Growth Model

$\boxed{9062395123}$

Golden Rule

Till which point we will proceed

$\boxed{\text{Depreciation} = MPK}$

Create something new → Cost 100

Depreciation → 100

MPK > Depreciation

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L   LE

Labour   → Effective Labour

E → Efficiency factor of the labour

Cobb Douglas Production function

$$Y = K^{\alpha}(LE)^{1-\alpha} \qquad \boxed{\alpha = 1/3}$$

$L = 100 \quad K = 40 \quad E = 50$

a) Potential output per worker??

b) market clearing Real wage Rate? [@ full employment]

$$Y = K^{\alpha}(LE)^{1-\alpha}$$

$$y = \frac{Y}{LE} = \left(\frac{K}{LE}\right)^{\alpha} = \left(\frac{40}{100\times 50}\right)^{1/3} = \left(\frac{1}{5}\right)$$

$$y = \frac{Y}{LE} = \left(\frac{K}{LE}\right)^{\alpha} = \left[\frac{40}{100 \times 50}\right]^{\frac{1}{3}} = \left(\frac{1}{5}\right)$$

Potential output/worker $= y \times E = \frac{1}{5} \times 50 = 10$

Part 2

Real wage = $\frac{\text{Nominal wage}}{\text{Price level}}$

→ Purchasing Power $\boxed{10000}$ ✓

$\boxed{31^{st}}$

$\boxed{\text{Gov}}$

$$MPK = \frac{dy}{dK} = \alpha K^{\alpha - 1} = \frac{1}{3}\left(\frac{1}{125}\right)^{\frac{1}{3}-1}$$

$$= \frac{1}{3}\left(\frac{1}{125}\right)^{-2/3}$$

$$= \frac{1}{3} \cdot 25 = \frac{25}{3} = 8.33$$

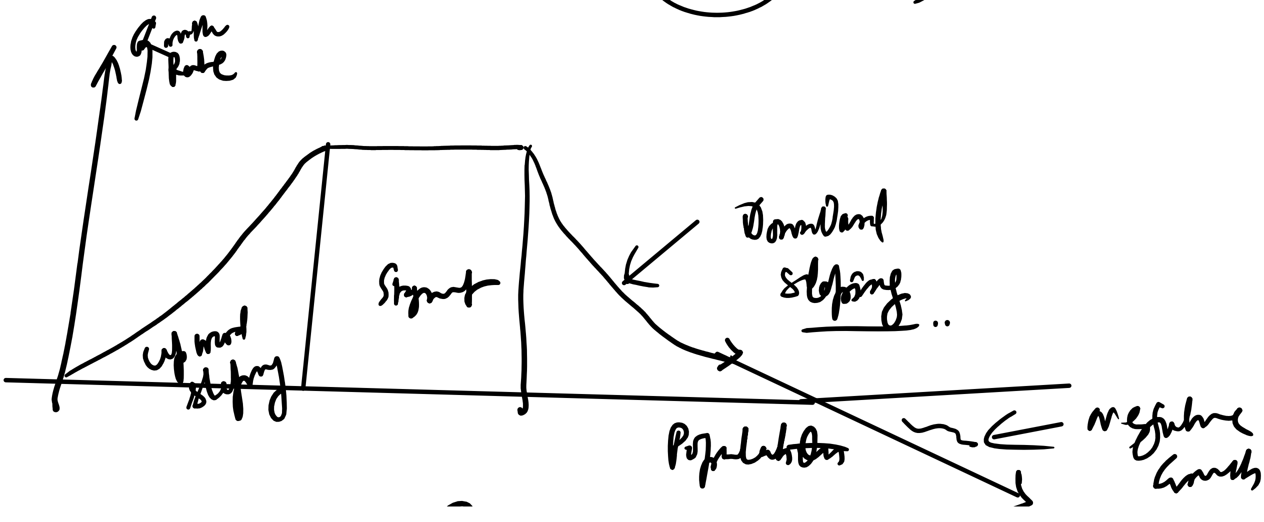
$\boxed{w = 8.33}$

@ MPK the wage Rate is exactly market clearing

Solow Model → Steady State

Population Growth → 1%

Technological Progress → 2% → Pro Growth



Population ↘ ← Negative Growth Zone

output & K grw @ 3%
K share of Y is 0.3.

$Y = f(K, L, A)$ TP

change

Base value

$$\frac{dY}{Y} = \alpha\frac{dK}{K} + (1-\alpha)\frac{dL}{L} + \frac{dA}{A}$$

α = Share of K
$(1-\alpha)$ = Share of L

$$3Y = 0.3(3\%) + 0.7(1\%) + 2\%$$

Since dA

2023

Stakeholder distribution Steady Session

6:30 - 7:30

9062395123

#

Q $Y = \sqrt{LK}$ MPC = 0.8
d = 10% of Capital
Population → 2%/year

~~(i) Calculate Steady state value of PCI & Consumption/Capita~~
~~(ii)~~ Find Savings Rate & $\frac{K}{L}$ Ratio which max Consumption/Capita.

Ans.

Break Even level → $(d + n)K$

Savings → $s f(k)$

$Y = \sqrt{KL}$

Savings => $sf(k)$

$Y = \sqrt{KL}$

$\frac{Y}{L} = \sqrt{\frac{K}{L}} =$

ans, $s = MPS = APS = 1 - MPC = \underline{0.2}$

$y = \sqrt{k}$

$f(k) = \sqrt{k}$

first Solow Growth model

$sf(k) = (\delta + n)k$

$0.2\,k^{\frac{1}{2}} = (0.1 + 0.02)\,k$

$\sqrt{k} = \frac{0.20}{0.12} = \frac{5}{3} = 1.67$

$k = \underline{2.78}$

for max Consumption / Capita..

$sf(k) = (\delta + n)k$

$0.2 \times k^{\frac{1}{2}} = ($

Part 2

$\boxed{\text{Golden Rule Steady State}}$

$MP_K = (\delta + n)$

$y = \sqrt{k}$

$\frac{dy}{dk} \Rightarrow \frac{1}{2}k^{-\frac{1}{2}} = 0.12$

$k^{\frac{1}{2}} = \frac{1}{2(0.12)} = \frac{1}{0.24}$

$\Rightarrow k = \boxed{17.36}$

Again, $s K^{\frac{1}{2}} = (\delta + n) K^{\frac{1}{2}}$

$$s = \frac{(0.1 + \cancel{0.02})}{2(0.1 + \cancel{0.02})} = \frac{1}{2}$$

$s = \underline{0.5}$

Production function $\rightarrow \frac{Y}{L}$ or y

<u>2014</u>

$$Y = A K^{0.5} L^{0.5}$$

$$\frac{Y}{L} = A\left(\frac{K}{L}\right)^{0.5}$$

$$\boxed{y = A\sqrt{K}}$$

Per capita formation ..

Y_t $\quad Y_{t-1}$

$Y_t = f(Y_{t-r})$ $\quad \boxed{r \in N}$

Channel Error

$n \geq 30$ Large N

$n < 30$

classical ...

$n \geq 30$ large (n)

$n < 30$ (t)

neo-classical

↓

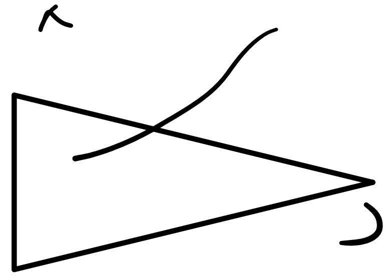
modern

IFS

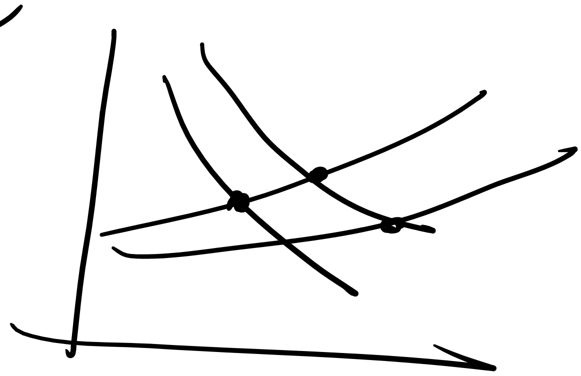
#

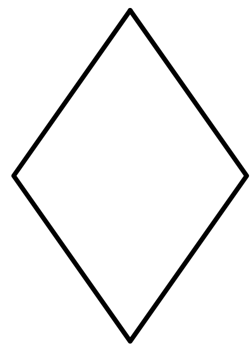
n X

The per capita K stock ⇒ $\left(\frac{K}{L}\right)$ grows over time with an increase in Y/L as economy moves from one steady state to another.



other variables stops fluctuation @ that point we can have Equns





For $y = \frac{Y}{L}$

$$\ln y = \ln Y - \ln L$$

$$\frac{1}{y}\frac{dy}{dt} = \frac{1}{Y}\frac{dY}{dt} - \frac{1}{L}\frac{dL}{dt} \to 0 \text{ as } n \to 0$$

$$\frac{1}{y}\frac{dy}{dt} = \frac{1}{Y}\frac{dY}{dt}$$

Transitional dynamics