

The Macroeconomics of Climate Change Mitigation: The state of play and shortcomings

Discussion of

Gourinchas, Schwerhoff, and Spilimbergo, “New Challenges to Climate Policies
and

Hassler, Krusell, and Olovsson, “The Macroeconomics of Climate Change:
Starting Points, Tentative Results, and a Way Forward

James H. Stock, Harvard University

Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macro**economists need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

I strongly agree with this narrative at a high level – I will comment on the bits in **red**.

Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macro**economists need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

1) What does **bad** mean?

Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macro**economists need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

1) What does **bad** mean?

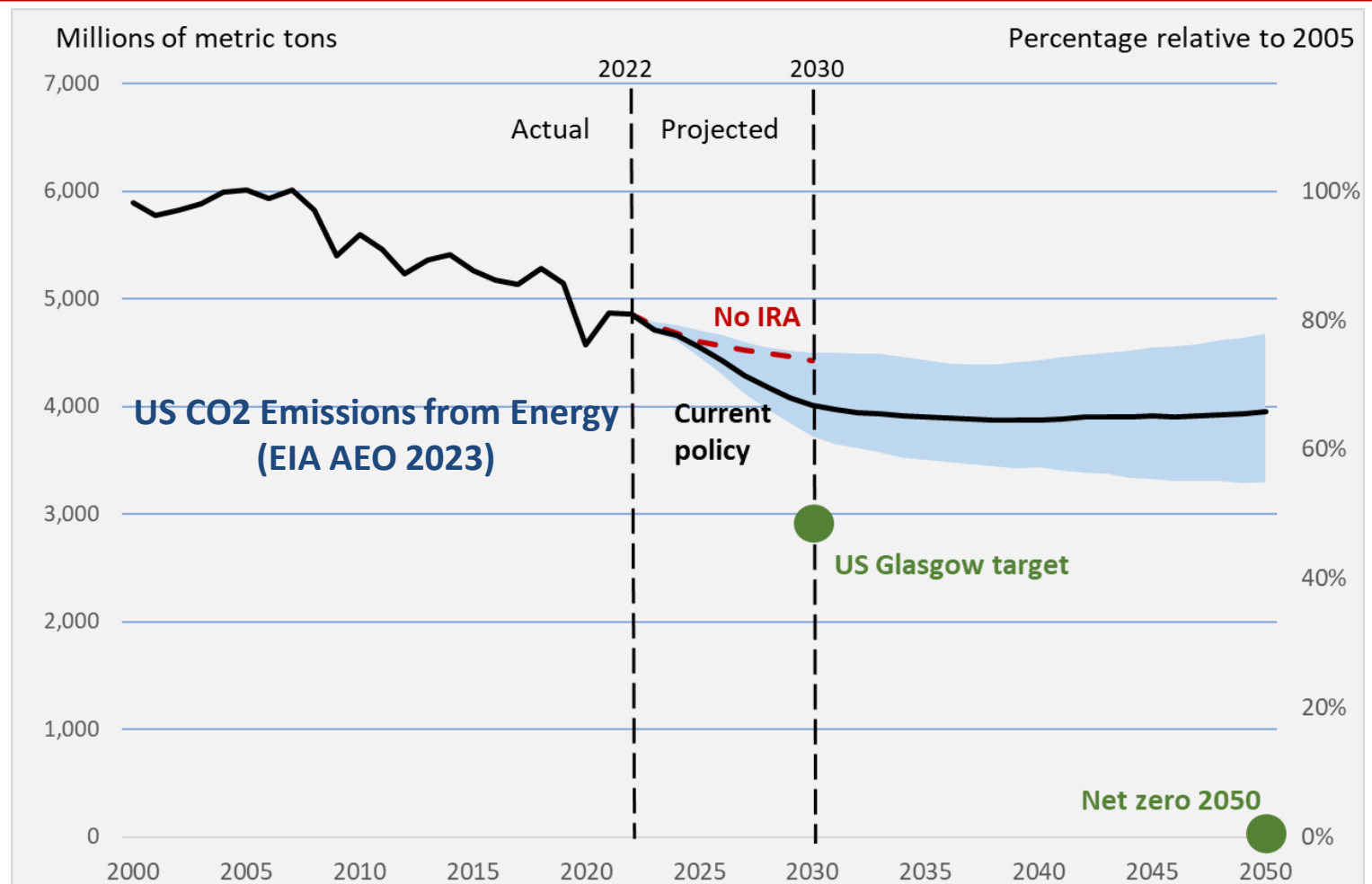
- GDP loss in 2100? (pre-2022 SCC, nearly all SCC papers)
- Monetized damages? (2022 SCC)
 - 2022 SCC is 190/ton CO2 (!)
- What about:
 - Migration & conflict?
 - Natural capital?
 - Species loss?
 - Rights of nature?
- *Digression*: I disagree with HKO conclusion 1

Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macro**economists need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

2) Despite passage of the IRA, the U.S. is not on track to meet its 2030 Paris target

Notes: U.S. CO₂ emissions from energy; excludes land use change. Source: U.S. Energy Information Administration, *Annual Energy Outlook 2023*



Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macroeconomists** need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

3) The IRA cost beneficial, not efficient, and arguably not scalable

- Likely total fiscal cost: \$800B - \$1T (10 year, not discounted; official CBO cost \$379B)
- IRA abatement costs per ton, various provisions:
 - Wind, solar tax credits: \$35/ton (Stock-Stuart) - \$60/ton (Bistline et al)
 - EV rebates: ~\$95/ton (Cole et al 2023)
 - Note: ~50% of EV tax credit is inframarginal
- Approximately same emissions reductions could be achieved by \$15 - \$25 carbon tax (Bistline et al (2023), Stock-Stuart (2021), US EIA (2022))
- Power sector 2030 emissions ~25% - 35% of 2005 (Bistline et al, Stock & Stuart, EIA)

So:

- Easily passes cost-benefit test
- Clearly only first step – even in the power sector
- What is the fiscal budget constraint for climate policy?
- What should be/will be next policy steps?

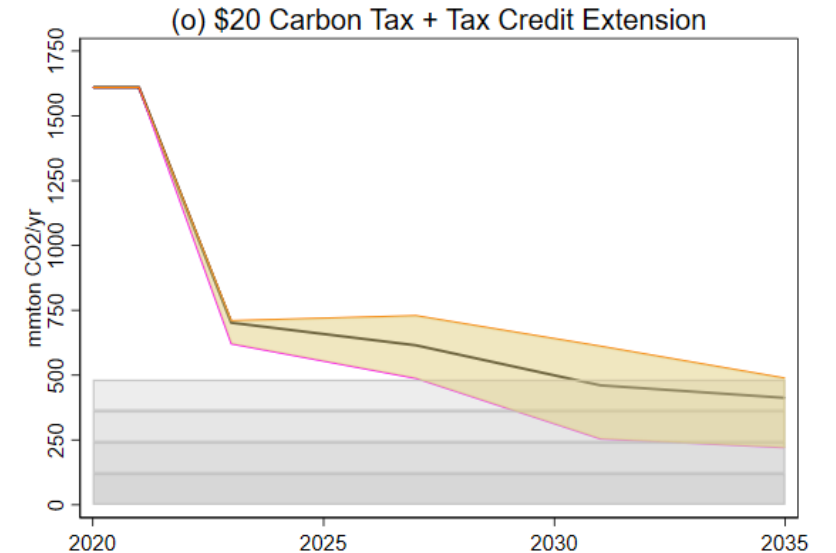
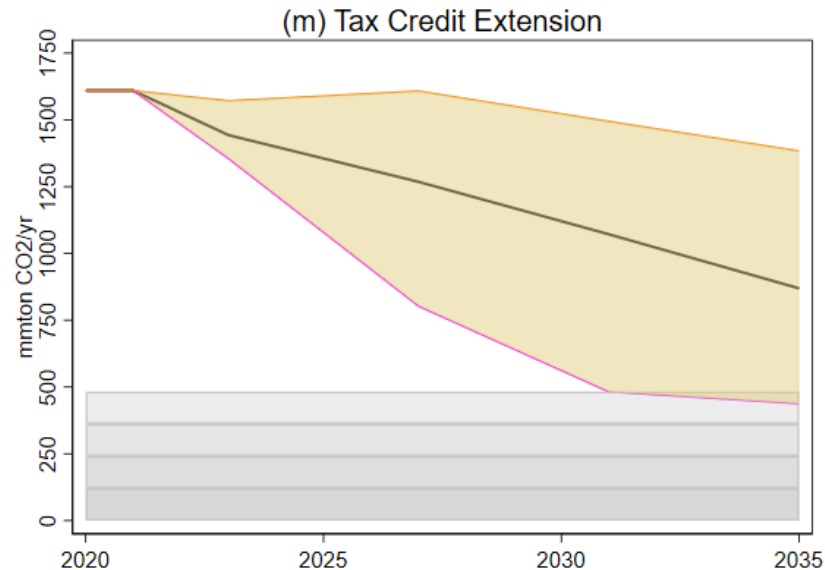
3) The IRA cost beneficial, not efficient, and arguably not scalable, ctd.

Next policy steps

- Currently: IRA + backstop regulation
 - Power sector rules – essentially backstop for IRA base case projections
 - Tailpipe rules (CAA) – 67% new EV penetration by 2030
- Carbon price would be very effective in power sector c. 2030 (below)
 - Not so much for Evs
 - Not at all – yet for “hard to abate” – technology policy
 - *Small* (\$20) carbon price now would help implement U.S. CBAM & prepare for 2030s

**U.S. Power sector:
(left) IRA and (right)
IRA + \$20 carbon tax**

Source: Stock & Stuart (2021)



Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macro**economists need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

4) Energy prices are unlikely to be much more stable during the transition...

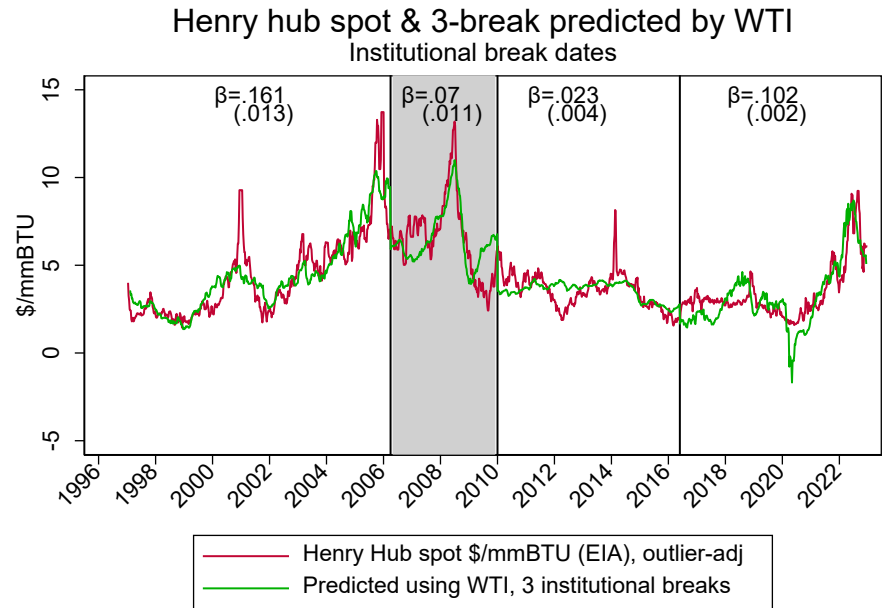
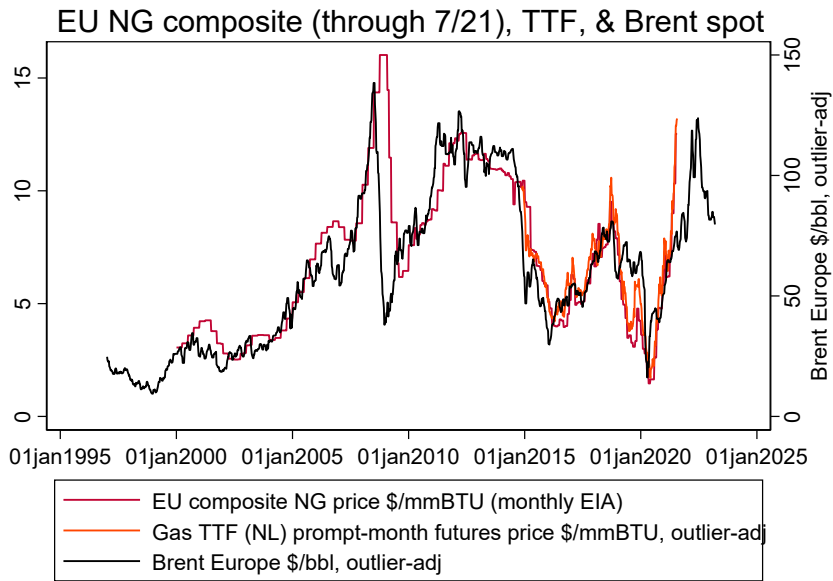
- Energy security and reliability = low and stable (predictable) prices



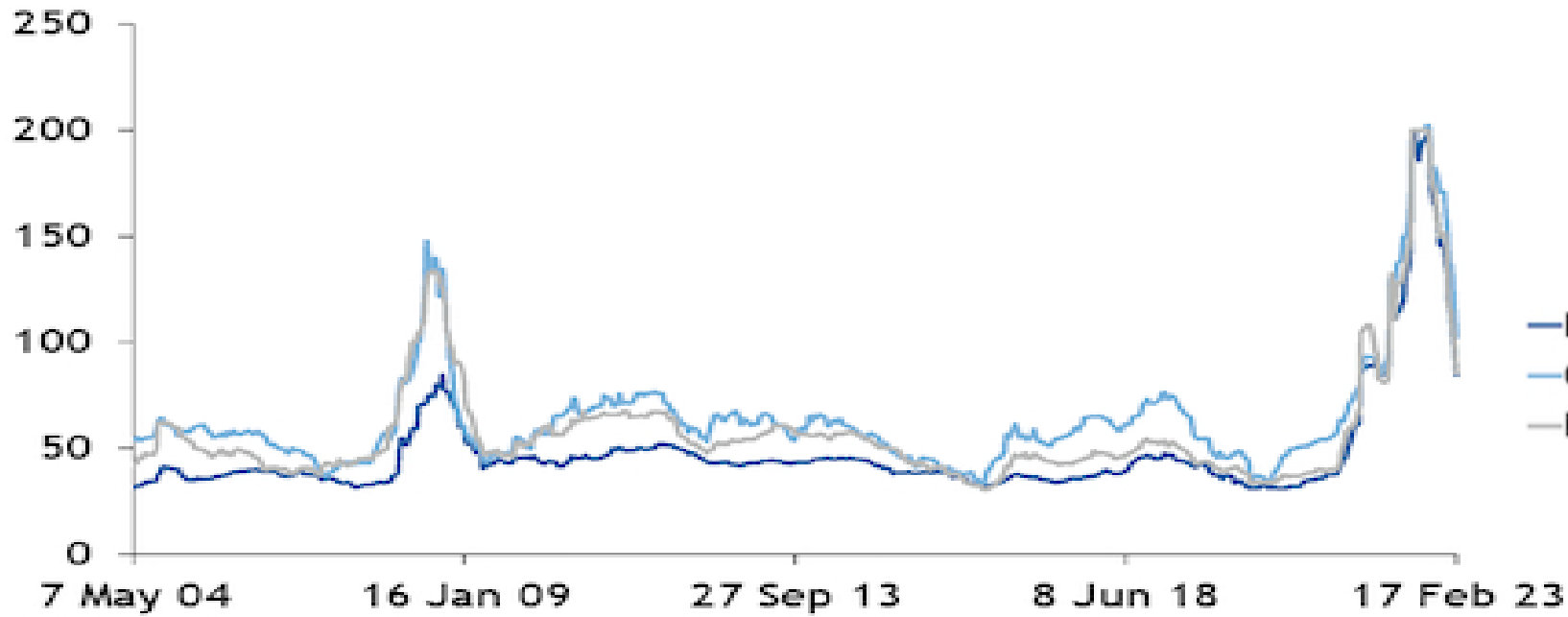
Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macroeconomists** need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

4) Energy prices are unlikely to be much more stable during the transition...



Coal prices



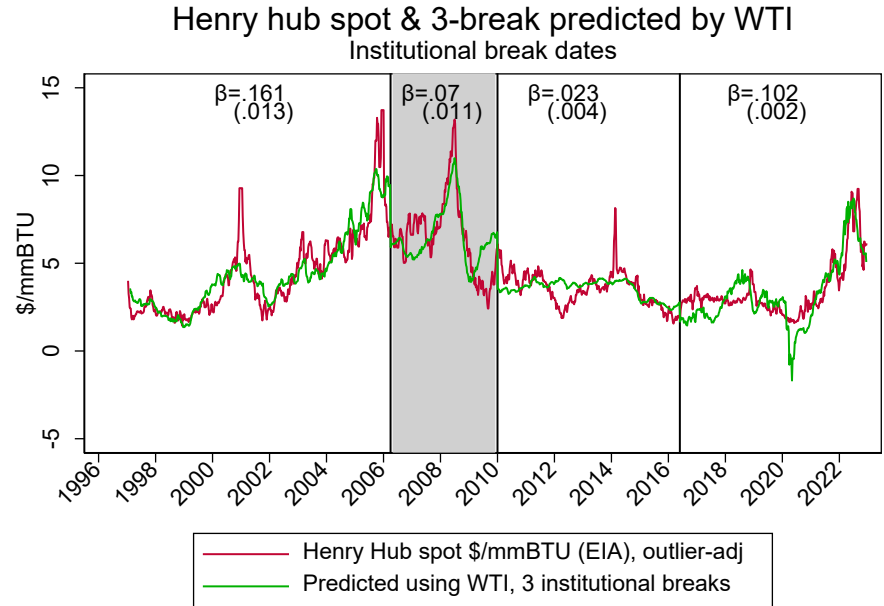
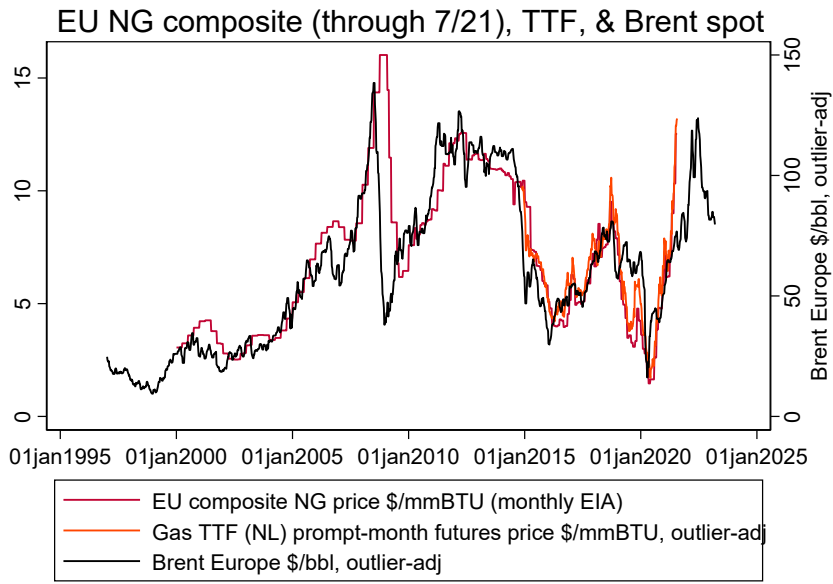
Henry Hub (monthly)

Source: Argus, EIA

Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macroeconomists** need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

4) Energy prices are unlikely to be much more stable during the transition...



...and – arguably – even after

- Marginal cost pricing
- Hydrogen, ammonia, natural gas + CCS, jet fuel + CCS likely to be tradable substitutes in production

Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macro**economists need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

5) Macroeconomists need to focus on short-term transition risk - including geopolitical risk

| | Short/medium run | Long run |
|--------------------------|--|---|
| Physical | <ul style="list-style-type: none">• Risks: storms, droughts, fires,...• Mechanisms: Insurance markets, asset revaluation.• NGFS, CFRAC, etc. | <ul style="list-style-type: none">• Risks: SLR, heat, etc• Models: IAMS, SCC, CGE policy models, trade models, climate tipping points, |
| Transition Human systems | <ul style="list-style-type: none">• Risks: Geopolitical, political economy, policy uncertainty,...• Models: Much more work needed | <ul style="list-style-type: none">• Risks: Climate migration |

Narrative from the two papers (HKO, GSS)

We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macro**economists need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

5) Macroeconomists need to focus on short-term transition risk - including geopolitical risk

| | Short/medium run | Long run |
|--------------------------------|--|---|
| Physical | <ul style="list-style-type: none">• Risks: storms, droughts, fires,...• Mechanisms: Insurance markets, asset revaluation.• NGFS, CFRAC, etc. | <ul style="list-style-type: none">• Risks: SLR, heat, etc• Models: IAMS, SCC, CGE policy models, trade models, climate tipping points, |
| Transition Human systems | <ul style="list-style-type: none">• Risks: Geopolitical, political economy, policy uncertainty,...• Models: Much more work needed | <ul style="list-style-type: none">• Risks: Climate migration |

Narrative from the two papers (HKO, GSS)

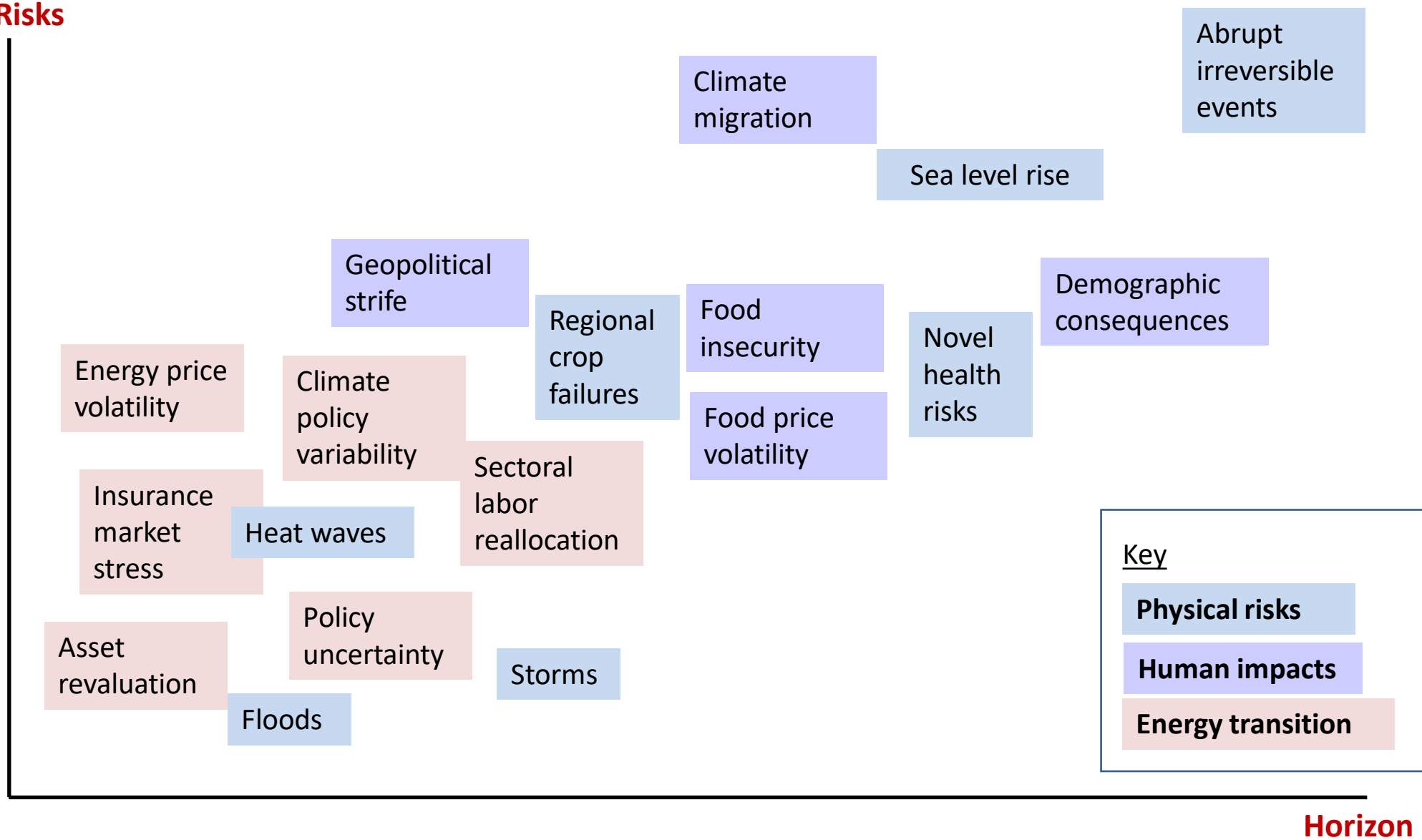
We know climate change is **bad** (HKO), so additional policies are needed, **especially in the U.S.** (HKO, GSS). Those policies must be effective and **robust** (HKO). They also must be **efficient** (HKO, GSS), like Fit for 55 (HKO), not like the **IRA** (HKO, GSS). They also need to deal with **multiple externalities** (GSS). So **macro**economists need to focus on policy solutions (HKO, GSS) – no more work on **damages, the SCC**, etc. (HKO)! With efficient policies, decarbonization probably won't be very costly (HKO). BTW, **energy security** still matters **during** the transition (GSS).

5) Macroeconomists need to focus on short-term transition risk - including geopolitical risk

| | Short/medium run | Long run |
|--------------------------------|--|---|
| Physical | <ul style="list-style-type: none">• Risks: storms, droughts, fires,...• Mechanisms: Insurance markets, asset revaluation.• NGFS, CFRAC, etc. | <ul style="list-style-type: none">• Risks: SLR, heat, etc• Models: IAMS, SCC, CGE policy models, trade models, climate tipping points, |
| Transition Human systems | <ul style="list-style-type: none">• Risks: Geopolitical, political economy, policy uncertainty,...• Models: Much more work needed | <ul style="list-style-type: none">• Risks: Climate migration |

Which climate risks?

Risks



Timing and magnitudes are illustrative.