

On "How climate change affects potential output"  
by  
Miles Parker and Andrej Ceglar, European Central Bank

**Discussant: Alessandro Rossi**

*European Commission, Joint Research Centre*

*DG ECFIN-OGWG workshop on  
"Natural capital measurement and modelling", 30 November 2023*

(C) European Union, 2023



- Drawing on existing literature and ECB's work, the paper assesses which channels are responsible for the economic impact of climate change on potential output (PO).
- The channels having major impact on PO are classified into:
  - i. long-run climate change (higher average temperatures, changes to precipitation, rising sea levels);
  - ii. extreme weather and climate events (e.g. droughts, heat-waves, wild-fires, wind-storms, floods);
  - iii. climate policies and green transition (notably carbon taxes).

- (some of the) Main findings
- Comments

# Main findings

Table 1 presents a broad picture linking the main channels through which climate change (higher temperatures, extreme weather, climate policies) impacts capital, labour, and TFP.

Empirical evidence is reported for the impact on the economy due to:

- Long-run climate change;
- Climate policies and the green transition;
- Natural capital depletion.



# The impact of long-run climate change

On rising temperature and the labor market in EU:

- As mentioned by the authors, the effect is heterogeneous among EU countries (e.g. north vs south countries);
- It would be of interest a quantitative assessment of the impact of rising temperature on potential GDP, breaking down the impact on tourism and agriculture (the sectors that are the most impacted by climate change), to understand their relative importance at a country-specific level.



# The impact of long-run climate change

On labor reallocation in light of rising temperature:

- This point is discussed in section 5 following the implementation of measures meant to reach net-zero.
- However even in the absence of policy there is general trend of labor moving away from agriculture due to climate change and the significant role of rising temperatures in altering labor allocation and sectoral employment especially for developing economies\*.
- Factors such as regional financial integration, global market access, local demand effects, and demographic variables play a role.

\*Liu, Shamdasani, Taraz (2023), Huang, Zhao, Huang, Wang, Findlay (2020), Albert, Bustos, Ponticelli (2023)



# Climate policies and the green transition

Over the period 1985-2021 half of 29 EU-MS have implemented carbon taxes.

- ECB results show that such policy have not had a major adverse impact on PO.
- But it actually has a significant positive impact for some quarters. Why?
- According to Table 1 only the reduction of the impact of supply shocks and an increase in technology push potential output up following an increase in the price of carbon.



# The impact of depletion of natural capital

ECB research shows that:

- 3/4 of non-financial corporations in EA are highly dependent on natural benefits;
- 3/4 bank loans granted to companies highly dependent on ecosystem service;
- $\Rightarrow$  substantial bank losses in the event of ecosystem failure.

- A valuable attempt would be to use a neoclassical/endogenous growth model to build scenarios about the long-term effect of depletion of natural capital on the economy (WB data on monetary values of natural capital and JRC data on ecosystem services exist).

