The Climate
and
the Economy

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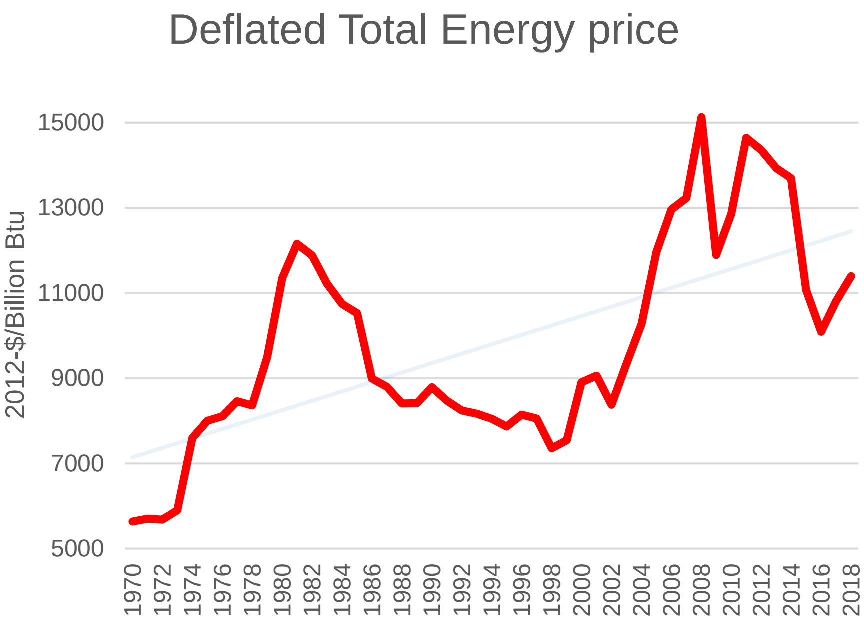
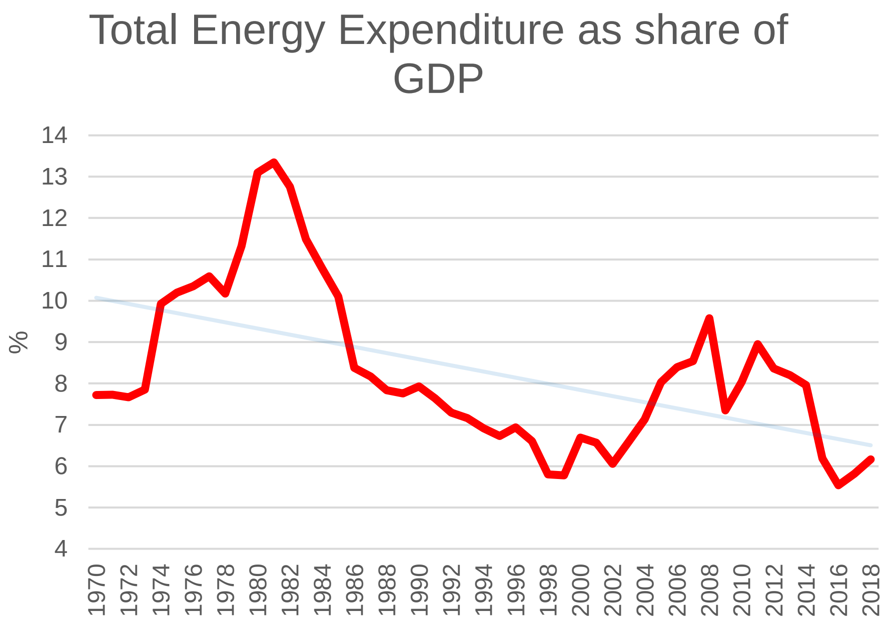
Growth is not the problem

- Narrative “oil and energy necessary for growth, so to stop global warming growth must stop” is wrong.
- In short run, economy uses different production factors in almost fixed proportions, but not in the long run.

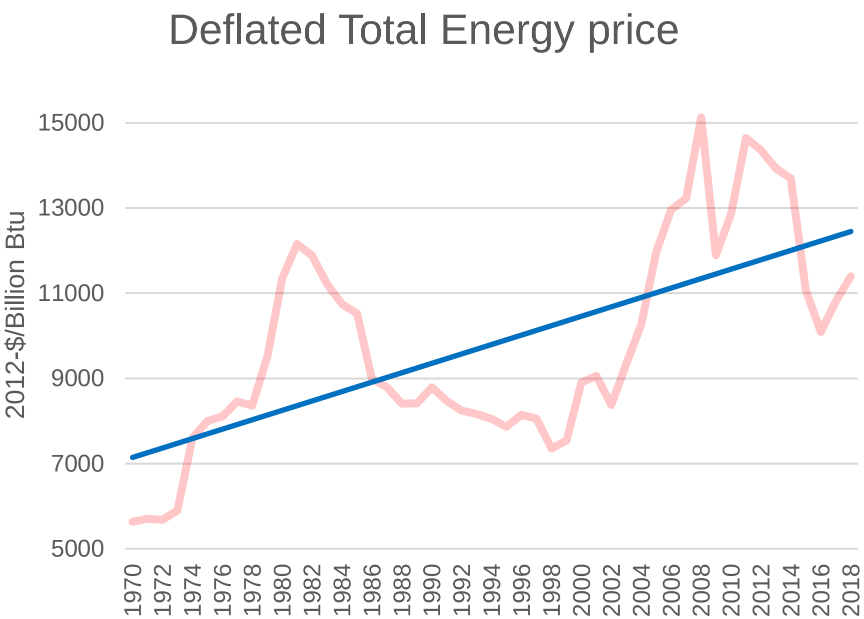
Energy price and energy spending

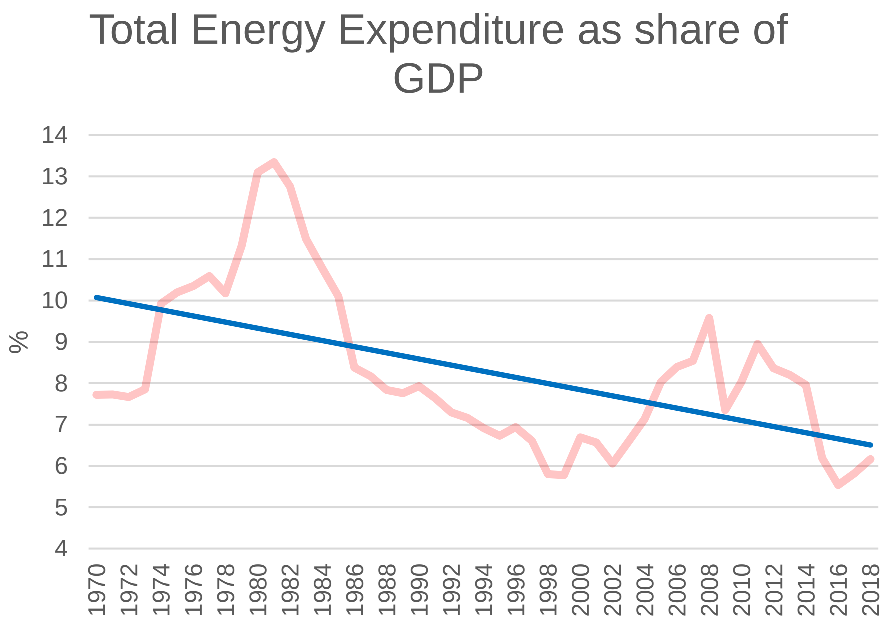




Source: Own calculations from EIA data for the U.S.

Energy price and energy spending
trends





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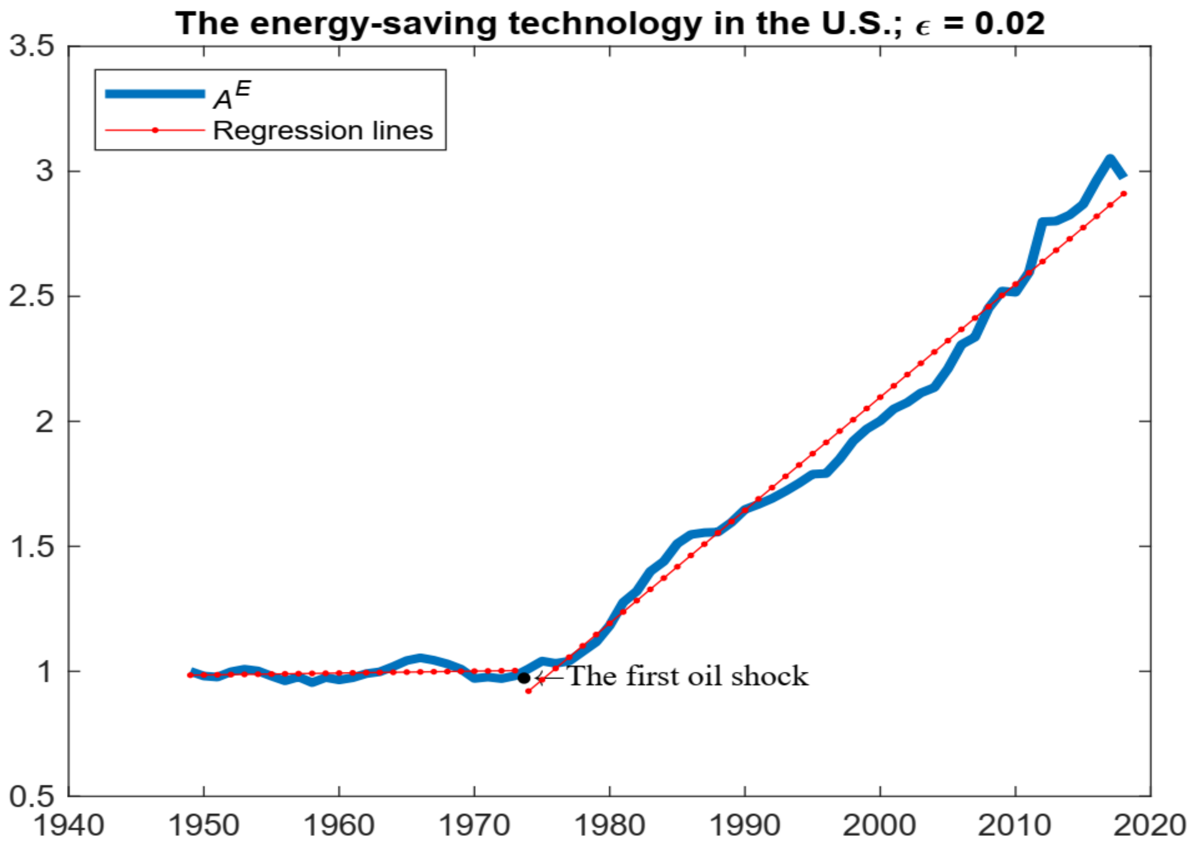


Source: “Directed technical change as a response to natural-resource scarcity”, Hassler. Krusell, Olovsson, WP 2020.

Emission trends can be broken

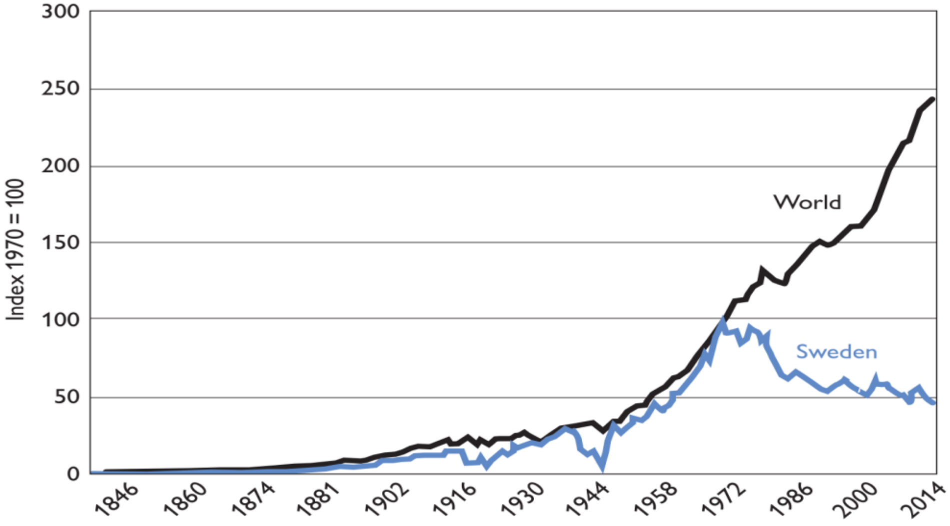


Figure 24 Long-term trend for Swedish and global emissions of carbon dioxide from fossil sources. Index 1970 = 100.

Source: Data from the Carbon Dioxide Information Analysis Center.

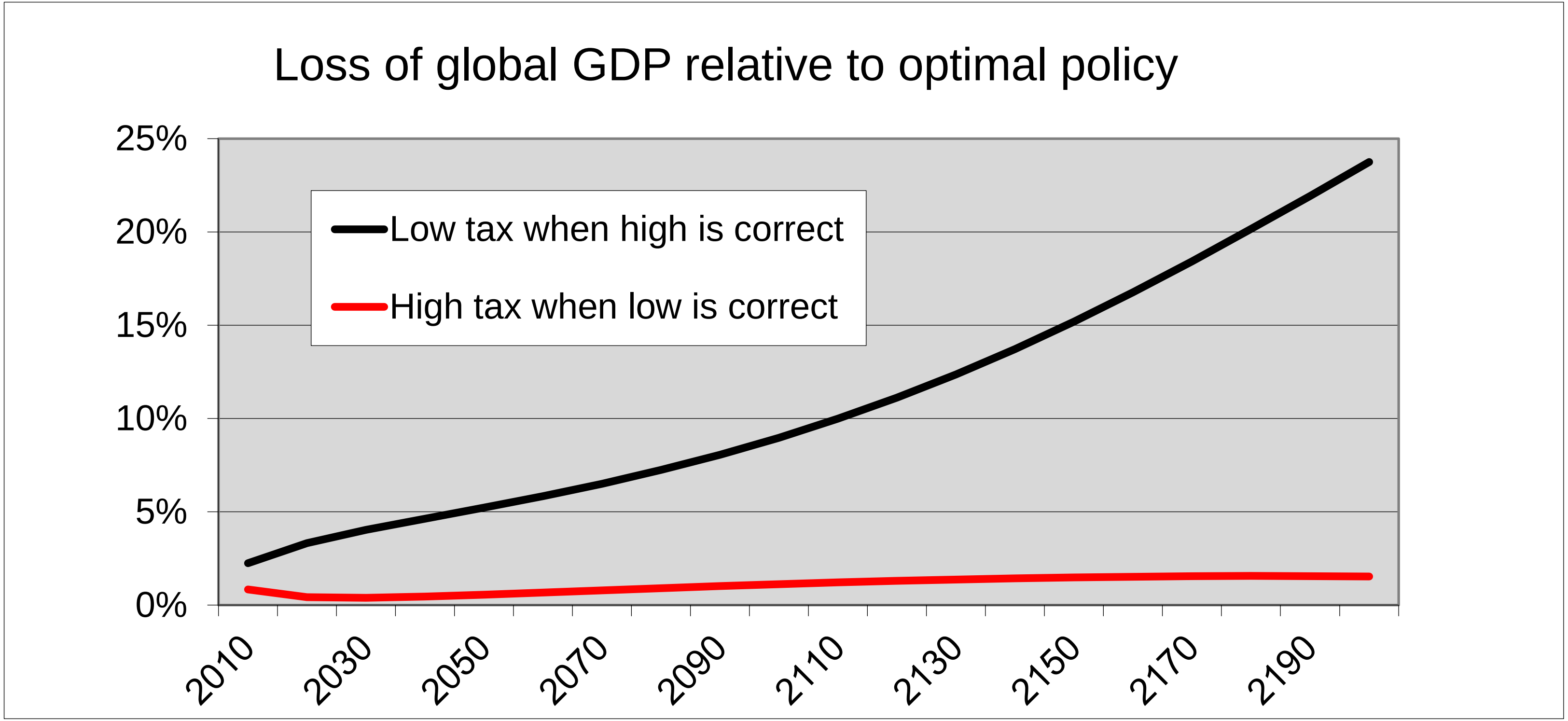
First set of conclusions

- The economy is quite flexible in the long run.
- Land, manhours, materials, energy, oil,… are required in almost fixed proportions in short run but technologies to save on them are developed when their prices rise.
- A price on emissions is therefore necessary and efficient. It allows the power of markets to be used to halt climate change.

Enormous uncertainty

- No question about direct greenhouse effect, but strength of feedback mechanisms (in particular cloud formation) very large.
- IPCC Models: Global warming proportional to accumulated emissions. 0.8 – 2.5 °C per TtC. Very wide! Now emitted around 0.6TtC.
- Similarly large uncertainty about consequences for human welfare.
- Standard cost-benefit calculations aiming for an “optimal tax” or exact value of Social Cost of Carbon not informative for policy.
- Policy errors cannot be avoided.

Cost of policy mistakes



Source: [“The Consequences of Uncertainty: Climate Sensitivity and Economic Sensitivity to the Climate”](), Hassler, Krusell and Olovsson, *Annual Review of Economics, 2018.*

Unknowns

- In a worst case Rockströmian scenario, an orderly transition to climate neutrality may not be sufficient or come too late.
  - Fast tipping points.
  - High climate sensitivity to emissions.
  - Larger than expected damages.
  - International policy cooperation breaks down.

Second set of conclusions

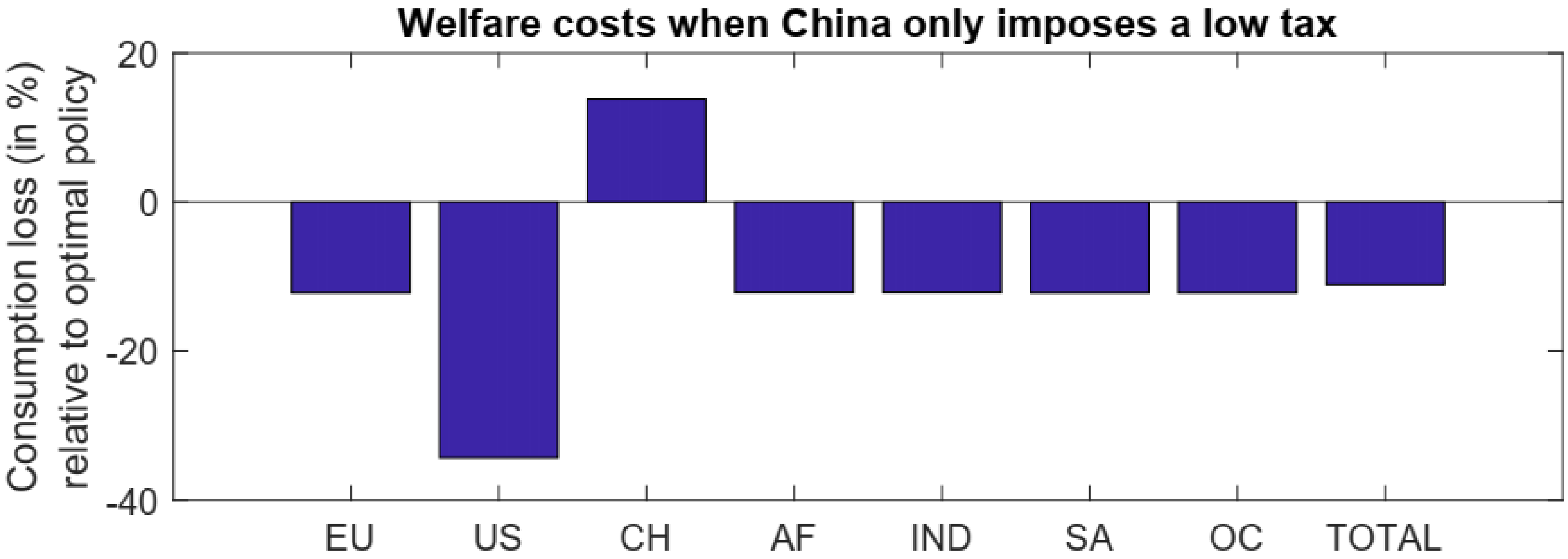
- Need to look for *robust* rather than *optimal* policies. Policies that give acceptable outcomes under as many scenarios as possible.
- Our work shows that a global carbon price at the level of the Swedish CO_2 tax is such a robust policy. Works like an insurance – not too costly if not needed but good to have if bad things happen.
- Also need a Plan B. Possibilities exists and are not necessarily expensive. Planning should start now.

Using Lightsails as parasols

Global solution needed

- Slowing and eventually halting climate change can become very expensive if not all parts of world participates.
- If China does not participate, carbon price in rest of world must be 20 times higher.

Costs if China does not participate



Source: “On the effectiveness of climate policies”, Hassler, Krusell, Olovsson and Reiter, WP 2020.

Third set of conclusions

- Local climate policy must have a global aim. Cleaning own backyard not enough. Moving emissions out of jurisdiction meaningless at best. Local emission targets highly questionable.
- Only subsidize development of scalable technologies for wide global use. Don’t mix climate policy and industrial policy.
- The plan for a climate neutral EU is a show case for the world. EU ETS key. Now plans to include heating and transportation. Makes Swedish goals like Transport Sector Goal for 2030 obsolete.

Summary Conclusions

1. A price on emissions is the efficient way to deal with climate change.

2. A high emission price (like Swedish CO_2-tax) is a robust policy, but we also need a plan B.

3. Local policies must be devised with global aim.