```
%This program will solve for the transition path of capital
%from the initial level (k0) to the steady state level (kss)
%for the standard growth model. There is no endogenous labor supply decision.
%The production function is Cobb-Douglas, with a capital share of alpha.
%The utility function is (c^(1-sigma))/(1-sigma).
%The program assumes that the initial level of capital is below the steady
%state value. Specifically, it is assumed that k0=lambda*kss.
%T is the number of periods for which the path is computed.

%Parameter values
delta = .08;
alpha = 1/3;
beta = .96;
sigma = 1.01;
lambda = .5;
T = 200;
A = 1;

%Steady state capital stock and initial condition
kss = ((1/beta-(1-delta))/A/alpha)^(1/(alpha-1));
srate = (delta*kss)/A*kss^alpha; %savings rate
```

Solve transition path for the neoclassical model

```
%Solution for path ksol(t)
k0 = lambda*kss;
ksol(1)=k0;

for t=2:T
    %compute path for various choices of k(t), given ksol(t-1)
    %each guess for k(t) will generate a series that has first element
    %ksol(t-1), second element the guess and then subsequent elements given by
    %iterating on the first order conditions. We call this sequence kguess.
    kguess(1)=ksol(t-1);
    %Step 1:  Set boundaries for interval that ksol(t) must lie in.
    kmin=ksol(t-1);kmax=kss;
    %Step 2: Pick a point in the interval as a hypothetical choice for k(t)
    while abs(kmax-kmin)>.00000015*kss
        kn=.5*(kmin+kmax);
        kguess(2)=kn;

        %Step 3: Determine the rest of the path given the choice for k(t)
        %stop is simply an indicator to tell us if we need to continue to the
next
        %element of the kguess series. i is the index of the kguess series,
with i=1 corresponding
        %to k(t-1) and i=2 corresponding to k(t).
        stop=0;
        i=2;
        while stop < 1
```

```
            i=i+1;
        %implied value for kguess(i)
            kguess(i)=A*kguess(i-1)^alpha+(1-delta)*kguess(i-1)-...
             (beta*(A*alpha*kguess(i-1)^(alpha-1)+(1-delta)))^(1/sigma)*...
            (A*kguess(i-2)^alpha+(1-delta)*kguess(i-2)-kguess(i-1));
        %check to see if kguess is going to zero (i.e., did we enter region I)
            if kguess(i)<=kguess(i-1),
kmin=kn;stop=1;else,kguess(i)=kguess(i);end
        %check to see if kguess is going beyond kss (i.e., did we enter region
        %III)
            if kguess(i)>kss, kmax=kn;stop=1;else,kguess(i)=kguess(i);end
        end
    end
    % We have now determined (within the limits of our approximation) the
next value of k(t)
    ksol(t)=kguess(2);
end
```

Solve the transition path for the Solow model

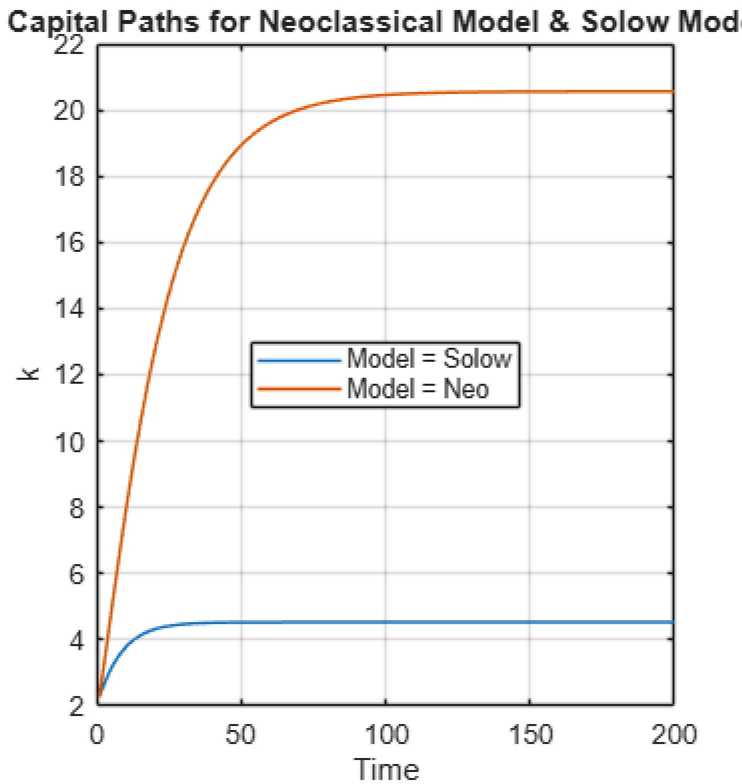
```
k_solow(1) = k0;
for t = 2:T
    k_solow(t) = srate * A * k_solow(t-1)^alpha + (1-delta) * k_solow(t-1);
end
```

Plot comparison

```
clear model
model{1} = ['Model = ', 'Solow'];
model{2} = ['Model = ', 'Neo'];

figure;
plot(1:T, ksol); % plot capital paths
hold on;
plot(1:T, k_solow);
hold off;

title('Capital Paths for Neoclassical Model & Solow Model');
xlabel('Time');
ylabel('k');
legend(model, 'Location', 'best');
grid on;
```



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