the probability of opposing carbon taxes**, controlling for income, geography, and carbon costs.
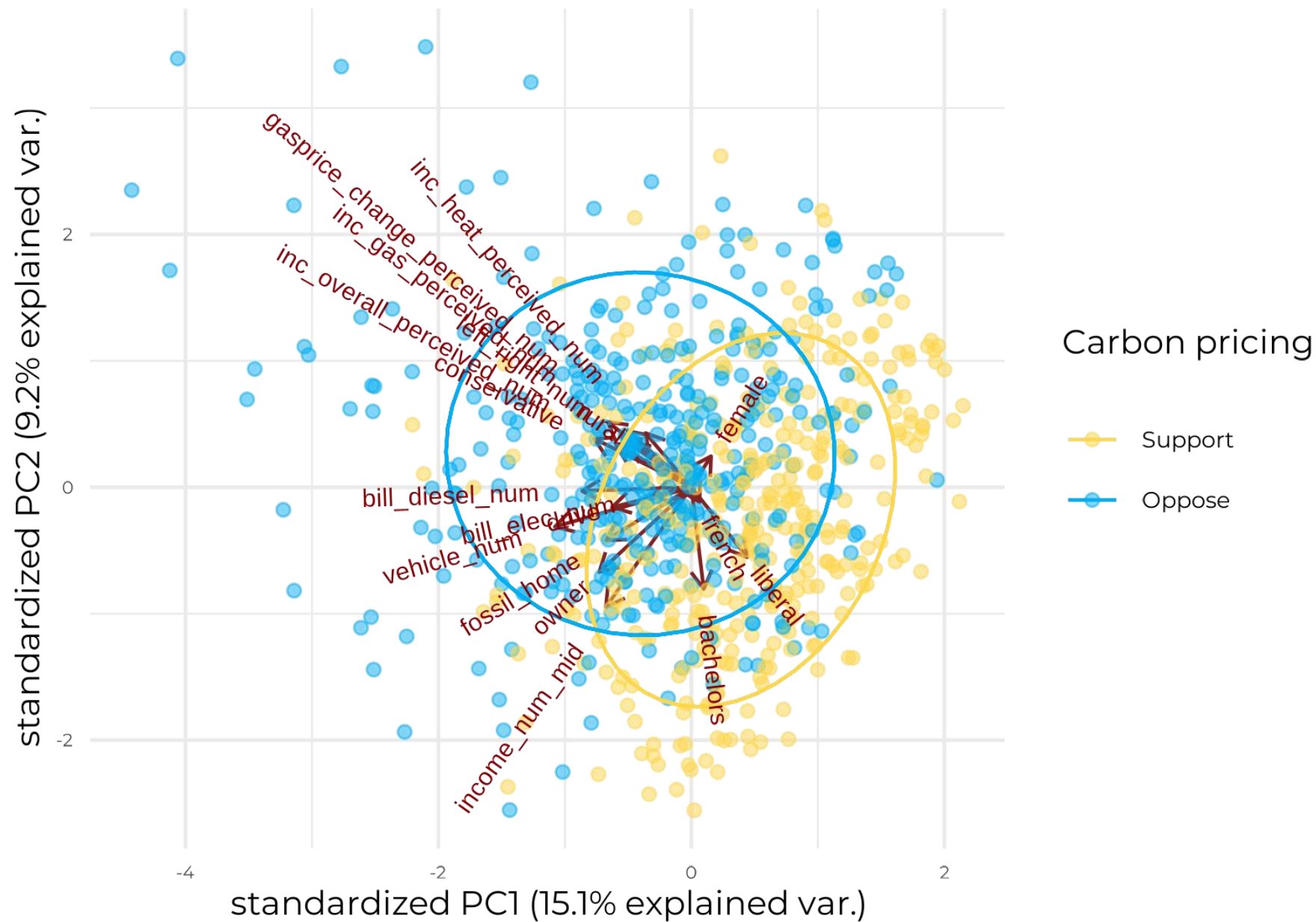
Living in a **rural** area and **owning a car** are strong predictors of opposition.

Conservatives **overestimate** the impact of carbon taxes on their monthly gasoline expenditures by **$402**.

Principal Components Analysis

Identifying axes of systematic variation in the data

Principal components of opposition to carbon pricing

Modeling cost drivers of carbon tax opposition

Approach

1. Estimate a **baseline model** of carbon tax opposition as a function of partisan identity and demographic controls

2. Estimate two models of carbon tax opposition as a function of **cost drivers**
   - Perceived costs
   - Actual costs

3. Put it all together and **evaluate the performance** of the nested models

	Oppose (dummy)	Support (dummy)
Education: High school	0.128*	0.003
Education: Some college	0.090	0.064
Education: College	0.010	0.165**
Education: Graduate or prof. degree	-0.075	0.229***
Income: $20,000-$40,000	0.077	-0.008
Income: $40,000-$60,000	0.088*	0.015
Income: $60,000-$80,000	0.046	-0.010
Income: $80,000-$100,000	0.032	-0.010
Income: $100,000 and over	0.079*	-0.025
Rural (dummy)	0.092***	-0.0884***
Left-right: 0-1 (1 is far right)	0.370***	-0.485***
Conservative (dummy)	0.353***	
Liberal (dummy)		0.262***
Constant	0.040	0.558***
N	1666	1666
Adj. R-squared	0.205	0.145

	Dependent variable: oppose carbon pricing (dummy)			
	Baseline	Perceived costs	Actual costs	Full model
Rural (dummy)	**0.092***	**0.112***	**0.139****	**0.161****
Left-right: 0-1 (1 is far right)	0.370***	0.364***	0.174	0.218
Conservative (dummy)	**0.353***	**-0.123***	**0.373***	**0.311***
Perceived ⬆ heating: $1-$50 per month		-0.097		-0.455*
Perceived ⬆ heating: $50-$99 per month		-0.134*		-0.253
Perceived ⬆ heating: $100 or more per month		0.099*		-0.463*
Perceived ⬆ gas: $1-$50 per month		0.112*		0.533***
Perceived ⬆ gas: $50-$99 per month		0.142**		0.474**
Perceived ⬆ gas: $100 or more per month		0.00001		0.672***
Perceived increase in overall costs (due to tax)		0.006***		-0.00000
Perceived increase in gas prices (cents/liter)				0.007**
Home owner (dummy)			-0.034	0.038
Home size (1000 square ft.)			0.00**	0.00
Home heating is fossil fuels (dummy)			0.172**	0.200**
Water heating is fossil fuels (dummy)			0.046	-0.029
Fossil fuel stove (dummy)			-0.010	0.008
Monthly electricity bill			-0.0004	-0.0004
Monthly gasoline/diesel bill			-0.0001	-0.0001
Drives to work (dummy)			-0.006	0.018
Number of vehicles owned			0.100**	0.075
Yearly kilometers driven			-0.00000	-0.00000
Home size * fossil home			-0.00000	-0.00001
Drives to work * Yearly kilometers driven			0.00001**	0.00001
Controls for education and income	👍	👍	👍	👍

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Disaggregating perceived costs

What drives subjective perceptions of the cost of carbon taxes?

	Perceived cost ↑ $ per month due to carbon pricing		
	Gasoline costs	Heating costs	Overall costs
Conservative (dummy)	**402.432***	10.011	-193.834
Rural (dummy)	-54.188		165.108
Household income	-0.0001	-0.0003	-.005
Household bills: Somewhat familiar	-243.430	26.796	2460.478
Household bills: Very familiar	-258.655	26.196	1344.216
Number of vehicles owned	-13.850		326.494
Drives to work (dummy)	100.159		-264.412
Yearly kilometers driven	0.004		0.011
Monthly gasoline/diesel bill	**0.699***		0.521
Perceived inc. in gas prices (cents/liter)	5.476		5.902
Conservative * Monthly diesel bill	**-0.560**		
Home owner (dummy)		-9.645	-2254.570**
Home size (square ft.)		0.0002***	-0.011
Home heating is fossil fuels (dummy)		-12.075	-714.903
Monthly electricity bill		0.389***	3.673

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Using machine learning for validation

Are these variables good predictors of opposition to carbon taxes?
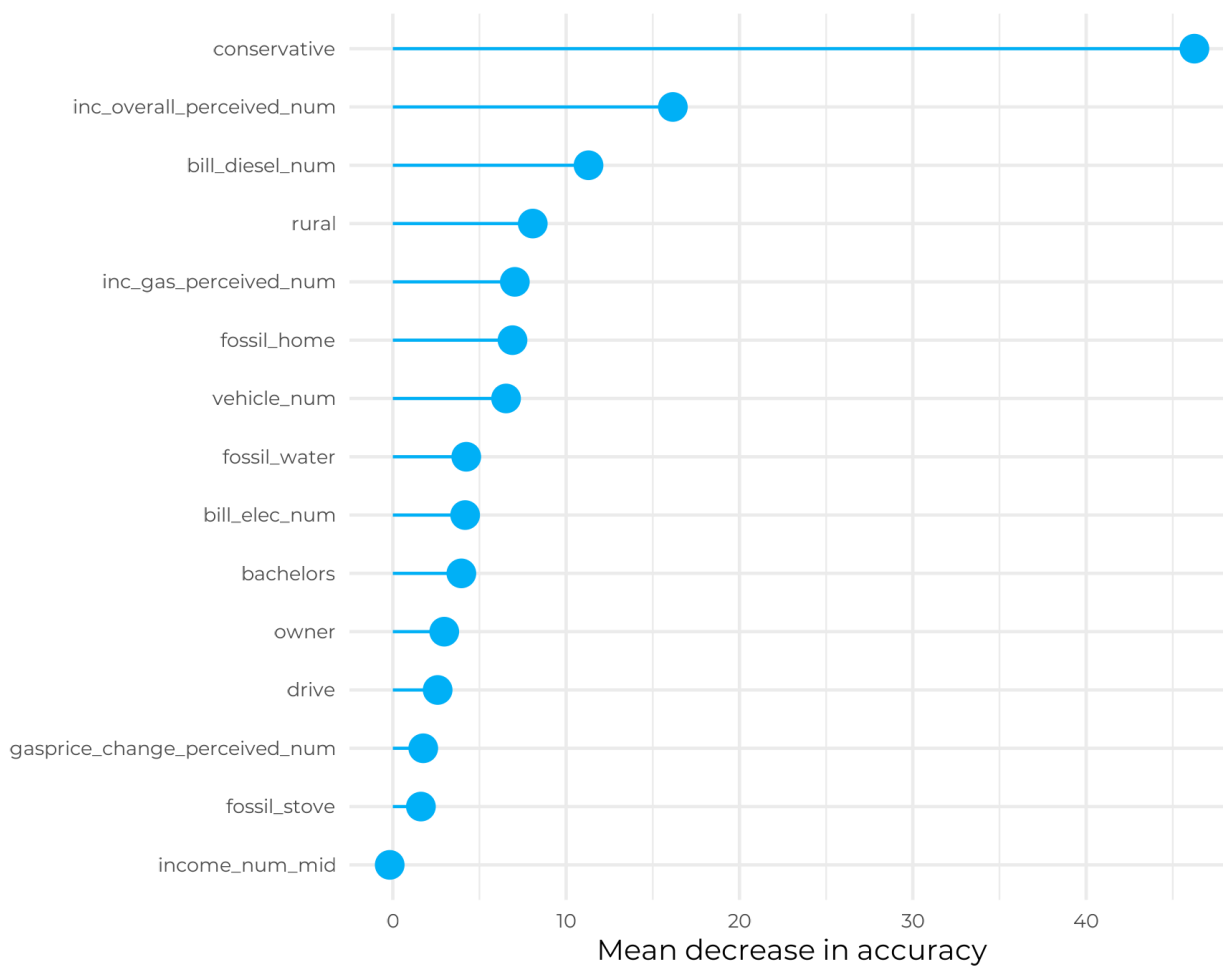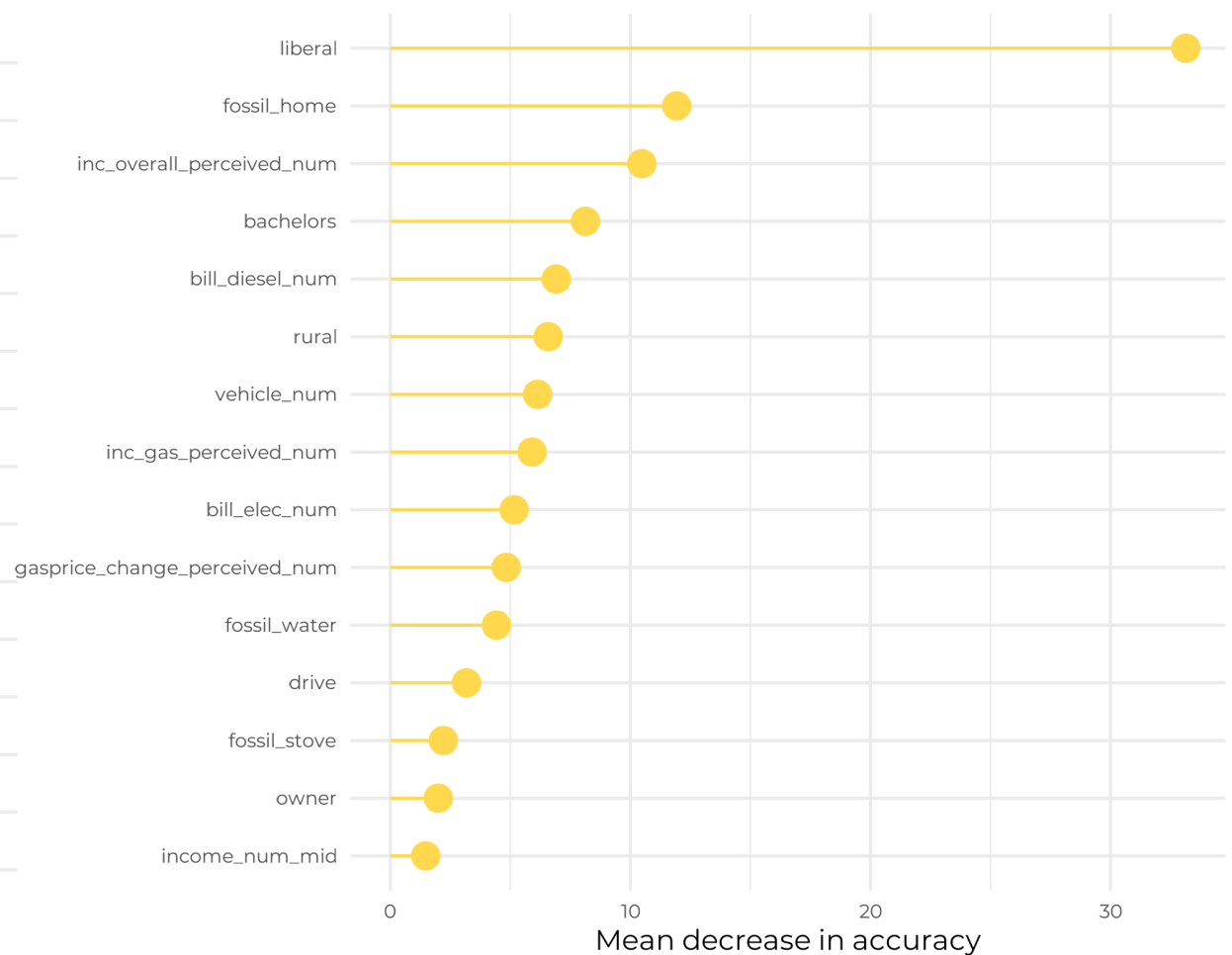
Classification tree
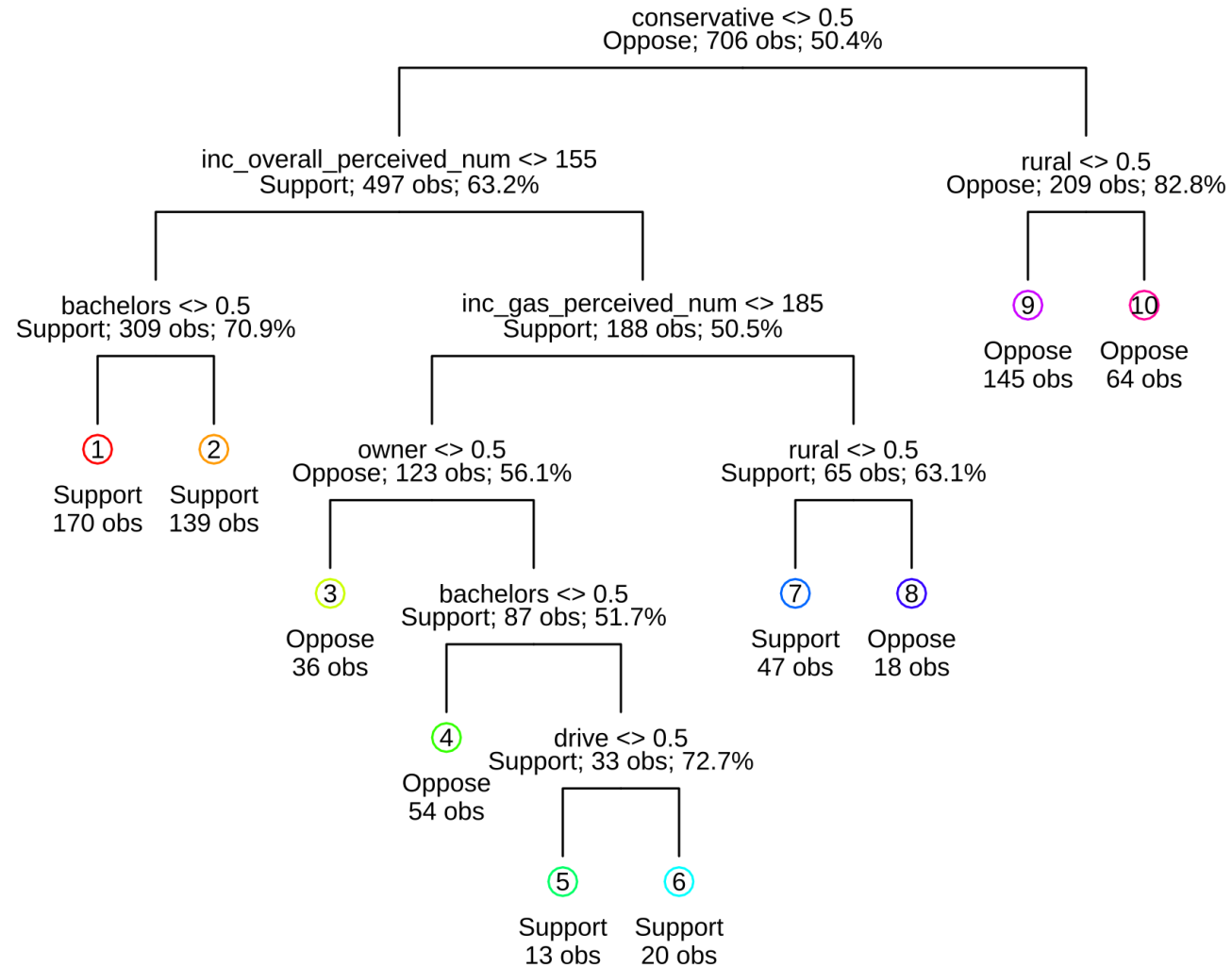
Total classified correct = 74.1 %

Random forest models

Variable importance
Predicting opposition to carbon pricing

Variable importance
Predicting support for carbon pricing

Take aways

Variations in the public's attitudes towards carbon pricing is mediated through their subjective understanding of their own political identities and economic circumstances.

Changes in perceived costs is explained largely by changes in political positions, especially for gasoline costs.

Opposition to carbon taxes is often rooted in ideology → explains the limited success of carbon fee-and-dividend schemes in ameliorating the politics of carbon pricing policies.

Thank you! Get in touch

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Code

⦿ https://github.com/walice/Carbon-Cost-Exposure

Run the code live at
⚙ https://mybinder.org/v2/gh/walice/Carbon-Cost-Exposure/HEAD