

Heterogeneity at the Heart of Macroeconomics

Ludwig Straub and the 2026 John Bates Clark Medal

Felipe Ovando Turra

Roadmap

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What is the John Bates Clark Medal?

A defining honor in economics

- ▶ Awarded by the **American Economic Association (AEA)**.
- ▶ Honors the U.S.-based economist **under the age of 40** who has made the most significant contribution to economic thought and knowledge.
- ▶ Established in **1947**; awarded *biennially* until 2009 and **annually** since.
- ▶ Named after **John Bates Clark** (1847–1938), pioneer of American neoclassical economics.

Why it matters

Often called the “**baby Nobel**”: a leading early-career indicator of long-run impact.

Why we care so much in economics

A signal of intellectual influence

- ▶ It is a **peer-judged** recognition: the prize committee surveys the entire profession.
- ▶ Rewards research that **reshapes how we think**, not merely incremental contributions.
- ▶ Tracks the **frontier** of economic theory, methods, and empirics.

A leading indicator of Nobel laureates

- ▶ **14 of the past Clark medalists** have gone on to win the **Nobel Prize in Economics**.
- ▶ Examples: Paul Samuelson (1947), Milton Friedman (1951), Joseph Stiglitz (1979), Paul Krugman (1991), Daron Acemoglu (2005), Esther Duflo (2010).
- ▶ Winning the Clark Medal often *redefines* a research agenda for a decade.

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What does winning it imply?

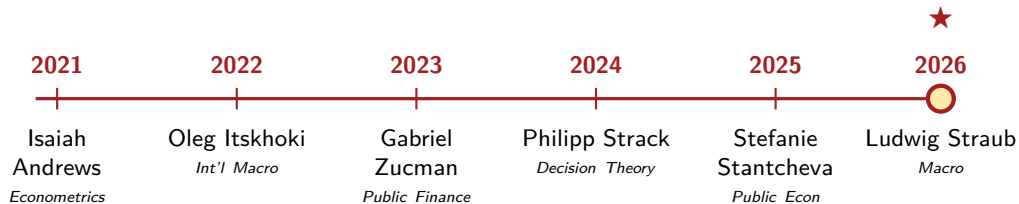
Professional and intellectual consequences

- ▶ **Visibility:** invitations to keynotes, policy panels, central bank conferences.
- ▶ **Authority:** medalists' frameworks become *textbook material*.
- ▶ **Funding and mentorship:** easier access to research grants, students, and co-authors.
- ▶ **Field influence:** their methods are adopted by graduate programs worldwide.

The deeper meaning

Winning the Clark Medal certifies that a young economist has **already changed the way the field thinks**.

Recent Clark medalists (selected)



The 2026 prize

Ludwig Straub (Harvard University), for his “*profound and far-reaching contributions to modern macroeconomics*”.

Ludwig Straub: a quick portrait

The basics

- ▶ **Born:** August 8, 1987, in Germany.
- ▶ **Age at award:** 38 years old.
- ▶ **Position:** Professor of Economics, **Harvard University** (since 2024).
- ▶ **Field:** Macroeconomics and international economics.

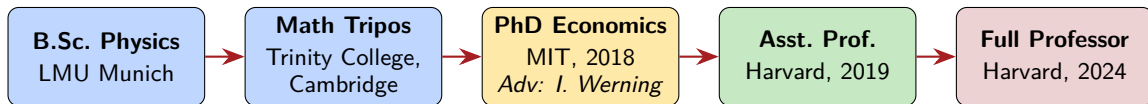
Affiliations

- ▶ Research Associate, **NBER**.
- ▶ Research Affiliate, **CEPR**.
- ▶ Member of **CESifo**.

A second consecutive Harvard winner

Straub follows **Stefanie Stantcheva** (2025), reinforcing Harvard Economics's recent dominance of the medal.

From physics to macroeconomics



An unusual trajectory

A **mathematical physicist by training** who brought formal modeling intuition to one of macroeconomics's hardest computational frontiers: **heterogeneous-agent models**.

Where has he published?

Top-5 economics journals

- ▶ **Quarterly Journal of Economics** (QJE) — multiple papers.
- ▶ **Econometrica** — methodological breakthroughs.
- ▶ **Journal of Political Economy** (JPE) — macro theory.
- ▶ **American Economic Review** (AER) — public finance.

A research portfolio that spans

- ▶ Household **heterogeneity** in macroeconomics.
- ▶ **Inequality, debt, and the natural rate** of interest.
- ▶ **Fiscal and monetary policy** transmission.
- ▶ **Computational methods** for heterogeneous-agent models.
- ▶ **Multisectoral** and spatial economics; tariff shocks.

Other distinctions and recognitions

Awards beyond the Clark Medal

- ▶ **2024 Sloan Research Fellowship** — one of the most prestigious early-career awards in the U.S.
- ▶ 2022 AQR Top Finance Graduate Award (Young Researcher Prize).
- ▶ NSF research grants and a Molly and Domenic Ferrante Award at MIT.
- ▶ Recognized as an **outstanding teacher and advisor** at Harvard.

The full citation in one line

“Profound and far-reaching contributions to modern macroeconomics.” — AEA, 2026

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The unifying theme of his work

The old workhorse: representative agent

Traditional macro assumes a single “average” household:

$$\text{Aggregate behavior} = \text{behavior of one agent} \times N.$$

Tractable, but ignores that **people are very different**.

Straub's bet

- ▶ Households differ in **income, wealth, debt, age, MPCs**.
- ▶ These differences are *not* a detail: they shape **aggregate** outcomes.
- ▶ Heterogeneity changes the answer to: *Does fiscal policy work? How does monetary policy transmit? Why are interest rates so low?*

The challenge

Heterogeneity makes models **very hard to solve** — this is where Straub's methodological work

Indebted Demand (QJE, 2021)

with Atif Mian and Amir Sufi

The puzzle

Over the past 40 years in advanced economies:

- ▶ Household + government debt has **risen** sharply (~ 100 p.p. of GDP).
- ▶ Real interest rates have **fallen** 3–5 percentage points.
- ▶ Income inequality has **risen**.

Why are debt and rates moving together this way?

Why we should care

- ▶ Low rates limit the room for **monetary policy** (liquidity trap).
- ▶ High debt makes economies **fragile**.
- ▶ Standard models cannot generate this joint pattern.

Indebted Demand — The mechanism

The key insight: *non-homothetic saving*

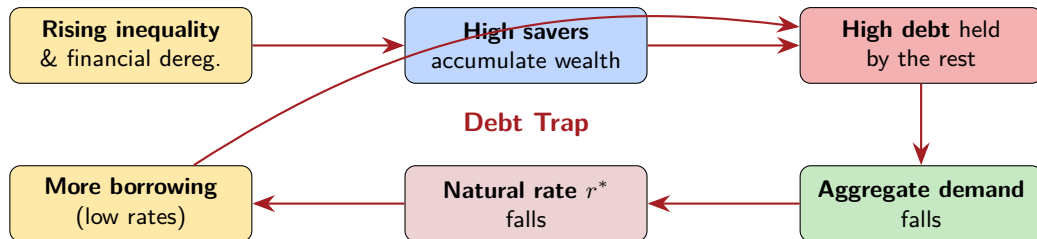
The rich save a **larger fraction** of their permanent income than the poor.

Saving rate(y) $\uparrow$ in income y .

The chain of logic

- ➊ Rising inequality $\Rightarrow$ more income flows to high-savers.
- ➋ High savers **lend to** low savers $\Rightarrow$ household debt rises.
- ➌ Funds flow from **high-MPC borrowers** to **low-MPC creditors**.
- ➍ This **depresses aggregate demand** $\Rightarrow$ pushes the natural rate down.
- ➎ Low rates encourage *more borrowing* $\Rightarrow$ self-reinforcing trap.

Indebted Demand — Visualizing the trap



Indebted Demand — Conclusions

Main takeaways

- ▶ Inequality, debt, and falling interest rates are **linked** by the same mechanism.
- ▶ Conventional **monetary and fiscal policy** lose long-run traction.
- ▶ Debt-financed booms today become **drag on demand** tomorrow.

Policy implication

Escaping the debt trap may require **less conventional** tools:

- ▶ Redistribution policies.
- ▶ Macroprudential regulation.
- ▶ Addressing the structural sources of inequality.

The Intertemporal Keynesian Cross (JPE, 2024)

with Adrien Auclert and Matthew Rognlie

The puzzle

The classic **Keynesian cross** is taught in every macro textbook:

$$dY_t = dG_t - \text{MPC} \cdot dT_t + \text{MPC} \cdot dY_t.$$

But it has a fatal flaw: it is **static**. It ignores that:

- ▶ Consumption today depends on **past** and **future** income.
- ▶ Households face **intertemporal budget constraints**.

The question

Can the Keynesian cross be rebuilt as a fully dynamic, microfounded object?

The intertemporal Keynesian cross

The new equation

Replace the scalar MPC with a full *matrix* of **intertemporal MPCs (iMPCs)**:

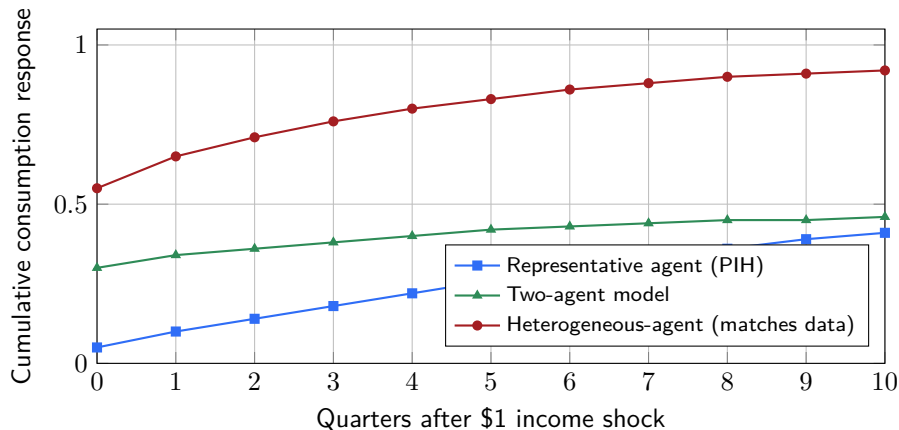
$$d\mathbf{Y} = d\mathbf{G} - \mathbf{M} \cdot d\mathbf{T} + \mathbf{M} \cdot d\mathbf{Y},$$

where $\mathbf{M} = [M_{ts}]$ with $M_{ts} = \partial C_t / \partial Y_s$.

What is an iMPC?

- ▶ How much does consumption *at date t* respond to income *at date s* ?
- ▶ It is a **sufficient statistic** for fiscal policy transmission.
- ▶ Empirically estimable from natural experiments and surveys.

Why iMPCs matter: representative vs. heterogeneous agents



Stylized illustration: HA models match the empirical iMPC profile, generating larger and more persistent fiscal multipliers.

Intertemporal Keynesian Cross — Conclusions

Main takeaways

- ▶ Empirical iMPCs are **front-loaded**, ruling out representative-agent and two-agent models.
- ▶ Heterogeneous-agent models match the data and imply:
 - **Larger and more persistent** output responses to fiscal shocks.
 - **Cumulative deficit-financed multipliers above 1.**
- ▶ Provides a clean, microfounded, and *empirically grounded* foundation for fiscal stabilization analysis.

Why it matters

Reconciles old Keynesian intuitions with modern dynamic models — and gives policymakers a **quantitative** guide to fiscal multipliers.

Sequence-Space Jacobian (Econometrica, 2021)

with Adrien Auclert, Bence Bardóczy, and Matthew Rognlie

The puzzle

Heterogeneous-agent models are **theoretically appealing** but **computationally brutal**:

- ▶ The state of the economy includes the entire **distribution of agents**.
- ▶ This distribution evolves **endogenously** every period.
- ▶ Standard methods (e.g. Reiter, Krusell-Smith) are slow or limited.

Why we should care

Without fast methods, **nobody** can use these models for serious quantitative or policy work.

The Sequence-Space approach

The key idea

Don't work in *state space* (cumbersome). Work in **sequence space**: the space of **time paths** of aggregate variables.

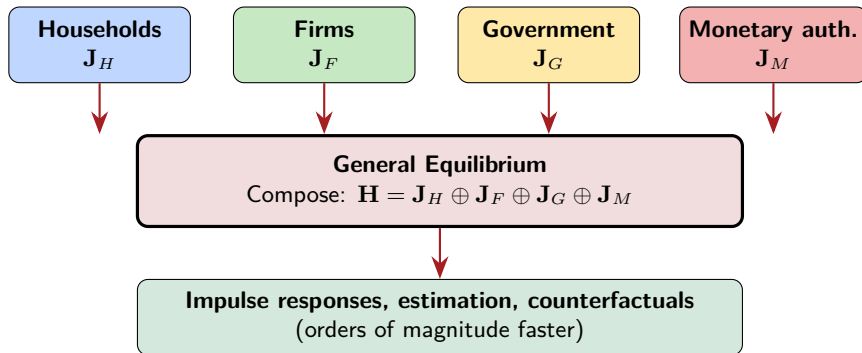
$$\text{Aggregate response} = \mathbf{J} \cdot (\text{aggregate shock}),$$

where $\mathbf{J}$ is the **sequence-space Jacobian**.

Why this works

- ▶ Linearize around a steady state (Reiter's idea).
- ▶ But: the size of the linear system depends only on the **time horizon**, not on the **state space dimension**.
- ▶ Compose Jacobians for blocks (households, firms, government) like **Lego pieces**.

Sequence-Space Jacobian: the toolkit illustrated



Sequence-Space Jacobian — Conclusions

Main takeaways

- ▶ A **general, fast, modular** method to solve and estimate heterogeneous-agent models.
- ▶ Applied to neoclassical, New Keynesian (one and two assets), and beyond.
- ▶ Enables **likelihood-based estimation** previously infeasible.
- ▶ Comes with open-source Python toolkit (`sequence-jacobian`) used worldwide.

The deeper impact

This paper has become **central to graduate macro training**. It transformed heterogeneous-agent macro from a niche endeavor into a **practical workhorse**.

New Pricing Models, Same Old Phillips Curves? (QJE, 2024)

with Adrien Auclert, Rodolfo Rigato, and Matthew Rognlie

The puzzle

Two competing families of price-setting models:

- ▶ **Time-dependent (Calvo)**: random adjustment opportunities. Tractable, gives the New Keynesian Phillips Curve (NKPC).
- ▶ **State-dependent (menu-cost)**: firms decide *when* to adjust based on state. Realistic, but computationally heavy.

Microdata clearly favor menu-cost-style models.

The question

Do richer micro-foundations actually change aggregate inflation dynamics?

The surprising answer

The result

To **first order**, a wide class of menu-cost models aggregates to a familiar object:

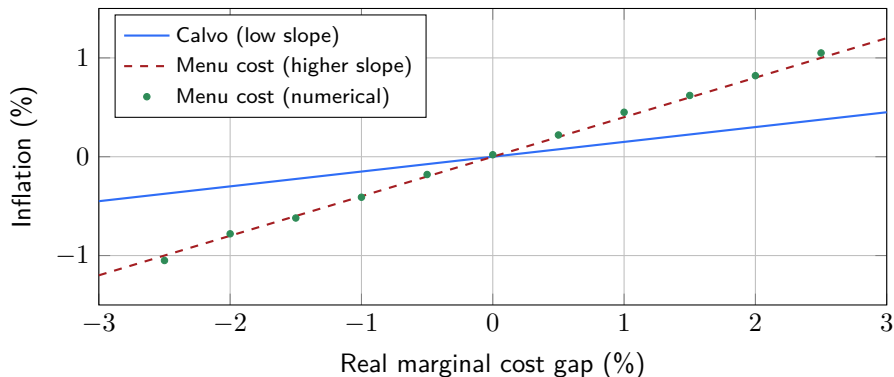
$$\pi_t = \kappa \cdot \widehat{mc}_t + \beta \mathbb{E}_t[\pi_{t+1}].$$

The same NKPC equation — but with a different (typically *higher*) slope κ .

Why

- ▶ Menu-cost models can be decomposed into a **mixture** of time-dependent models.
- ▶ The *extensive margin* (which firms adjust) and *intensive margin* (by how much) combine into NKPC-like aggregate dynamics.
- ▶ For shocks that are **not too large**, this approximation is very accurate.

NKPC vs. menu cost: visualization



Stylized illustration: the menu-cost model traces out the NKPC functional form, but with a steeper slope.

New Pricing Models — Conclusions

Main takeaways

- ▶ For aggregate inflation dynamics, **the functional form is the same**: a Phillips curve.
- ▶ Microfoundations matter mainly for the **slope coefficient**, not the structure.
- ▶ Clarifies the **limits** of what richer micro models can change at the macro level.

Why it matters

Provides a **rigorous bridge** between micro pricing evidence and the workhorse New Keynesian framework used by central banks.

Disaggregated Economic Accounts (QJE, 2026)

with A. Andersen, K. Huber, N. Johannesen, and E. Toft Vestergaard

The puzzle

National accounts (Kuznets, Stone) measure aggregates: total consumption, total income, total output. But:

- ▶ Which **specific consumers** buy from which **specific producers**?
- ▶ Which producers pay income to which consumers?
- ▶ This level of detail is **missing**.

Why we should care

Without these flows, we cannot answer:

- ▶ Which fiscal transfers **actually stimulate the economy**?
- ▶ How do shocks **propagate** across regions and sectors?

What the paper does

A new system of accounts

Builds a **full disaggregated** system tracking bilateral flows:

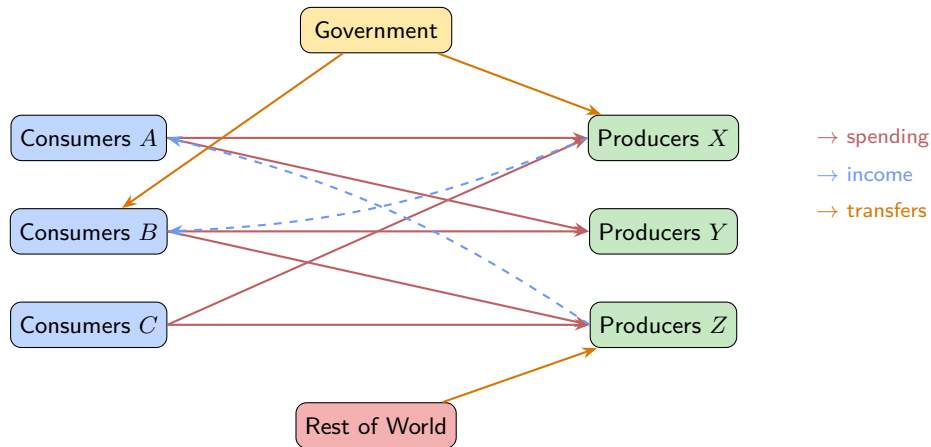
- ▶ Between groups of **consumers** (cells).
- ▶ Between groups of **producers** (cells).
- ▶ With the **government** and the **rest of the world**.

Implemented for **Denmark** using comprehensive administrative data.

The key concept: *spending intensity*

For each cell, measure how much its spending flows to *cells with high unemployment* after a shock.

Disaggregated Accounts: visualization of the flows



The full circular flow of money, broken down into bilateral cell-level flows.

Disaggregated Accounts — Conclusions

Main takeaways

- ▶ Fiscal multipliers depend not only on **who receives** transfers, but on **where their spending flows** and **which sectors have slack**.
- ▶ Targeting transfers to cells with **high spending intensity on unemployed cells** raises GDP *more*.
- ▶ Provides a **practical guide** for governments to design more effective interventions.

The big methodological contribution

A **new accounting infrastructure** for the 21st century, bridging micro-spatial heterogeneity with macroeconomic policy analysis.

Tying it all together

The unifying thread

Across all of his work, Straub asks:

What changes when we take **heterogeneity seriously**?

And the answers are big

- ▶ **Indebted Demand:** low rates and high debt are a *structural* consequence of inequality.
- ▶ **Intertemporal Keynesian Cross:** fiscal multipliers depend on the *distribution of MPCs*.
- ▶ **Sequence-Space Jacobian:** heterogeneity is now *computationally tractable*.
- ▶ **New Pricing Models:** micro complexity does not always change macro form.
- ▶ **Disaggregated Accounts:** policy effectiveness depends on *where* money flows.

Why Straub deserves the Clark Medal

Three legs of a complete economist

- 1 **Theory:** novel mechanisms (indebted demand, iMPCs) that reshape how we think about aggregates.
- 2 **Methods:** tools (sequence-space Jacobian) that the entire field now uses.
- 3 **Empirics and policy:** frameworks (disaggregated accounts) that connect models to actionable decisions.

The verdict of the AEA

“Through his integration of heterogeneity into the core of macroeconomic analysis, Ludwig Straub has fundamentally advanced the field’s understanding of demand, policy transmission, and macroeconomic dynamics.”

Take-home message

The new macroeconomics

The “representative agent” is no longer enough.

- ▶ Modern macroeconomics must take **differences across households** seriously.
- ▶ Inequality, debt, MPCs, and spatial structure are **first-order** for aggregate dynamics.
- ▶ Straub’s body of work provides both the **language** and the **tools** to do this rigorously.
- ▶ Expect his methods to shape policy debates — on inequality, debt, fiscal stimulus, and monetary policy — for decades.

A worthy heir to the John Bates Clark tradition.

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