BASEforHANK

Spring School 2027 at DIW Berlin

Instructors: Christian Bayer, University of Bonn

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Place: week 1 (online), week 2 (on-site at DIW Berlin, Germany)

Time: March 1 - 10, 2027

The BASEforHANK spring school is designed for PhD students, postdoctoral researchers and professionals seeking training in methods for solving and estimating heterogeneous agent business cycle models, particularly HANK models. While the focus is on technical training, the program also covers some economic aspects of heterogeneous agent macro models.

The school runs for two weeks (eight days). Each day consists of lectures in the morning and small-group training sessions (with a maximum of ten participants per group) in the afternoon. The first week is online, and the second week takes place on-site at the DIW Berlin (Germany).

The school provides all the necessary training to become a proficient user of the BASEforHANK package (https://github.com/BASEforHANK/BASEtoolbox.jl), which allows HANK models to be solved and estimated efficiently in a Dynare-like environment.

The programming language used at the school is Julia; therefore the school also provides an introduction to Julia as a programming language. You can apply to attend either week separately, but a solid knowledge of the material covered in week one is a prerequisite for week two.

Prospective Schedule and Course Contents

Week 1: Basic methods for HANK (online), March 1 – March 5, 2027

Date	Content
Mar 1	Basics of dynamic programming, value and policy function iteration
Mar 2	Endogenous grid method (EGM), Markov chains, distributional EGM
Mar 3	Stationary distributions, stationary equilibria
Mar 4	Solving DSGE models by perturbation, Kalman filter
Mar 5	Estimation of DSGE models

Week 2: Advanced methods for HANK (on-site), March 8 – March 10, 2027

Date	Content
Mar 8	Overview of techniques to solve HANK models
Mar 9	State-space reduction techniques, aggregate uncertainty
Mar 10	Estimating HANK models, applications

The **first week** of the course begins with an overview of efficient methods for solving single-agent dynamic programming problems, as described in Carroll (2006) and Hintermaier and Koeniger (2010). The dynamic household problems studied here generate distributions of income and wealth over time, described by a Kolmogorov forward equation. Next, we will study methods to efficiently solve for stationary distributions in this setup, which will allow us to describe and compute Aiyagari (1994) and Huggett (1993)-type stationary equilibria. We will then discuss solution techniques (in particular Klein, 2000; Schmitt-Grohé and Uribe, 2004) for solving dynamic stochastic general equilibrium models based on their state-space form and perturbation techniques. Finally, we will discuss Bayesian estimation of DSGE models in state-space form based on filtering techniques. The application example will be a representative agent New Keynesian model of the type studied, for example, by Christiano et al. (2005) and Smets and Wouters (2007).

The **second week** focuses on HANK models. We will begin with an overview of solution techniques for HANK models (see e.g., Ahn et al., 2018; Auclert et al., 2021; Krusell and Smith, 1998; Reiter, 2009). We will then focus on state-space techniques based on model reduction (Bayer et al., 2024; Bayer and Luetticke, 2020). This will include techniques for solving HANK models at higher order (Bayer et al., 2025), as well as methods that allow us to study the effects of aggregate uncertainty in environments with ambiguity-averse heterogeneous agents (Ilut et al., 2025). Finally, we will introduce the BASEforHANK toolbox, the estimation techniques developed in Bayer et al. (2024), and their application to studying business cycles, monetary and fiscal policy.

The daily schedule runs from 9 a.m. to 5 p.m. CET, including four hours of lectures (9 a.m. - 1 p.m., CET) and three hours of small-group training sessions (2 p.m. – 5 p.m. CET).

We strongly recommend to either attend only week one or to attend both weeks. If you wish to only attend week 2, please make sure that you're familiar with the contents of week one.

Regular participation fees

The participation fees for the BASEforHANK Spring School 2027 are

- € 825 for week 1,
- € 1,225 for week 2, and
- a discounted rate of € 1,725 if both weeks are booked together.

Reduced participation fees

PhD students and postdoctoral researchers from higher education institutions and research organisations can apply for an additional *early bird academic discount*, bringing the respective rates down to

- € 500 for week 1,
- € 775 for week 2, and
- € 1,225 for both weeks.

This reduced fee only applies if the registration will be completed by December 6th, 2026. If the registration will be made after that date, the full price applies.

Light lunches and coffee will be provided in week two, but participants need to book their own accommodation. We do not cover any travel or accommodation expenses occurring for participants of the on-site module at DIW Berlin.

Application and Requirements

Please apply until November 15, 2026 via mail to hankspringschool2027@diw.de with the following:

- a CV
- a short description of how you already use HANK models or how you intend to use HANK models for your research
- a note which week of the course you wish to attend (week 1, week 2, or both)

We will decide about applications and make offers to enroll for the school by November 22, 2026. For the early bird academic discount, enrollment has to take place until December 6, offers to enroll at the undiscounted price are valid until January 15, 2027. Fees are due at enrollment and have to be paid by January 31, 2027 the latest.

References

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Carroll, Christopher D. (2006). "The method of endogenous gridpoints for solving dynamic stochastic optimization problems". Economics Letters 91 (3), 312–320.

Christiano, Lawrence J, Martin Eichenbaum, and Charles L Evans (2005). “Nominal rigidities and the dynamic effects of a shock to monetary policy”. Journal of Political Economy 113 (1), 1–45.

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Huggett, Mark (1993). “The risk-free rate in heterogeneous-agent incomplete-insurance economies”. Journal of Economic Dynamics and Control 17 (5-6), 953–969.

Ilut, Cosmin L, Ralph Luetticke, and Martin Schneider (2025). “Hank’s response to aggregate uncertainty in an estimated business cycle model”. NBER Working Paper 33331.

Klein, Paul (2000). “Using the generalized Schur form to solve a multivariate linear rational expectations model”. Journal of Economic Dynamics and Control 24 (10), 1405–1423.

Krusell, Per and Anthony A. Smith Jr. (1998). “Income and wealth heterogeneity in the macroeconomy”. Journal of Political Economy 106 (5), 867–896.

Reiter, Michael (2009). “Solving heterogeneous-agent models by projection and perturbation”. Journal of Economic Dynamics and Control 33 (3), 649–665.

Schmitt-Grohé, Stephanie and Martin Uribe (2004). “Solving dynamic general equilibrium models using a second-order approximation to the policy function”. Journal of Economic Dynamics and Control 28 (4), 755–775.

Smets, Frank and Rafael Wouters (2007). “Shocks and frictions in US business cycles: a Bayesian DSGE approach”. American Economic Review 97 (3), 586–606.