

# Heterogeneous Agents in Macroeconomics

University of Oxford  
MPhil in Economics

Rustam Jamilov  
[rustam.jamilov@all-souls.ox.ac.uk](mailto:rustam.jamilov@all-souls.ox.ac.uk)

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## Course Description

This course covers macroeconomic environments with heterogeneous agents. Each lecture will focus on a different “unit” of a modern macro framework: household, firm, bank, and region. We will break the representative agent assumption - for each unit - and study aggregate and distributional consequences of heterogeneity. We complete the course with an overview of workhorse heterogeneous-agent models with and without nominal rigidities.

**Material:** Journal articles that are marked “mandatory” are required reading. Articles that are marked “recommended” will not be covered in the exam but are recommended for most students, particularly those that are interested in academia.

**Assessment:** Final exam (100%).

# Material

## Lecture 0: Foundations

### 1. Mandatory

- Deaton, A. and C. Paxson. “Intertemporal Choice and Inequality”. *Journal of Political Economy*. 1994.

### 2. Recommended

- Gorman, W. M. “On the Class of Preference Fields.” *Metroeconomica* 13. 1961.
- Rubinstein, M. “An Aggregation Theorem for Securities Markets”. *Journal of Financial Economics*. 1974.
- Constantinides, G. “Intertemporal Asset Pricing with Heterogeneous Consumers and Without Demand Aggregation”. *Journal of Business*. 1982.
- Hall, R. E. “Intertemporal Substitution in Consumption.” *Journal of Political Economy*. 1988.
- Blundell, R. and L. Pistaferri and I. Preston. “Consumption Inequality and Partial Insurance.” *American Economic Review*. 2008.

## Lecture 1: Households

### 1. Mandatory

- Campbell, J. and N. G. Mankiw. “Consumption, Income, and Interest Rates: Reinterpreting the Time Series Evidence.” *NBER Macroeconomics Annual*. 1989.
- Aiyagari, R. “Uninsured Idiosyncratic Risk and Aggregate Saving.” *The Quarterly Journal of Economics*. 1994.

### 2. Recommended

- Bewley, T. “The permanent income hypothesis: A theoretical formulation”. *Journal of Economic Theory*. 1977.
- Mankiw, N. G. “The Equity Premium and the Concentration of Aggregate Shocks.” *Journal of Financial Economics*. 1986.
- Imrohroglu, A. “Cost of business cycles with indivisibilities and liquidity constraints”. *Journal of Political Economy*. 1989.
- Huggett, M. “The Risk-Free Rate in Heterogeneous-Agent Incomplete-Insurance Economies.” *Journal of Economic Dynamics and Control*. 1993.

- Carroll, C. “Buffer-Stock Saving and the Life Cycle/Permanent Income Hypothesis.” *Quarterly Journal of Economics*. 1997.
- Krusell, P. and A. Smith “Income and wealth heterogeneity in the macroeconomy”. *Journal of Political Economy*. 1998.
- Heathcote, J. and F. Perri and G. Violante. “Unequal We Stand: An Empirical Analysis of Economic Inequality in the United States, 1967–2006.” *Review of Economic Dynamics*. 2010.
- Heathcote, J. and K. Storesletten and G. Violante. “The macroeconomic implications of rising wage inequality in the United States”. *Journal of Political Economy*. 2010.
- Ljungqvist, L. and T. Sargent “Recursive Macroeconomic Theory”. Chapter 18. 2012.

## Lecture 2: Firms

### 1. Mandatory

- Hopenhayn, H. “Entry, exit, and firm dynamics in long run equilibrium”. *Econometrica*. 1992.

### 2. Recommended

- Gertler, M. and S. Gilchrist. “Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms”. *The Quarterly Journal of Economics*. 1994.
- Melitz, M. “The impact of trade on aggregate industry productivity and intra-industry reallocations”. *Econometrica*. 2003.
- Luttmer, E. “Selection, Growth, and the Size Distribution of Firms”. *The Quarterly Journal of Economics*. 2007.
- Khan, A. and J. Thomas. “Idiosyncratic Shocks and the Role of Nonconvexities in Plant and Aggregate Investment Dynamics”. *Econometrica*. 2008.
- Khan, A. and J. Thomas. “Credit Shocks and Aggregate Fluctuations in an Economy with Production Heterogeneity”. *Journal of Political Economy*. 2013.
- Ottonello, P. and T. Winberry. “Financial Heterogeneity and the Investment Channel of Monetary Policy”. *Econometrica*. 2020.
- Winberry, T. “Lumpy Investment, Business Cycles, and Stimulus Policy”. *American Economic Review*. 2021.
- Jeenas, P. “Firm Balance Sheet Liquidity, Monetary Policy Shocks, and Investment Dynamics”. Working Paper. 2023.

## Lecture 3: Banks

### 1. Mandatory

- Coimbra, N. and H. Rey. “Financial Cycles with Heterogeneous Intermediaries”. *The Review of Economic Studies*. 2023.

### 2. Recommended

- Mendicino, C., K. Nikolov, J. Rubio-Ramirez, J. Suarez, and D. Supera, “Twin Default Crises,” *ECB Working Paper 2414*, 2020.
- Corbae, D. and P. D’Erasmus. “Capital Buffers in a Quantitative Model of Banking Industry Dynamics”. *Econometrica*. 2021.
- Begenau, J. and T. Landvoigt. “Financial regulation in a quantitative model of the modern banking system”. *The Review of Economic Studies*. 2022.
- Bianchi, J. and S. Bigio. “Banks, Liquidity Management, and Monetary Policy”. *Econometrica*. 2022.
- Jamilov, R. and T. Monacelli. “Bewley Banks”. Working Paper. 2023.
- Bellifemine, M. and R. Jamilov and T. Monacelli. “HBANK: Monetary Policy with Heterogeneous Banks”. Working Paper. 2022.

## Lecture 4: Regions

### 1. Mandatory

- Mendoza, E. and V. Quadrini, and J-V. Ríos-Rull. “Financial Integration, Financial Development, and Global Imbalances.” *Journal of Political Economy*. 2009.

### 2. Recommended

- Caballero, R. and E. Farhi and P-O. Gourinchas. “An Equilibrium Model of “Global Imbalances” and Low Interest Rates”. *American Economic Review*. 2008.
- Gourinchas, P-O. and H. Rey. “Exorbitant Privilege and Exorbitant Duty”. Working Paper. 2010.
- Hassan, T. “Country Size, Currency Unions, and International Asset Returns.” *Journal of Finance*. 2013.
- Farhi, E. and I. Werning. “Fiscal Multipliers: Liquidity Traps and Currency Unions”. *Handbook of Macroeconomics*. 2016.
- Farhi, E. and I. Werning. “Fiscal Unions”. *American Economic Review*. 2017.
- Maggiori, M. “Financial intermediation, international risk sharing, and reserve currencies.” *American Economic Review*. 2017.

- de Ferra, S. and K. Mitman and F. Romei. “Household heterogeneity and the transmission of foreign shocks”. *Journal of International Economics*. 2020.
- Auclert, A. and M. Rognlie and M. Souchier and L. Straub. “Exchange Rates and Monetary Policy with Heterogeneous Agents: Sizing up the Real Income Channel”. Working Paper. 2021.
- Bellifemine, M. and A. Couturier and R. Jamilov “The Regional Keynesian Cross”. Working Paper. 2023.

## Lecture 5: Granularity

### 1. Mandatory

- Gabaix, X. “The Granular Origins of Aggregate Fluctuations”. *Econometrica*. 2011.

### 2. Recommended

- Carvalho, V. and X. Gabaix. “The Great Diversification and Its Undoing”. *American Economic Review*. 2013.
- di Giovanni, J. and A. Levchenko and I. Mejean. “Firms, Destinations, and Aggregate Fluctuations.” *Econometrica*. 2014.
- di Giovanni, J. and A. Levchenko and I. Mejean. “The Micro Origins of International Business Cycle Comovement.” *American Economic Review*. 2018.
- Gabaix, X. “Power Laws in Economics: An Introduction”. *Journal of Economic Perspectives*. 2016.
- Benhabib, J. and A. Bisin. “Skewed Wealth Distributions: Theory and Empirics”. *American Economic Review*. 2018
- Gaubert, C. and O. Itskhoki. “Granular Comparative Advantage”. *Journal of Political Economy*. 2021.
- Gabaix, X. and R. Koijen. “Granular Instrumental Variables”. *Journal of Political Economy*. Forthcoming.
- Galaasen, S. and R. Jamilov and R. Juelsrud and H. Rey. “Granular Credit Risk”. Working paper. 2023.
- Jamilov, R. and A. Kohlhas and S. Talavera and M. Zhang. “Granular Sentiments”. Working Paper. 2023.

## Lecture 6: HANC, TANK, and HANK

### 1. Recommended

- Galí, J. and D. López-Salido and K. Vallés. “Understanding the Effects of Government Spending on Consumption”. *Journal of the European Economic Association*. 2007.
- Bilbiie, F. “Limited asset markets participation, monetary policy and (inverted) aggregate demand logic”. *Journal of Economic Theory*. 2008.
- Kaplan, G. and G. Violante. “A model of the consumption response to fiscal stimulus payments”. *Econometrica*. 2014.
- Werning, I. “Incomplete markets and aggregate demand”. Working Paper. 2015.
- Krueger, D. and K. Mitman, and F. Perri. “Chapter 11 - Macroeconomics and Household Heterogeneity”. In: J.B. Taylor and H. Uhlig (eds.) *Handbook of Macroeconomics*, vol. 2. 2016.
- McKay, A. and R. Reis. “The Role of Automatic Stabilizers in the U.S. Business Cycle”. *Econometrica*. 2016.
- Challe, E. and X. Ragot. “Precautionary Saving Over the Business Cycle”. *The Economic Journal*. 2016.
- Challe, E. and J. Matheron and X. Ragot and J. Rubio-Ramirez. “Precautionary saving and aggregate demand”. *Quantitative Economics*. 2017.
- Kaplan, G. and B. Moll and G. Violante. “Monetary Policy According to HANK”. *American Economic Review*. 2018.
- Bayer, C. and R. Luetticke and L. Pham-Dao and V. Tjaden. “Precautionary Savings, Illiquid Assets, and the Aggregate Consequences of Shocks to Household Income Risk”. *Econometrica*. 2019.
- Hagedorn, M. and I. Manovskii and K. Mitman “The Fiscal Multiplier”. Working Paper. 2019.
- Auclert, A. “Monetary Policy and the Redistribution Channel”. *American Economic Review*. 2019.
- Bilbiie, F. “The New Keynesian Cross”. *Journal of Monetary Economics*. 2020.
- Broer, T. and N. Hansen and P. Krusel and E. Öberg. “The New Keynesian Transmission Mechanism: A Heterogeneous-Agent Perspective.” *Review of Economic Studies*. 2020.
- Ravn, M. and V. Sterk. “Macroeconomic Fluctuations with HANK & SAM: an Analytical Approach”. *Journal of the European Economic Association*. 2020.
- Luetticke, R. “Transmission of Monetary Policy with Heterogeneity in Household Portfolios.” *American Economic Journal: Macroeconomics*. 2021.
- Auclert, A. and Rognlie, M. and Straub, L. “The Intertemporal Keynesian Cross”. Working Paper. 2023