Applied Monetary Economics

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Syllabus

This course targets graduate students with a background in economics or related fields. It aims to equip students with the analytical tools and knowledge necessary to understand and evaluate monetary policy decisions and their implications for the economy.

The course is organised in lectures and student presentations based on projects.

I Topic 1:

Conventional vs Unconventional Monetary Policy, Taylor rule, Romer and Romer (2004)'s regression

Exploration of unconventional monetary policy tools, such as quantitative easing, forward guidance, and negative interest rates. Explaining the Taylor rule, a widely-used guideline for setting interest rates based on inflation and output deviations from target levels. Discussing the Romer and Romer (2004)'s regression.

References: Taylor (1993); Christiano et al. (1999); Krishnamurthy and Vissing-Jorgensen (2011); Bernanke (2020).

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II Topic 2:

The 3-Equation New Keynesian Model

The basic 3-equation New Keynesian model is a cornerstone of modern macroeconomic theory, often used to analyze monetary policy and economic fluctuations. It consists of three main equations: the IS curve, the Phillips curve, and the monetary policy rule.

The IS curve represents the relationship between output (or economic activity) and the real interest rate. It is derived from the equilibrium condition in the goods market, where total output equals total demand. In this model, output is negatively related to the real interest rate. Expectations about future policy actions can affect current economic decisions, thereby impacting the IS curve and overall economic dynamics.

The Phillips curve captures the relationship between inflation and economic activity (or the output gap), derived under the hypothesis of price rigidities and the forward-looking behavior of firms and households. In the New Keynesian model, the New Keynesian Phillips Curve (NKPC) incorporates expectations of future inflation. Expectations play a crucial role in this model. The forward-looking nature of the Phillips curve means that anticipated future inflation influences current inflation.

The monetary policy rule describes how the central bank sets the nominal interest rate in response to deviations of inflation from its target and the output gap. The rule captures the central bank's objective to stabilize both inflation and output.

References: Galí (2015).

III Topic 3:

Identification of Monetary Policy Surprises

Overview of empirical techniques used to identify monetary policy surprises including time series analysis, econometric models, and event studies. The identification of monetary policy surprises involves determining unexpected changes in monetary policy actions or announcements that deviate from market expectations.

References: Kuttner (2001); Cochrane and Piazzesi (2002); Faust et al. (2003); Romer

and Romer (2004); Faust et al. (2004); Bernanke and Kuttner (2005); Gürkaynak et al. (2005); Hanson and Stein (2015); Gertler and Karadi (2015); Ramey (2016); Cieslak (2018); Altavilla et al. (2019); Jarociński and Karadi (2020); Swanson (2021); Miranda-Agrippino and Ricco (2021); Bauer and Swanson (2023a,b).

IV Topic 4: Monetary Policy Transmission Mechanisms and Nonlinearities

Monetary policy transmission mechanisms describe how changes in monetary policy actions, such as interest rate adjustments or changes in the money supply, affect key economic variables such as output, inflation, and employment. Results form linear and nonlienar models will be presented.

IV.A Linear Models

References: Christiano et al. (1999); Gertler and Karadi (2015); Ramey (2016); Nakamura and Steinsson (2018b,a); Jarociński and Karadi (2020); Miranda-Agrippino and Ricco (2021); Bauer and Swanson (2023a).

IV.B Nonlinear Models

References: Granger and Teräsvirta (1993); Mumtaz and Surico (2015); Tenreyro and Thwaites (2016); Angrist et al. (2018); Bruns and Piffer (2021); De Santis and Tornese (2024).

V Topic 5:

Taylor rules and Transmission of Monetary Policy Shocks

Baumeister and Hamilton (2018) allow to estimate contemporaneous structural relations as in DSGE models, while at the same time leaving the lag structure estimated as in traditional VARs. The estimation of the 3-equation New Keynesian model in linear and non-linear settings.

References: Baumeister and Hamilton (2018); Cardamone and De Santis (2024).

VI Data and Codes

- **Romer and Romer (2004)'s surprises and codes:** Click here
- **Bauer and Swanson (2023a,b)'s surprises:** Click here
- **Antolín-Díaz and Rubio-Ramírez (2018)'s code:** Click here
- **Fabio Canova and Filippo Ferroni's Toolbox:** Click here
- **Baumeister and Hamilton (2018)'s code:** Click here

VII Location and Timetable

The topics will take place in Bicocca, Edificio U7, Piano 2, Stanza 2104 (aula seminari economia).

Date	Number of hours	Topics	Presentations and discussions	Location
01 December 2024	2 (17:00-18:30)	1		Bicocca
02 December 2024	2 (08:30-10:00)	1		Bicocca
03 December 2024	2 (08:30-10:00)	1		Bicocca
04 December 2024	2 (08:30-10:00)	1		Bicocca
05 December 2024	3 (08:30-11:00)	1		Bicocca
17 December 2024	2 (08:30-10:00)		1	Team
18 December 2024	2 (08:30-10:00)		1	Team

Table 1: **Schedule of Topics and Presentations**

References

Altavilla, Carlo, Luca Brugnolini, Refet S. Gürkaynak, Roberto Motto, and Giuseppe Ragusa (2019) "Measuring euro area monetary policy," *Journal of Monetary Economics*, 108 (C), 162–179.

Angrist, Joshua D., Òscar Jordà, and Guido M. Kuersteiner (2018) "Semiparametric Estimates of Monetary Policy Effects: String Theory Revisited," *Journal of Business & Economic Statistics*, 36 (3), 371–387.

Antolín-Díaz, Juan and Juan F. Rubio-Ramírez (2018) "Narrative Sign Restrictions for SVARs," *American Economic Review*, 108 (10), 2802–2829.

Bauer, Michael D. and Eric T. Swanson (2023a) "A Reassessment of Monetary Policy Surprises and High-Frequency Identification," *NBER Macroeconomics Annual*, 37, 87–155.

——— (2023b) "An Alternative Explanation for the "Fed Information Effect"," *American Economic Review*, 113 (3), 664–700.

Baumeister, Christiane and James Hamilton (2018) "Inference in structural vector autoregressions when the identifying assumptions are not fully believed: Re-evaluating the role

of monetary policy in economic fluctuations," *Journal of Monetary Economics*, 100 (C), 48–65.

Bernanke, Ben S (2020) "The New Tools of Monetary Policy," *American Economic Review*, 110 (4), 943–983.

Bernanke, Ben S. and Kenneth N. Kuttner (2005) "What Explains the Stock Market's Reaction to Federal Reserve Policy?," *Journal of Finance*, 60 (3), 1221–1257.

Bruns, Martin and Michele Piffer (2021) "Monetary policy shocks over the business cycle: Extending the Smooth Transition framework," University of East Anglia School of Economics Working Paper Series 2021-07.

Cardamone, Dario and Roberto A. De Santis (2024) "State-Dependent Taylor Rules, Monetary Policy Transmission, and the Credit Channel," Mimeograph.

Christiano, Lawrence J, Martin Eichenbaum, and Charles L Evans (1999) "Monetary Policy Shocks: What Have We Learned and to What End?" in *Handbook of Macroeconomics*, 1, 65–148: Elsevier.

Cieslak, Anna (2018) "Short-Rate Expectations and Unexpected Returns in Treasury Bonds," *Review of Financial Studies*, 31 (9), 3265–3306.

Cochrane, John H and Monika Piazzesi (2002) "Asset pricing implications of the bond market's reaction to monetary policy," *Journal of Political Economy*, 110 (1), 64–104.

De Santis, Roberto and Tommaso Tornese (2024) "US monetary policy is more powerful in low economic growth regimes," Working Paper 2919, European Central Bank.

Faust, Jon, John H. Rogers, Eric Swanson, and Jonathan H. Wright (2003) "Identifying the Effects of Monetary Policy Shocks on Exchange Rates Using High Frequency Data," *Journal of the European Economic Association*, 1 (5), 1031–1057.

Faust, Jon, Eric Swanson, and Jonathan Wright (2004) "Identifying VARS based on high frequency futures data," *Journal of Monetary Economics*, 51 (6), 1107–1131.

Galí, Jordi (2015) *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework and Its Applications Second edition* in , Economics Books (10495): Princeton University Press.

Gertler, Mark and Peter Karadi (2015) "Monetary Policy Surprises, Credit Costs, and Economic Activity," *American Economic Journal: Macroeconomics*, 7 (1), 44–76.

Granger, Clive and Timo Teräsvirta (1993) *Modelling Non-Linear Economic Relationships*: Oxford University Press.

Gürkaynak, Refet S, Brian Sack, and Eric Swanson (2005) "Do Actions Speak Louder Than Words? The Response of Asset Prices to Monetary Policy Actions and Statements," *International Journal of Central Banking*, 1 (1).

Hanson, Samuel and Jeremy Stein (2015) "Monetary policy and long-term real rates," *Journal of Financial Economics*, 115 (3), 429–448.

Jarociński, Marek and Peter Karadi (2020) "Deconstructing Monetary Policy Surprises—The Role of Information Shocks," *American Economic Journal: Macroeconomics*, 12 (2), 1–43.

Krishnamurthy, Arvind and Annette Vissing-Jorgensen (2011) "The Effects of Quantitative Easing on Interest Rates: Channels and Implications for Policy," *Brookings Papers on Economic Activity*, 2, 215–287.

Kuttner, Kenneth N. (2001) "Monetary policy surprises and interest rates: Evidence from the Fed funds futures market," *Journal of Monetary Economics*, 47 (3), 523–544.

Miranda-Agrippino, Silvia and Giovanni Ricco (2021) "The Transmission of Monetary Policy Shocks," *American Economic Journal: Macroeconomics*, 13 (3), 74–107.

Mumtaz, Haroon and Paolo Surico (2015) "The Transmission Mechanism in Good and Bab Times," *International Economic Review*, 56 (4), 1237–1260.

Nakamura, Emi and Jón Steinsson (2018a) "Identification in Macroeconomics," *Journal of Economic Perspectives*, 32 (3), 59–86.

——— (2018b) "High-Frequency Identification of Monetary Non-Neutrality: The Information Effect," *The Quarterly Journal of Economics*, 133 (3), 1283–1330.

Ramey, Valerie (2016) "Macroeconomic Shocks and Their Propagation," 2, Chap. Chapter 2, 71–162: Elsevier.

Romer, Christina D. and David H. Romer (2004) "A New Measure of Monetary Shocks: Derivation and Implications," *American Economic Review*, 94 (4), 1055–1084.

Swanson, Eric (2021) "Measuring the effects of federal reserve forward guidance and asset purchases on financial markets," *Journal of Monetary Economics*, 118 (C), 32–53.

Taylor, John B. (1993) "Discretion versus policy rules in practice," *Carnegie-Rochester Conference Series on Public Policy*, 39 (1), 195–214.

Tenreyro, Silvana and Gregory Thwaites (2016) "Pushing on a String: US Monetary Policy Is Less Powerful in Recessions," *American Economic Journal: Macroeconomics*, 8 (4), 43–74.