# Distributional Macroeconomics

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# What do I mean by “Distributional Macroeconomics”?

- Study of macroeconomic questions in terms of distributions rather than just aggregates
    - typical example: distributions of income and wealth
- More technically: macroeconomic theories in which relevant state variable is a distribution (or: “heterogeneous agent models”)

# Main Message

- Hard to coherently think about macro if ignore distribution

- Instead, rich interaction:

$$\text{inequality} \quad \Longleftrightarrow \quad \text{macroeconomy}$$

# Plan

1. Inequality in macroeconomics: a history of thought
2. Three applications of "distributional macro" from my own work

- based on joint work with Yves Achdou, SeHyoun Ahn, Abhijit Banerjee, Paco Buera, Andreas Fagereng, Jiequn Han, Martin Holm, Greg Kaplan, Jean-Michel Lasry, Pierre-Louis Lions, Bob Lucas, Gisle Natvik, Galo Nuño, Gianluca Violante, Tom Winberry, Christian Wolf

# Inequality in Macro: A History of Thought

I find it useful to categorize macroeconomic theories as follows:

- before modern macro: 1930 to 1970
- 1st generation modern macro: 1970 to 1990
- 2nd generation modern macro: 1990 to financial crisis
- 3rd generation modern macro: after the financial crisis

Main drivers of evolution in modern macro era

1. better data
2. better computers & algorithms
3. current events (rising inequality, financial crisis)

# Before Modern Macro: 1930 to 1970

1. Keynesian IS/LM: about aggregates, no role for inequality/distribution by design

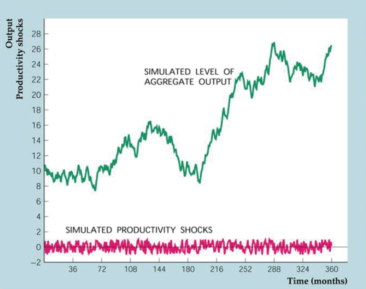
2. Distribution does play role in growth theory

    - mostly factor income distribution: Kaldor, Pasinetti and other Cambridge UK theorists
    - rarely personal income distribution: e.g. Stiglitz, Blinder

3. Disconnected empirical work on inequality (Kuznets)

# First Generation Macro Theories: 1970 to 1990

Representative agent models, e.g. RBC & New Keynesian models


About aggregates, no role for inequality/distribution by design

Advertised as "microfounded" but representative agent assumption cuts 1st generation modern macro from micro inequality research

# First Generation Macro Theories: 1970 to 1990

What's wrong with that?

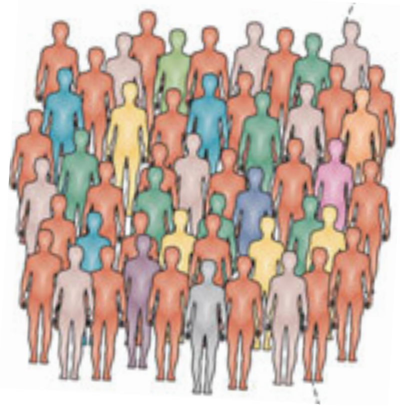
1. cannot speak to a number of important empirical facts, e.g.
    - unequally distributed growth
    - poorest hit hardest in recessions

2. cannot think coherently about welfare – "who gains, who loses?"

# Second Generation Macro Theories: 1990 to 2008

(a) First Generation Theories


(b) Second Generation Theories



Second generation theories incorporate heterogeneity from micro data, particularly in income and wealth

# Second Generation Macro Theories: 1990 to 2008

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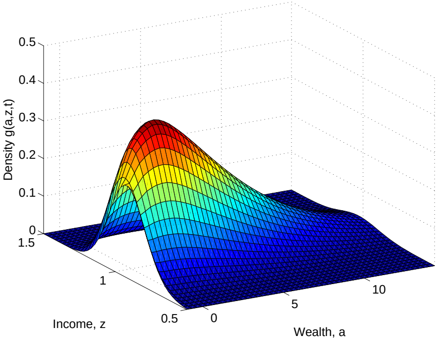


Second generation theories represent economy with a distribution...

# Second Generation Macro Theories: 1990 to 2008

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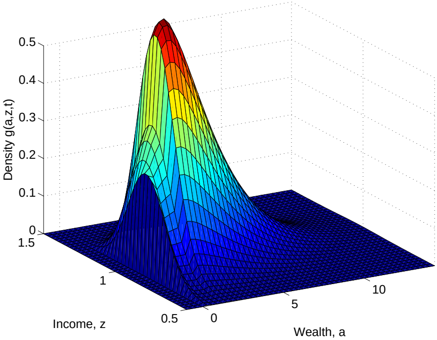
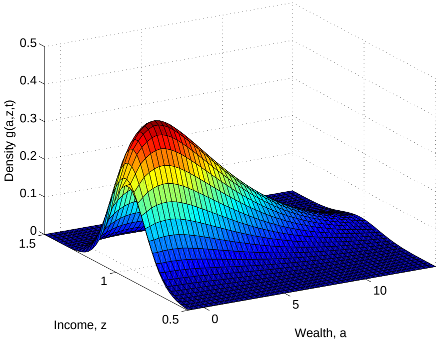



Second generation theories represent economy with a distribution...
that moves over time, responding to macroeconomic shocks, policies

# Second Generation Macro Theories: 1990 to 2008

(a) First Generation Models


(b) Second Generation Models




Second generation theories can potentially speak to

- unequally distributed growth
- poorest hit hardest in recessions

and are useful for welfare analysis

# Second Generation Theories: Inequality $\not\Rightarrow$ Macro

- Typical finding: heterogeneity doesn't matter much for macro agg's
- Reason: in these theories, rich and poor differ in wealth but not consumption and saving behavior – rich = scaled version of poor
- Hence "inequality $\not\Rightarrow$ macro", but also a knife-edge result
- Problem: in data, rich $\neq$ scaled version of poor, e.g. rich have
  - lower MPCs out of transitory income changes
  - higher saving rates out of permanent income, wealth
- Note: some important contributions from same time period don't fit my narrative
  - Banerjee-Newman, Benabou, Galor-Zeira, Persson-Tabellini, ...
  - also related: 1950s "capitalist-worker theories" of Kaldor, Pasinetti, ...

# Third Generation Theories: after the Crisis

- 3rd generation theories take micro data more seriously

- Leads them to emphasize things like
    - household balance sheets
    - credit constraints
    - MPCs that are high on average but heterogeneous
    - non-homotheticicities, non-convexities

- Typical finding: distribution matters for macro

- Momentarily: three examples from my own work

# Inequality in Macro: Summary

- Before modern macro: 1930 to 1970
  - it's complicated
- 1st generation: 1970 to 1990
  - representative agent models (RBC, New Keynesian etc)
  - no role for inequality by design
- 2nd generation: 1990 to financial crisis
  - early "distributional macro" models
  - "macro $\Rightarrow$ inequality" but "macro $\not\Leftarrow$ inequality"
- 3rd generation: after the financial crisis
  - current "distributional macro" models
  - rich interaction: "inequality $\Longleftrightarrow$ macro"

# Inequality in Modern Macro: Summary

Recent Janet Yellen speech "Macroeconomic Research After the Crisis": `http://www.federalreserve.gov/newsevents/speech/yellen20161014a.htm`

- "Prior to the financial crisis, representative-agent models were the dominant paradigm for analyzing many macroeconomic questions [= 1st generation]."
- "However, a disaggregated approach seems needed to understand some key aspects of the Great Recession..."
- "While the economics profession has long been aware that these issues matter, their effects had been incorporated into macro models only to a very limited extent prior to the financial crisis [ = 2nd generation]."
- "I am glad to now see a greater emphasis on the possible macroeconomic consequences of heterogeneity [ = 3rd generation]."

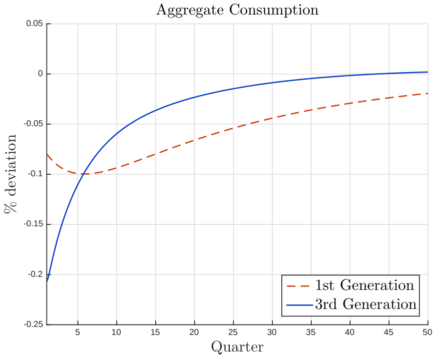
# Three Applications

# Application 1: Monetary Transmission Mechanism

- From "Monetary Policy According to HANK" with Kaplan & Violante
- Distributional macro changes how to think about monetary policy
- Question: consumption response to interest rate cut?
- In standard "New Keynesian" framework used by central banks:
  - consumption $\uparrow$ due to strong intertemporal substitution
  - tiny indirect GE/multiplier effects because tiny MPCs
  - but both inconsistent with empirical evidence!
- Instead, in our framework consistent with micro evidence:
  - micro sensitivities to income and interest rate changes heterogeneous, depend on households' balance sheets
  - 30% direct effects, 70% indirect GE effects
  - response of aggregate consumption depends on distribution

# Application 2: Aggregate Consumption in a Recession

- From “When Inequality Matters for Macro and Macro Matters for Inequality” with Ahn, Kaplan, Winberry & Wolf
- Thought experiment: consumption response to negative income shock that disproportionately hits low-skilled households?
- 1st and 2nd generation view: low-skilled households well insured
- Our view: low-skilled not well insured, many live hand to mouth

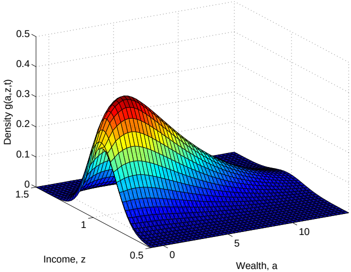


# Application 3: Misallocation and Productivity Losses from Financial Frictions

- From papers with Banerjee, Buera, Itskhoki
- Typical emerging economy:
  - imperfect credit market
  - large number of privately held firms
- With well-functioning credit market:
  - resources allocated to their most efficient use
  - independent of owners' wealth
- Instead, with poorly-functioning credit market:
  - inefficient allocation of resources, low aggregate productivity
  - resource allocation tied to owners' wealth
  - aggregate productivity depends on wealth distribution

# Distributional Macroeconomics: Summary

- Yesterday's discussion: policy institutions lack framework for thinking about distributional implications of macro policies
- Current macro research offers exactly that: economy = joint distribution of micro variables, not collection of aggregates




- Often: can't ignore distribution even if care only about aggregates
- Not yet part of policy makers' toolkit, but starting to change:
    - various central banks currently developing their own 3rd generation frameworks

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