

# Flooded House or Underwater Mortgage? by Yasmine van der Straten

Discussion by Achim Hagen (HU Berlin)

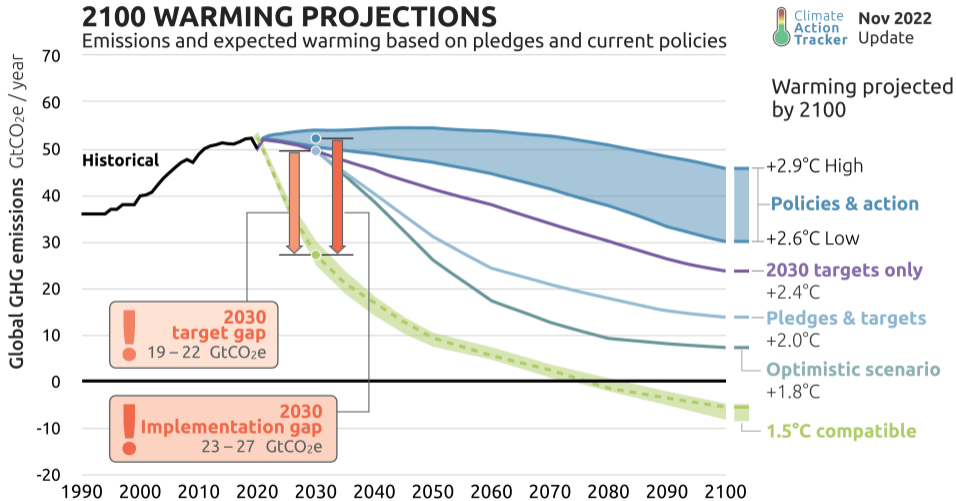
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# Motivation



Source: Climate Action Tracker (2022). 2100 Warming Projections: Emissions and expected warming based on pledges and current policies. November 2022. Available at: <https://climateactiontracker.org/global/temperatures/>. Copyright 2022 by Climate Analytics and NewClimate Institute. All rights reserved.

## Motivation and Research Questions

Policies to mitigate climate change remain insufficient to reach 1.5 degree target

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- ▶ Distributional consequences?
- ▶ Role of financial constraints?

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- ▶ Credit constraint for households (undamaged housing as collateral)

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- ▶ Wage inequality rises in climate damages
- ▶ Costs of borrowing rises in climate damages
- ▶ Share prices fall in climate risks
- ▶ Privately optimal investment of climate change adaptation is dynamically efficient
- ▶ Price of housing capital rises in climate risk if households are sufficiently risk-averse
- ▶ Credit constraint low-income household adapt relatively less than high-income households

## Results from Parameterization

- ▶ Quantified illustration for finding of Propositions for different RCP-trajectories



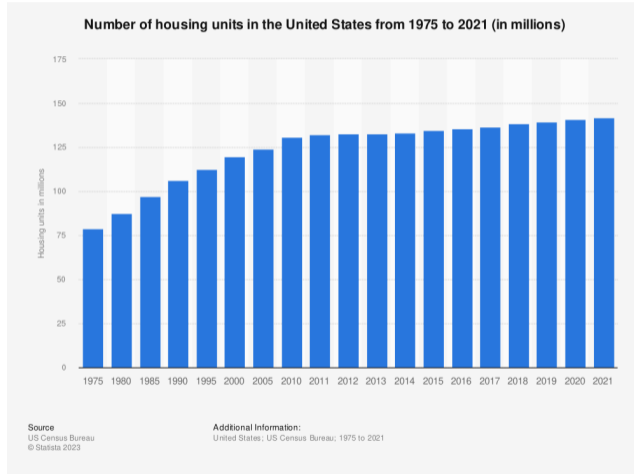
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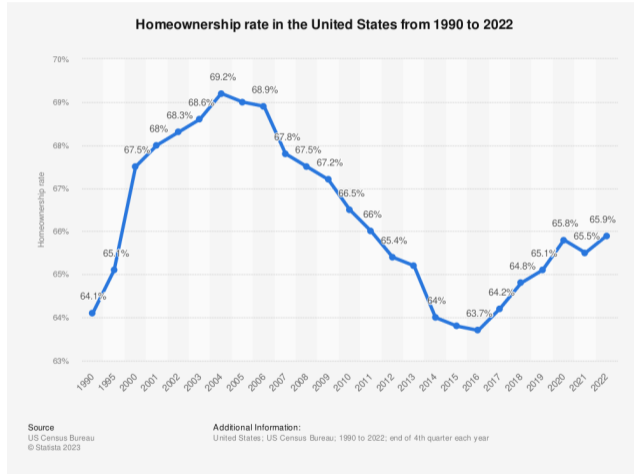
## Results from Parameterization

- ▶ Quantified illustration for finding of Propositions for different RCP-trajectories
- ▶ Evaluation of default rates with and without adaptation
  - ▷ Adaptation remarkably reduces default rates

# Comments on Assumptions I: No New Housing?



# Comments on Assumptions II: Home Ownership



## Comments on Assumptions III

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## Comments on Assumptions III

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## Comments on Assumptions IV

- ▶ "Since  $x_{i,t}$  , depreciates fully after the extreme weather at the start of period  $t + 1$ , adaptive measure do not have any resale value (other than increasing the amount of housing capital that has non-zero resale value.)"



## Comments on Assumptions IV

- ▶ "Since  $x_{i,t}$  , depreciates fully after the extreme weather at the start of period  $t + 1$ , adaptive measure do not have any resale value (other than increasing the amount of housing capital that has non-zero resale value.)"
- ▶ But undamaged housing capital does not depreciate at all
- ▶ This is hard to imagine: If I elevate my house on stilts, why can I sell the house but not the stilts?
- ▶ Could be relaxed by either letting housing capital depreciate or make adaptation more persistent

## Welfare effects

- ▶ It would be interesting to see something on the welfare effects of the adaptation gap
- ▶ If analytically not tractable, I would suggest to do the welfare analysis in the parameterization part
- ▶ Both a quantification of the welfare effects of adaptation vs. no adaptation and of the adaptation gap?

## Public policies

- ▶ "Households invest in climate change adaptation when they purchase housing capital" in your model
- ▶ In reality also public investment e.g. dikes
- ▶ If adaptation gap leads to welfare losses, public adaptation measures could be welfare improving
- ▶ These could be financed via taxes

# Conclusion

- ▶ Great paper with very interesting contribution
- ▶ Some potential avenues for extensions
- ▶ I would suggest to justify/discuss/change some assumptions
- ▶ Looking forward to see the further journey of the paper!