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Income Polarization and Climate Policy Backlash

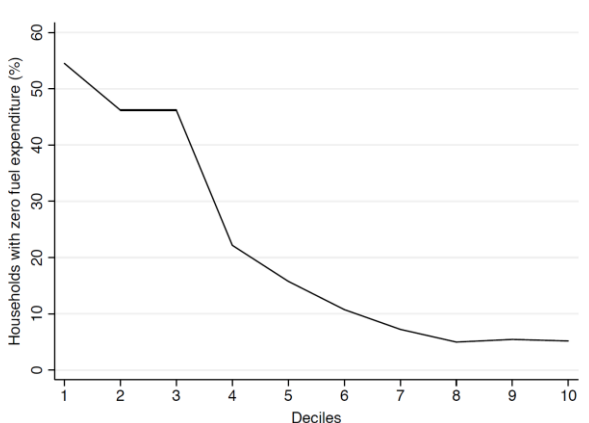
A recurring challenge for climate policy is political backlash. Over the last decade, we have seen prominent examples like the repeal of the carbon tax in Australia in 2014, the 'Yellow Vests' protest against the French carbon tax between 2018 and 2020, and the rollback of climate policy in the transport sector in Sweden between 2022 and 2024. A common argument put forward to explain this backlash is distributional concerns - that carbon and fuel taxes are regressive, disproportionately burdening low-income households. Yet, these prominent episodes often look like *middle-class* revolts. Studies find that the Yellow Vests supporters in France had 'modest incomes', but few came from the poorest deciles of the income distribution. Similarly, a study of Swedish fuel tax protesters found that they had relatively high incomes. This brief proposes a complementary explanation to regressivity: when the income distribution becomes more *polarized* - with stronger growth at both tails relative to the middle - the tax burden can shift toward the middle. A simple three-agent example illustrates how polarization can 'squeeze' the middle class, potentially undermining the durability of climate policy even when the poorest are compensated.

Climate policy backlash: why “not just the poor”?

Fuel and carbon taxes have repeatedly triggered political controversy and, in some cases, reversals. In France, the planned 2018 increase in the carbon tax became a focal point of the Yellow Vests protests. In Australia, the economy-wide carbon pricing introduced in 2012 was repealed just two years later. And in Sweden, the current government has reduced transport fuel taxes and the biofuel mandate to lower pump prices.

These episodes are often interpreted through the lens of tax progressivity (Douanne and Fabre 2022; Ewald et al. 2022): if energy and transport fuels are necessities, the tax-to-income burden can be higher for low-income households, with implications for policy stability. But the political patterns are frequently more complex. In France, many protesters were working or middle-class rather than poor (Dormagen et al. 2022). In Sweden, fuel tax protesters had, on average, relatively high incomes (Ewald et al. 2022),

Figure 1. Share of Swedish households with zero transport fuel expenditure, by income decile.



Source: Household expenditure survey data 1999-2012 from Statistics Sweden.

and households in the bottom third of the income distribution have no transport fuel expenditure at all, which weakens a simple “regressivity” narrative.

This motivates the question: what if the distributional conflict that matters politically is not only bottom-versus-top, but, more importantly, concerns what happens to the middle class?

This brief introduces a three-agent model to show that under income polarization, the relative tax burden may shift to the middle. Traditional tax progressivity indices may fail to capture this shift as they weight different parts of the income distribution. At the same time, such a change is likely to have large implications for the political action and ultimately, the environmental policy design.

A simple model of tax burden shifts

Consider an economy with three types of households: low-income (L), middle-income (M), and high-income (H). When a good like gasoline is taxed at a constant rate, each household's tax burden depends on how much of their budget they spend on the taxed good; their 'budget share.'

As incomes grow over time, these budget shares change. The direction of change depends on whether the taxed good is a necessity or a luxury. For necessities -- goods where spending doesn't keep pace with income growth -- the budget share falls as income rises. For luxuries, the opposite occurs. The speed at which budget shares change over time is thus governed by two factors: how responsive spending is to income changes (the



income elasticity), and each household's income growth rate.

To track how tax burdens shift between different income groups, we can examine the relative changes in their budget shares. With three income groups, we need to make three comparisons: poor versus rich, poor versus middle, and middle versus rich. If the budget share falls faster for the relatively richer household in all three comparisons, the tax becomes more regressive. If it falls faster for the relatively poorer in all three comparisons, the tax becomes more progressive.

However, a third pattern is possible: the burden can shift in a 'polarized' way, where the middle class loses ground relative to *both* the poor and the rich. In this case, whether the tax is progressive or regressive is ambiguous - it depends on which comparison we prioritize in our social welfare function.

Polarization squeezes the middle

We use the example of income polarization to illustrate how this middle-squeeze can occur. Following Esteban and Ray (1994) and Wolfson (1994), we define income polarization as a situation where the middle group's income grows more slowly than both the bottom and top groups. Under polarization, the middle class shrinks as a share of total income, while both the poor and rich expand their shares. Such income polarization has been well documented in the US and Europe (e.g., Goos et al. 2009; Autor 2022).

Table 1 shows a stylized numerical example of income polarization. Low- and high-income households have higher income growth compared

to the middle, whose income share shrinks. Furthermore, gasoline is a necessity (in high-income countries), and we assume uniform income elasticities so that the budget share declines as income grows for all three income groups.

Table 1: Example of income polarization

Household	Income	Growth rate	Income share
<i>L</i> (low)	20	6%	Increasing
<i>M</i> (mid)	50	1%	Decreasing
<i>H</i> (high)	100	5%	Increasing

What happens to relative tax burdens under these conditions? Because low-income households have the fastest income growth, their gasoline budget share falls the quickest. The middle class, with much slower income growth, sees its budget share fall more slowly. This means the middle class shoulders *more* of the tax burden relative to the poor.

Similarly, high-income households also experience faster income growth than the middle class, so their budget share also falls faster. Again, the middle class ends up shouldering more relative to the rich. The middle is thus 'squeezed' from both directions.

Importantly, when we compare the poor directly to the rich, the tax burden shifts in a progressive direction -- the poor's relative burden falls compared to the rich. Yet this 'traditional' progressive pattern masks the fact that the middle class is bearing an increasing share of the burden compared to everyone else.

The political implication is clear: when taxing a necessity under income polarization, the middle class can become relative losers even when the tax appears progressive in traditional comparisons between top and bottom. In this case, climate



policy backlash would come from working and middle-class groups rather than the absolute poorest, and compensating mainly the poor may be insufficient for political durability.

What this suggests for climate policy design

The mechanism illustrated above does not deny that tax progressivity matters. Rather, it highlights an additional vulnerability: in a polarized economy, a carbon tax on necessities may face backlash when the middle class is squeezed. Three practical implications for climate policy design follow from this.

First, protecting the bottom is essential, but may not be sufficient for political durability if the middle becomes the relative 'loser.' The traditional focus in the economics literature on the political economy of climate policy and its potential distributional effects is on measures like revenue recycling ('carbon dividends') - especially to the poor - to counter regressivity. This compensation may be insufficient for policy stability, however, and targeted measures toward the middle class may be needed (such as a reduction in middle-income tax rates).

Second, backlash may potentially be lower when there are credible substitutes, thereby reducing the budget share of the taxed goods over time. If, for instance, the middle-class are relatively more dependent on private transport, compensatory policies aimed at making electric vehicles more affordable may reduce both the objective burden and the intensity of climate policy aversion.

Third, summary indices of tax progressivity -- like the Kakwani (1977) and Suits (1977) indices -- may obscure 'middle-squeeze' patterns. A useful complement to these summary measures would thus be to report incidence separately for bottom--middle and middle--top comparisons, and to track how polarization changes these margins over time.

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