

Research Summary

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Research Summary

Research agenda: Macroeconomics and climate change, with a particular focus on the importance of heterogeneity and inequality across households and firms.

Current projects:

- 1 'Sheltering from Climate Risks' (JMP)
- 2 'The Green Energy Transition in a Putty-Clay Model of Capital' - with Simon Gilchrist (NYU) and Joseba Martinez (LBS)
- 3 'Non-essential Business Cycles' - with Michele Andreolli (Boston College) and Paolo Surico (LBS)

Near-term plans:

- Failures in insurance supply in the face of rising climate risks
- Local community investment in adaptation to climate change
- 'Keeping up with the iJones' - reference consumption and social media transmission of information over the business cycle, in a world of social media

(1) Sheltering from Climate Risks

How can households act to mitigate climate risks, and what are the broader consequences?

- Empirical setting, using administrative data on flood insurance in the US
 - High income households more likely to invest in adaptation, when more aware of climate risks
 - Low income households more reliant on insurance
- Develop a heterogeneous agent model of climate risk, incorporating adaptation and insurance
 - Climate damage larger and hits lower income households more
 - Because low income households fail to invest in adaptation.

(2) The Green Energy Transition in a Putty-Clay Model of Capital

with Simon Gilchrist (NYU), Joseba Martinez (LBS)

Climate targets require a shift away from existing fossil-fuel dependent capital (e.g. sunk investments in coal power plants).

We propose a model of the green transition using putty-clay production technology (Gilchrist and Williams (2000), Wei (2003)):

- Once created, investments in capital of a particular vintage are (1) Fixed in nature - factor input ratios can't change, and (2) may be only partially utilised
- Incorporate this into a multi-sector integrated assessment model

Assess the impact of green technology improvements and carbon tax increases:

- A green transition has worse aggregate effects and requires a $\sim 40\%$ larger carbon tax increase.

(3) Non-Essential Business Cycles

with Michele Andreolli (Boston College) and Paolo Surico (LBS)

Non-essentials (discretionary/luxury spending):

- 1 Non-essential consumption declines more during recessions
- 2 Resulting in declining earnings in non-essential sectors
- 3 Which disproportionately employ low income, hand-to-mouth workers

This paper:

- New macro time series for essentials and non-essentials, for consumption, prices, earnings
- Document how these respond during recessions and to monetary policy shocks
- Estimate a new-Keynesian model with consumption and labour market heterogeneity
- Demonstrate business cycle amplification and implications for unconventional fiscal policy

Submitted, working on follow-up paper

Future: continue to work at intersection of macroeconomics and climate economics, in addition to other important macro topics. Similar mix of micro-empirical evidence and macro modelling.

Near-term plans:

- Failures in insurance supply in the face of rising climate risks
 - Widespread failures in insurance supply (Florida, wildfires in California) represent broader problems supplying insurance
 - Hard for even large reinsurers to insure larger and more correlated climate risks
 - Document how insurance/reinsurance supply changes after disasters, using reinsurer administrative filings
 - Model reserve requirements in reinsurance to explore implications of fluctuating insurance supply
- Local community investment in adaptation to climate change
- 'Keeping up with the iJones' - reference consumption and social media transmission of information over the business cycle, in a world of social media

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Near-term plans:

- Failures in insurance supply in the face of rising climate risks
- Local community investment in adaptation to climate change
 - Address coordination (rather than individual level) decisions on adaptation
 - Use Community Rating System of NFIP as case study
 - Are more homogenous/heterogeneous, rich/poor communities more able to co-ordinate adaptation?
- 'Keeping up with the iJones' - reference consumption and social media transmission of information over the business cycle, in a world of social media

Future: continue to work at intersection of macroeconomics and climate economics, in addition to other important macro topics.

Near-term plans:

- Failures in insurance supply in the face of rising climate risks
- Local community investment in adaptation to climate change
- 'Keeping up with the iJones' - reference consumption and social media transmission of information over the business cycle, in a world of social media
 - Households' comparisons are increasingly online via social media, rather than down the street
 - Selective reporting on social media may skew perceptions
 - More conspicuous consumption during booms, less during recessions?
 - Does this contribute to consumption cyclicalities, particularly for more 'online' groups?