Christian Groth May 29, 2002

Economic Growth

Spring 2002

Course plan and syllabus

The basic text for the course is: R. J. Barro and X. Sala-I Martin, *Economic Growth*, McGraw-Hill 1995 or MIT Press 1998, henceforth B & S.

In addition journal articles and lecture notes will be used.

Useful supplementary text (more elementary than B & S, includes entertaining discussions): B. Valdés, *Economic Growth. Theory, Empirics, and Policy,* Edward Elgar 1999.

FINAL LIST OF TOPICS

Author names refer to items in the literature list at:
http://www.econ.ku.dk/okocg/Economic%20Growth/EconomicGrowth-hoved.htm
Starred items are required reading. These items are listed separately in the Syllabus List for Economic growth as of May 24, 2002.

I. Setting the stage

A. Stylized fatcs about growth: *B & S Introduction.

B. Quick refresher: The Solow model. σ convergence and β convergence. Adjustment speed.

1. Basics: *B & S 14-37, Levine & Renelt 1992, Valdés Ch. 3-4, Maddala & Wu 2000.
2. World income distribution: *Pritchett 1997, *Jones 1997a, *Dalgaard & Vastrup 2001, Quah 2000.

C. Simple models of accumulation-based endogenous growth and of poverty traps: *B & S 38-46 49-52.

II. Optimizing agents. Exogenous technical progress

A. Brushup of the Ramsey model (basic representative agent model) with focus on the transitional dynamics: *B & S 59-87 (pp. 80-87 only cursory).

B. The small open economy and the world economy: *B & S 96-101.

C. Extension with human capital and capital market imperfections: *B & S 101-109.

D. Overlapping generations in an open economy: *B & S 110-19 cursory.

III. Accumulation-based endogenous growth

A. The AK model: *B & S 140-43.

B. Reduced-form AK models.

1. Two kinds of capital produced by the same technology (to be read in connection with IV.A below): *B & S 144-46.
2. Learning-By-Doing (the Arrow 1962 model and the Romer 1986 model). Semi-endogenous growth vs. endogenous growth. *B & S 146-52, Valdés Ch. 7.

C. Productive government services and public finance.

1. The Barro 1990 model and extensions: *B & S 152-61, Futagami et al. 1993.

2. Growth, income distribution and political economy: *Alesina & Rodrik 1994.

D. Necessary conditions for accumulation-based endogenous growth in a one-sector model: *B & S 167-69.

IV. Two-sector models with physical and human capital

A. The degenerate case: Same technology in the two sectors: B & S 171-74.

B. Different technologies.

1. The general case: *B & S 179-81 cursory.

2. No physical capital in the educational sector (the Uzawa-Lucas model): B & S 182-97, *Lucas 1988, § 1, 4, and 6.

3. Necessary conditions for accumulation-based endogenous growth in a two-sector model: B & S 198-200.

C. Learning-By-Doing and comparative advantage: *Lucas 1988, § 5 and 7.

V. Innovation-based endogenous growth

A. Increasing-variety models.

1. Increasing input variety.

a. A simple model: *B & S 212-222.

b. Erosion of monopoly power: *B & S 223-225.

c. The Romer 1990 model: *B & S 226-30 cursory, Valdés Ch. 8, *Romer 1990, *Alvarez & Groth 2002 (§ 3-7 only cursory).

2. Increasing consumer-goods variety: *B & S 231-38 cursory.

3. Discussion, scale effects etc.: *Jones 1995a (§ 4 og 5 only cursory), Jones 1995 b, Jones 1999, Jones 2001b Chapters 4-5, *Dalgaard & Kreiner 2001, § 1-3 and 5, Valdés Ch. 9.

B. Increasing product quality (quality ladder models) and creative destruction: B & S 240–63, *Aghion & Howitt 1992, § 1-4 and 9 (§ 4 only cursory), Aghion & Howitt 1998 Ch. 2-3.

VI. Other topics

A. Catching-up? Country growth in an international context: *Bernard & Jones 1996.

B. Environmental and non-renewable natural ressources. Limits to growth? *Smulders 1995, *Groth & Schou 2002 (§ 3-5 only cursory), Schou 2000, Pezzey & Withagen 1998, Groth & Schou 2001, Stokey 1998.

Appendixes are not required reading, with the exception of B & S, p. 167-69.

Apart from the listed books and the articles by Lucas (1988) and Smulders (1995), the starred readings (and some others) are downloadable for students with access to the course pack website.

The articles by Lucas (1988) and Smulders (1995) can be bought at Studiekontoret.

Lecture notes 1-17, handed out during the semester, are required reading (except appendixes).

Spørgetime fredag d. 14/6 kl. 11,15-13 i St. Øvelsessal, Øk. Inst., 2. sal tv.

24/5 2002 Christian Groth

Syllabus List for Economic Growth

Pensum i Videregående Vækstteori
ved eksamen juni 2002

Aghion, P., and Howitt, P. , 1992, A model of growth through creative destruction, *Econometrica 60,* 2, 323-51, § 1-4, 9 (§ 4 only cursory).

Alesina, A., and D. Rodrik, 1994, Distributive Politics and Economic Growth, *Quarterly Journal of Economics 109,* no. 2.

Alvarez, M. J., and C. Groth, 2002, Too Little or Too Much R&D? Working Paper (§ 3-6 only cursory), http://www.econ.ku.dk/okocg/

Barro, R. J., and X. Sala-i-Martin, 1995, *Economic Growth,* MIT Press, Cambridge (Mass.). Selected parts, see Course Plan as of May 15, 2002.

Bernard, A. B., and C. I. Jones, 1996, Technology and Convergence, *Economic Journal 106,* 1037-44.

Dalgaard, C.-J., and J. Vastrup, 2001, On the measurement of σ-convergence, *Economics Letters 70,* 283-87.

Dalgaard, C.-J., and C. T. Kreiner, 2001, Is Declining Productivity Inevitable? *Journal of Economic Growth 6,* § 1-3 and 5.

Groth, C., and P. Schou, 2002, Capital Taxes, Growth, and Non-renewable Resources. Working paper (§ 3-5 only cursory), http://www.econ.ku.dk/okocg/

Jones, Charles I., 1995a, R&D-based models of economic growth, *Journal of Political Economy 103* (§ 4 and 5 only cursory).

Jones, Charles I., 1997a, On the evolution of world income distribution, *Journal of Economic Perspectives 11,* no. 3, 19-36.

Lucas, R. E. Jr., 1988, On the mechanics of economic development, *J. Monetary Economics 22,* § 1, 4-7.

Pritchett, L., 1997, Divergence, Big Time, *J. of Economic Perspectives 11,* no. 3.

Romer, P. M., 1990, Endogenous technological change, *J. Political Economy 98,* (supplementary issue) S71-S103.

Smulders, S., 1995, Entropy, Environment, and Endogenous Economic growth, *International Tax and Public Finance 2,* 319-40.

Videregående vækstteori, forårssemesteret 2002

Eksamensvink

De modeller, der optræder i pensum, kan inddeles i to grupper:

Gruppe A: Dette er modeller, der skal beherskes i betydningen, at man skal have præcist kendskab til deres grundantagelser og kunne analysere disses implikationer, dvs. kunne *anvende* modellen, evt. i en lettere modificeret udgave.

1 Solowmodellen med Harrod-neutrale tekniske fremskridt.
2 Den simple AK-model og "Sobelow"-modellen (B & S, s. 39-42).
3 Ramseymodellen for en lukket økonomi med Harrod-neutrale tekniske fremskridt.
4 AK-modellen.
5 Arrows Learning-by-doing-model.
6 Romers Learning-by-doing-model.
7 Barromodellen og dens udvidelser.
8 Énsektormodel med to slags kapital (B & S, ss. 144-46, 171-74).
9 Lucas' humankapitalmodel.
10 Romers 1997-model = enkel vækstmodel med stigende inputspecialisering (B & S, s. 212-22).
11 Jones' model.
12 Aghion-Howitt-modellen.

Gruppe B: Dette er modeller, som man skal have et vist kendskab til i den forstand, at man for en given model i gruppen skal vide noget om, hvilken modeltype der er tale om, hvad modellens formål er, og hvad nogle af dens hovedkonklusioner er.

En simpel model med CES-produktionsfunktion (B & S, s. 43-46).
En simpel model med en fattigdomsfælde.
Ramseymodel for en lille åben økonomi.
Ramseymodel for verdensøkonomien.
Ramseymodel for verdensøkonomien udvidet med humankapital og kreditmarkedsimperfektion.
Alesina-Rodrik-modellen.
Lucas' Learning-by-doing-model.
Romers 1997-model udvidet med stokastisk erosion af monopolmagt.
Romers 1990-model og Alvarez & Groths udvidelse af denne.
Dalgaard & Kreiners model.
Groth & Schou's model.

Samt de modeller, der i gennemgangsplanen er anført som kursorisk læsning.