Discussion of "The transition to a green economy: Implications for monetary policy"

Matthias Paustian

All views are my personal opinions and do not reflect those of the Board or the Federal Reserve System.

FRB

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The questions this paper is after

- Is the green transition inflationary?
- What measure of inflation should central banks respond to?
- How does climate/energy affect a welfare-based loss function?

My discussion

1. compare model response to carbon tax with empirical evidence
2. comments on the appropriate inflation rate to respond to

Effects of carbon price shocks: VAR evidence

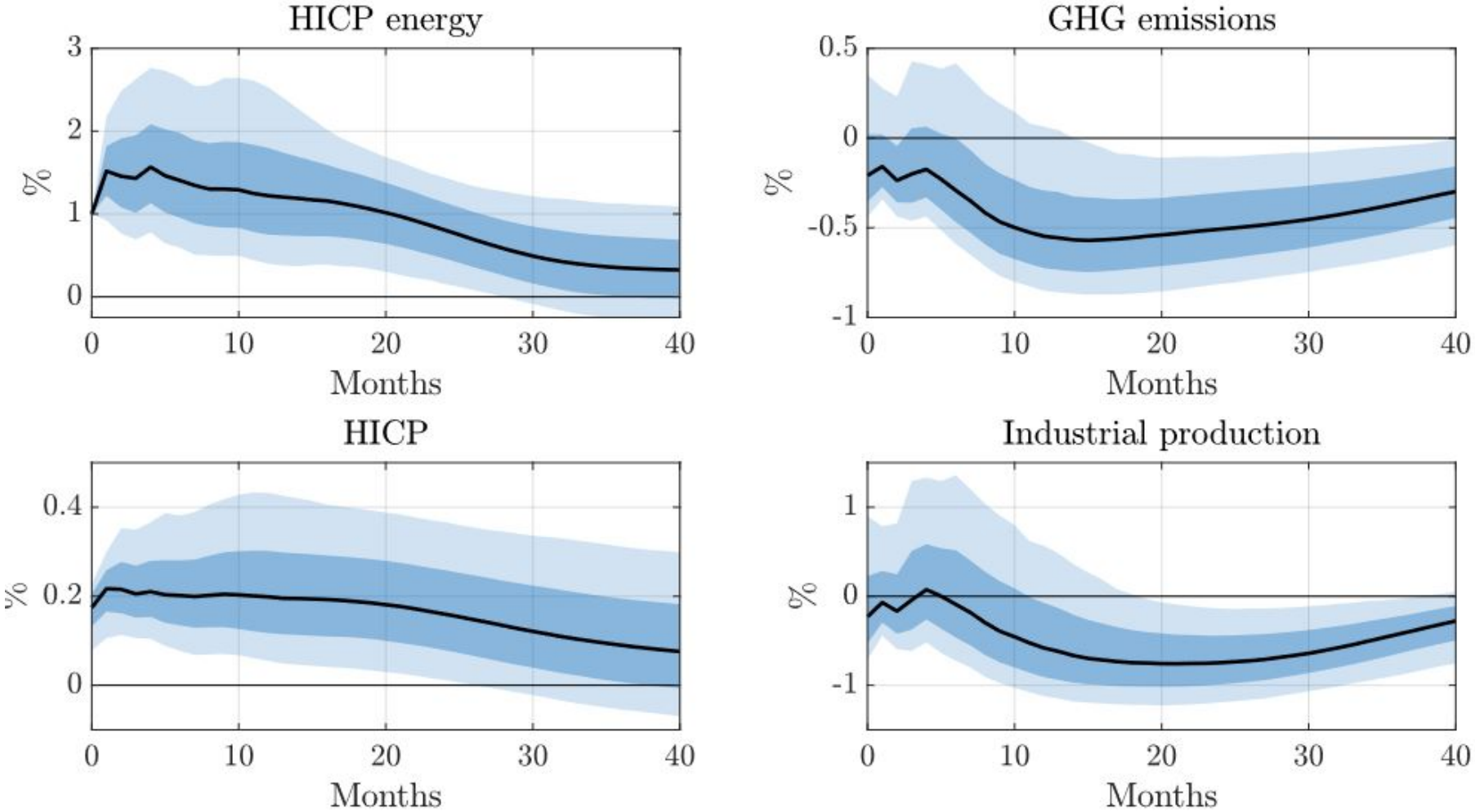

Figure 1: Source: Kaenzig (2022)

Effects of carbon price shocks: VAR evidence

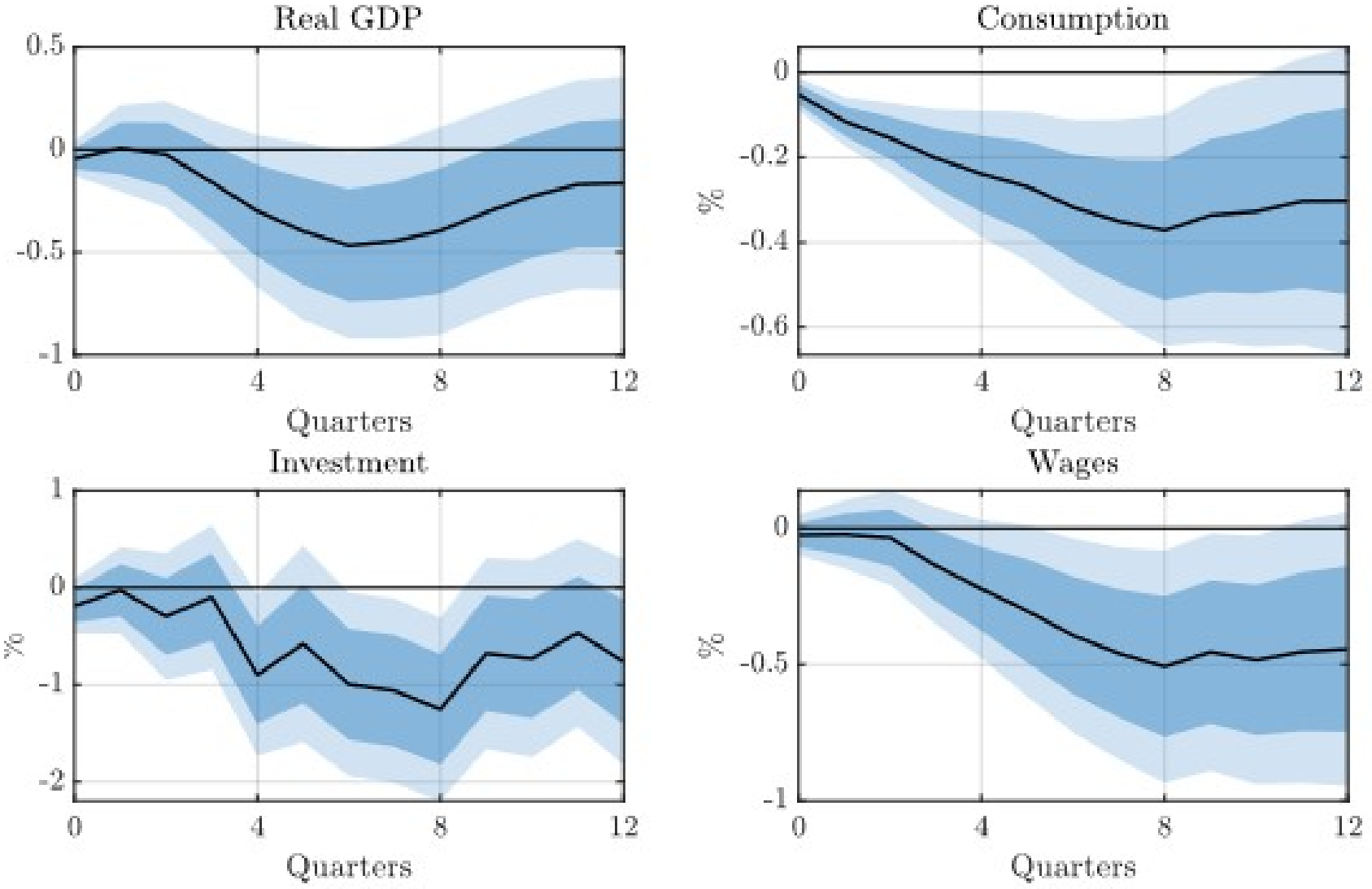

Figure 2: Source: Kaenzig (2022)

Inflation effects of carbon taxes: Local projections

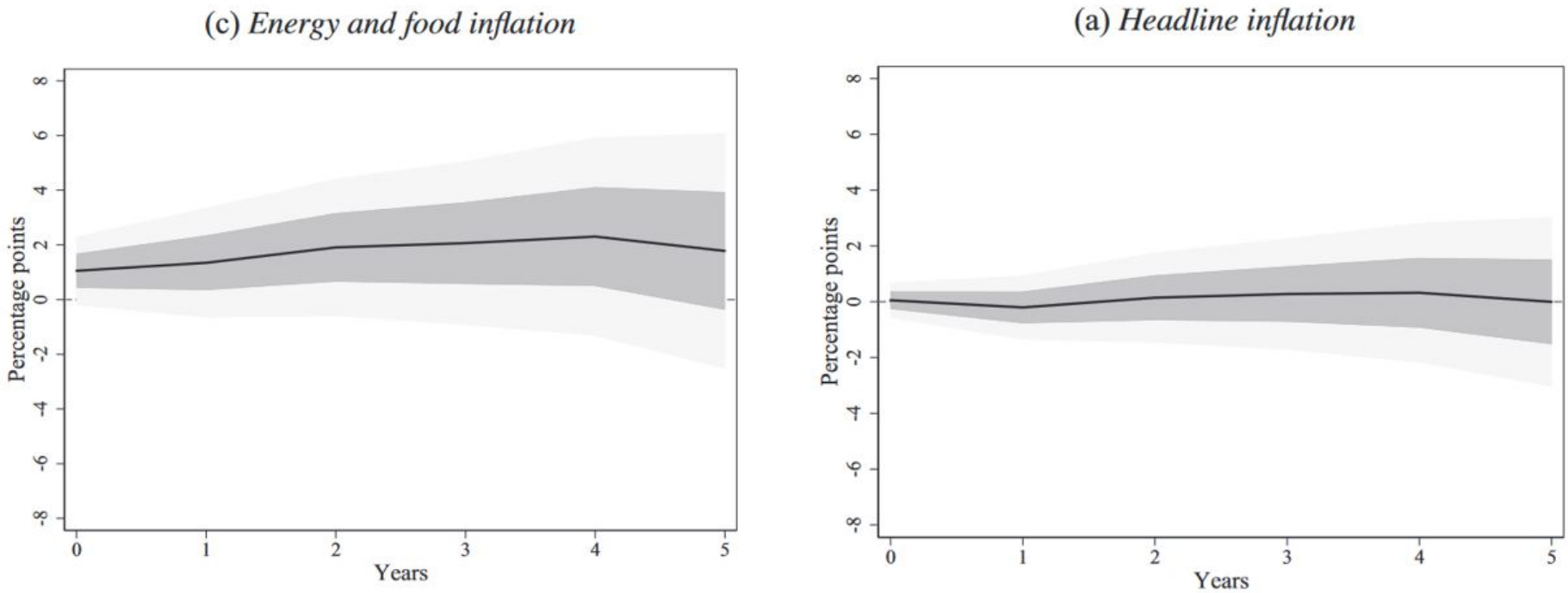

Figure 3: Source: Konradt and Weder di Mauro (2023)
Impulse is a permanent \$40/ton tax on 30 percent of emissions

GDP effects of carbon taxes: Local projections

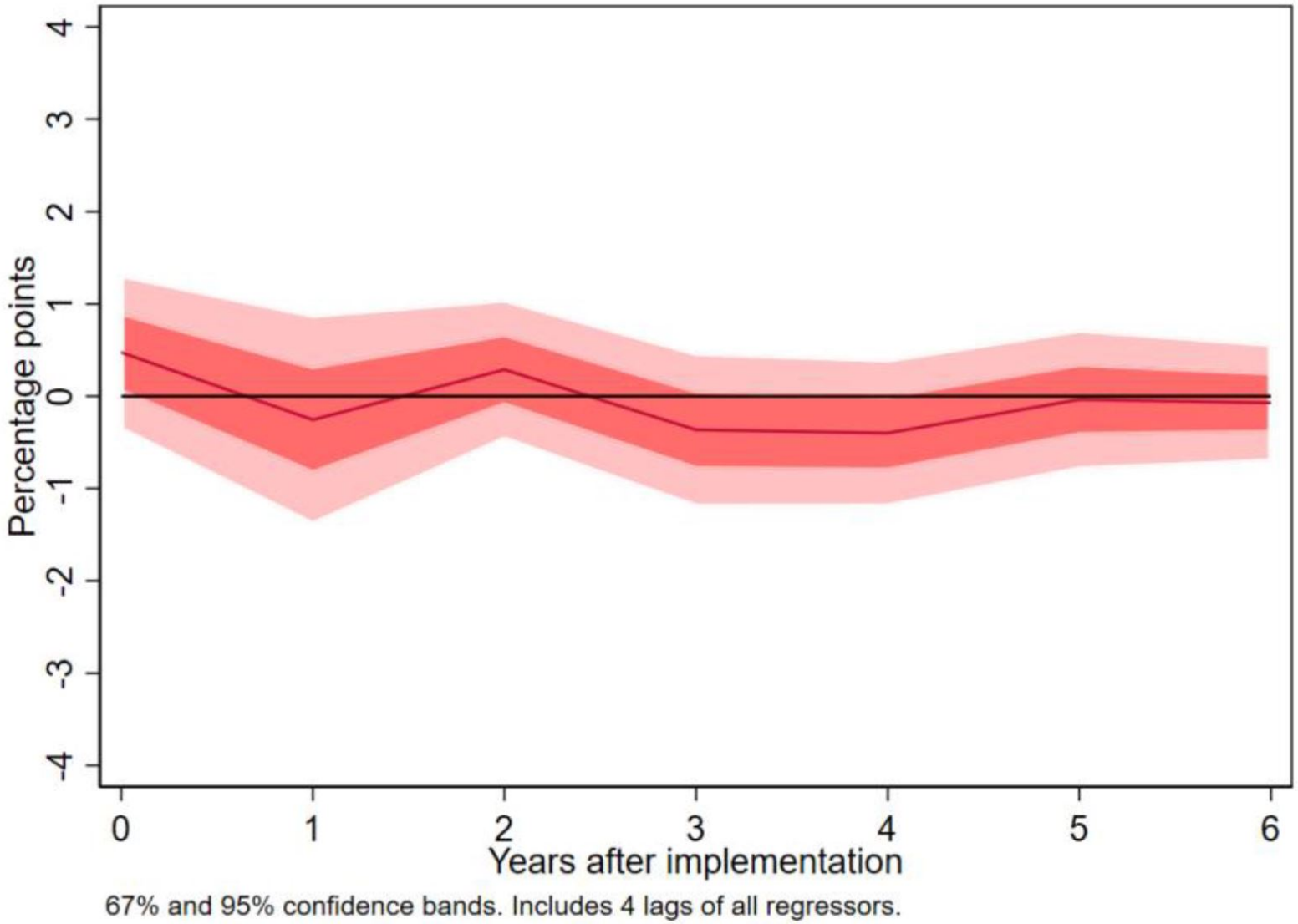

Figure 4: Source: Metcalf and Stock (2023)

Model: Inflation response to short-run carbon tax

A carbon tax that lowers emissions ten percent over one year.

- carbon tax raises price of fossil resource
- fossil energy is produced from fossil resource and labor
- fossil resource input falls, labor input rises
- energy price rises
- energy use falls (mix becomes greener)
- core goods are complements with energy
- core goods consumption falls
- core inflation also rises (energy as input)
- real wages fall, moderating the rise in core inflation

Quantitative results

- consumer energy prices rise almost 15 percent
- immediate and full pass through (energy prices are flexible)
- peak effect on headline inflation $\sim$ 0.5 p.p.
- peak effect on core inflation $\sim$ 0.2 p.p.
- "net" output falls by 1.5 percent at trough
- employment rises by 1.5 percent at peak
- carbon tax looks like an adverse shock to labor productivity

Qualitatively similar to Kaenzig (not as bad a "sacrifice ratio")

Inflation response in the model to long-run carbon tax

Increasing path for carbon taxes over 10 years (anticipated)

- energy prices increase driven by higher fossil prices
- core and headline inflation are barely affected
- key: anticipation of lower longer run aggregate demand
- fall in real wages strong enough to neutralize energy prices (?)
- likely to be different with imperfect anticipation

In line with Konradt and Weder di Mauro, perhaps not with Stock

What inflation rate to respond to?

- policy transmission lags $\rightarrow$ focus on persistent inflation
- energy price shocks are often short lived
- policy should look through transitory energy price shocks
- "conventional" view: respond to core inflation

What inflation rate to respond to?

Focus on inflation in sectors where prices are sticky (Aoki 2003)

- policy should minimize inefficient fluctuations in relative prices
- all firms identical except for visit from Calvo fairy
- all firms should charge same price, zero inflation achieves that
- in multi-sector model: focus on sticky price inflation
- this model: energy prices are flexible

Many models: respond to wage inflation (distortion matters most)

What the paper finds

- responding to core inflation can exacerbate the contraction
- I think what is going on is this:
  1. nominal interest rate runs of core inflation
  2. deflator to construct real rate uses headline
  3. responding to core lowers headline faster than core
  4. headline quickly back to steady state
  5. nominal rates still elevated due to sticky core inflation
  6. real rates are higher compared to headline targeting
- interesting empirical question:
- What measure of real interest rate governs aggregate demand?
- (long rates drive demand and wedge should be short lived ...)

Conclusion

If we can cope with this, perhaps we can cope with a carbon tax.

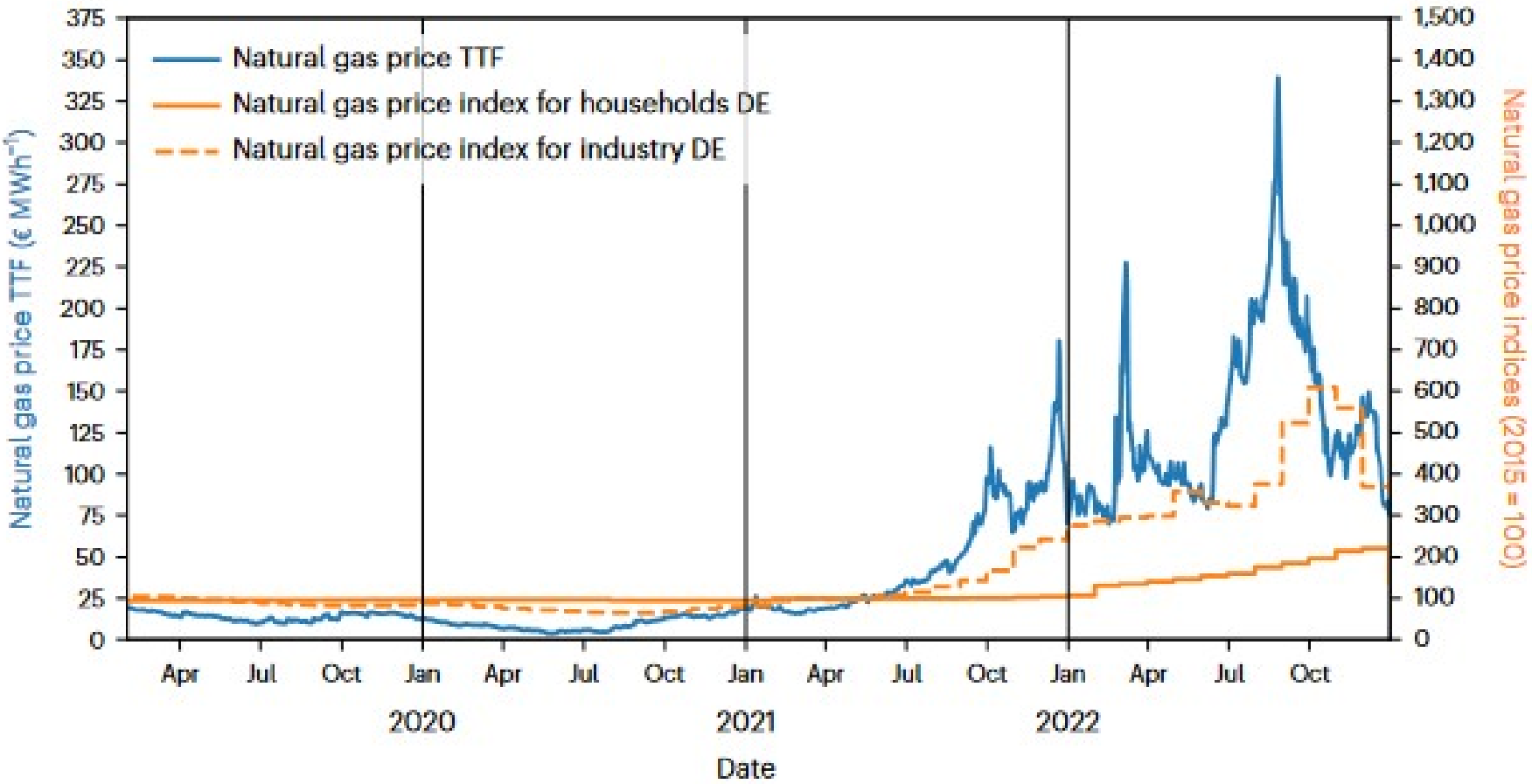

Figure 5: Source: Hirth et. al. (2023) in Nature