Chapter 7

growth in per capita income in Canada = 2%

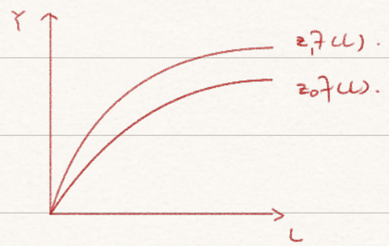
real per capita income + investment rate (possibly)

− population growth rate

Malthusian model: tech advance will only increase population, with no long-run change in the standard of living

$Y = zF(L, N)$ output is produced from land and labour input

in equilibrium consumption equals output produced $C = Y = zF(L, N)$.



if z increase in this model, per-worker production function shift up. In a long run, the population increase to the point that per capita consumption falls to initial level, so there's no change for living standard in a long run.

Solow model: population assumed to grow at a constant rate n

$N' = (1+n)N$

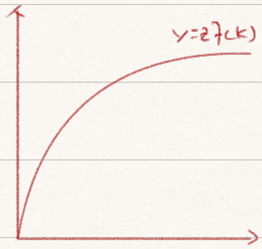
consumers are assumed to save a constant fraction

$C = (1-s)Y$

constant return to scale $\frac{Y}{N} = zF(\frac{K}{N}, 1)$

future capital equals after-depreciation capital plus invest

$K' = (1-d)K + I$



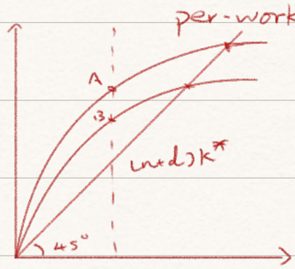
slope is the marginal product of capital

Since income equals to expenditure, $Y = C + I$

$K' = sY + (1-d)K$ saving from output plus remaining

then, substitude for output: $K' = szF(K,N) + (1-d)K$

per-worker form: $k' = [szf(k) + (1-d)k]/(1+n)$



an increase in saving rate shift the curve $szf(k)$ up, resulting in higher capital per worker

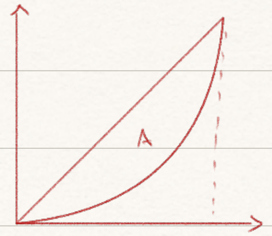
AB is the consumption per worker

$c = (1-s)zf(k)$

an increase in labor force grow rate would lead to decrease in steade-state capital per worker

increase in tech increase capical per worker

The Lorenz curve: the smaller area A is, a better equality it is



and it indicates a smaller gini coefficient.

Cobb-Douglas production function: $Y = zK^{a}N^{1-a}$

solow residual $= z = \frac{Y}{K^{a}N^{1-a}}$.