CARL-JOHAN DALGAARD
UNIVERSITY OF COPENHAGEN
DEPARTMENT OF ECONOMICS
EMAIL: CARL.JOHAN.DALGAARD@ECON.KU.DK
Course web page:
http://www.econ.ku.dk/dalgaard/makro2.htm

SUMMARY 2

GROWTH THEORY: THE SOLOW MODEL

Readings: Slides, Lecture Note + Sørensen og Whitta-Jacobsen (2005), Ch. 3 og 5.

Basic assumption and the equations of the model
Closed economy implies S=I; Savings a constant fraction of total income; Aggregate production function; Inputs: Physical Capital and Labor (Rival); technology (non rival); constant returns to K and L (replication argument); increasing returns to K,L and A; production function on "intensive form"; Diminishing returns to capital input; Inada conditions; The law of motion for capital with and without exogenous technological change.

Steady state properties
Unique non-trivial steady state; global stability; GDP per capita grows at the rate of technological progress in steady state; the model is consistent with the Kaldorian facts. In the absence of exogenous technological change: No growth in GDP per capita due to diminishing returns and "upper Inada" condition. Capital accumulation cannot sustain growth.

Qualitative impact of parameter changes
Increasing the savings rate increases long-run labor productivity; increasing fertility does the opposite; "golden rule" steady state. Dynamic responses of key aggregates (GDP per capita, Capital per capita etc) from changes in parameters.

Empirical Implications
Transitional dynamics as an explanation for persistent growth differences; The rate of convergence and the time it takes to get to steady state; The model's lack of an ability to motivate GDP per capita/worker differences; Conditional Convergence; Club Convergence; Policy implications of the two convergence hypotheseis; σ-convergence; the Solow model does not predict σ-convergence The empirical success of the model when estimated: signs of key parameters ok; structure supported; reasonable R2. The empirical problems: size of estimated capital share is too big**.**

Growth accounting
Decomposing growth; deriving the growth accounting equation; The "residual" (total factor productivity" appears important in countries like US; pitfalls: Cannot be used for counterfactuals, cannot be used for forecasts.