Lecture Notes:
Demystifying DSGE Models

Based on lectures by **John D.A. Cuddy** in Autumn semester, 2025

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This is the lecture note taken in the course *Demystifying DSGE Models* taught by **John D.A. Cuddy** at Graduate Institute of International and Developoment Studies, Geneva as part of the International Economics program (Semester II, 2024).
Currently, these are just drafts of the lecture notes. There can be typos and mistakes anywhere. So, if you find anything that needs to be corrected or improved, please inform at `jingle.fu@graduateinstitute.ch`.

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Introduction to DSGE Models

1.1 Introducory Points

Lecture 2.

Appendix

2.1 Yule-Walker

2.2 Kronecker Products & Vector Operator

Recommended Resources

Books

[1] Helmut Lütkepohl. *New Introduction to Multiple Time Series Analysis*. New York: Springer, 2005

[2] James H. Stock and Mark W. Watson. *Introduction to Econometrics*. 4th ed. New York: Pearson, 2003

[3] Jeffrey M. Wooldridge. *Introductory Econometrics: A Modern Approach*. 7th ed. Cengage Learning, 2020

[4] Bruce E. Hansen. *Econometrics*. Princeton, New Jersey: Princeton University Press, 2022

[5] Fumio Hayashi. *Econometrics*. Princeton, New Jersey: Princeton University Press, 2000

[6] Jeffrey M. Wooldridge. *Econometric Analysis of Cross Section and Panel Data*. 2nd ed. Cambridge, Massachusetts: The MIT Press, 2010

[7] Joshua Chan et al. *Bayesian Econometric Methods*. 2nd ed. Cambridge, United Kingdom: Cambridge University Press, 2019

[8] Badi H. Baltagi. *Econometric Analysis of Panel Data*. 6th ed. Cham, Switzerland: Springer, 2021

[9] James D. Hamilton. *Time Series Analysis*. Princeton, New Jersey: Princeton University Press, 1994. ISBN: 9780691042893

[10] Takeshi Amemiya. *Advanced Econometrics*. Cambridge, MA: Harvard University Press, 1985

[11] Peng Ding. *A First Course in Causal Inference*. 2023. arXiv: 2305.18793 [stat.ME]. URL: https://arxiv.org/abs/2305.18793

[12] David Walters. *An Introduction to Stochastic Processes and Their Applications*. New York: Dover Publications, 1982

[13] Peter Whittle. *Hypothesis Testing in Time Series Analysis*. Uppsala: Almqvist & Wiksells, 1951

[14] Colorado P. J. Brockwell Fort Collins. *Time Series: Theory and Methods*. New York: Springer, 1991

Others

[15] Roger Bowden. "The Theory of Parametric Identification". In: *Econometrica* 41.6 (1973), pp. 1069–1074. DOI: 10.2307/1914036

[16] Robert I. Jennrich. "Asymptotic Properties of Non-linear Least Squares Estimators". In: *The Annals of Mathematical Statistics* 40.2 (1969), pp. 633–643. DOI: 10.1214/aoms/1177697731

[17] Michael P. Keane. "A Note on Identification in the Multinomial Probit Model". In: *Journal of Business & Economic Statistics* 10.2 (1992), pp. 193–200. DOI: 10.1080/07350015.1992.10509906

[18] Thomas J. Rothenberg. "Identification in Parametric Models". In: *Econometrica* 39.3 (1971), pp. 577–591. DOI: 10.2307/1913267

[19] George Tauchen. "Diagnostic Testing and Evaluation of Maximum Likelihood Models". In: *Journal of Econometrics* 30 (1985), pp. 415–443. DOI: 10.1016/0304-4076(85)90149-6

[20] Abraham Wald. “Note on the Consistency of the Maximum Likelihood Estimate”. In: *The Annals of Mathematical Statistics* 20.4 (1949), pp. 595–601. DOI: 10.1214/aoms/1177729952

[21] Halbert White. “Maximum Likelihood Estimation of Misspecified Models”. In: *Econometrica* 50.1 (1982), pp. 1–25. DOI: 10.2307/1912526

[22] Jerzy Neyman. “On the Application of Probability Theory to Agricultural Experiments. Essay on Principles. Section 9”. In: *Statistical Science* 5.4 (1923), pp. 465–472

[23] Donald B. Rubin. “Comment on "Randomization Analysis of Experimental Data: The Fisher Randomization Test" by D. Basu”. In: *Journal of the American Statistical Association* 75.371 (1980), pp. 591–593. DOI: 10.1080/01621459.1980.10477410

[24] Donald B. Rubin. “Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies”. In: *Journal of Educational Psychology* 66.5 (1974), pp. 688–701. DOI: 10.1037/h0037350

[25] Donald B. Rubin. “Bayesian Inference for Causality: The Importance of Randomization”. In: *The Annals of Statistics* 3.1 (1975), pp. 121–131. DOI: 10.1214/aos/1176343238

[26] Donald B. Rubin. “Causal Inference Using Potential Outcomes: Design, Modeling, Decisions”. In: *Journal of the American Statistical Association* 100.469 (2005), pp. 322–331. DOI: 10.1198/016214504000001880

[27] Paul W. Holland. “Statistics and Causal Inference(with discussion)”. In: *Journal of the American Statistical Association* 81.396 (1986), pp. 945–960. DOI: 10.1080/01621459.1986.10478373