RBC Theory Developments

Criticisms of early RBC models

Things true in model, not true in reality.

Recall that a business cycle in the model must be $\tilde{A}$ not $\tilde{G}$ (causes countercyclical C)

1) In model, real wage strongly procyclical.

   In reality, $\frac{\text{Wage index}}{\text{Price index}}$ <u>not</u>.

2) In model, variation in employment comes from variation in hours/worker ("intensive margin")

   In reality, mostly variation in number employed ("extensive margin")

3) In model, individual's labor supply responds strongly to temporary fluctuations in real wage & real interest rate ("intertemporal substitution of labor supply").

   No evidence people do this.

4) In model, C is procyclical but only a little, not as strongly procyclical as in reality.

And the biggest criticism....

RBC Thy Developments

Technological regress?

In model, a recession in which $Y\downarrow$, $L\downarrow$ as in real recessions must be caused by an absolute decline of TFP (not just below-trend growth) that persists for several quarters.

Yes, estimates of TFP backed out from

$$\underbrace{Y}_{\text{real GDP}} = A \underbrace{K}_{\text{capital stock}}^{\alpha} \underbrace{L}_{\text{employment hours}}^{1-\alpha}$$

& data do show big, persistent $A\downarrow$

because capital stock doesn't fall in recession, & Y falls more than L

but there's a plausible alternative explanation for this: in recession,

— labor input per employment hours falls ("labor hoarding")

— lots of capital is unused or used less ("capital utilization" falls).

How can technology get worse?

Wouldn't we notice?

RBC Theory Developments
Technological regress? (cont.)
Why won't below-trend growth do the trick?

Why does model require technological regress?

Suppose $\tilde{A}_{t-1} = \tilde{K}_{t-1} = 0$ (variables were at LRSS values last period)

hence $\tilde{K}_t \doteq 0$

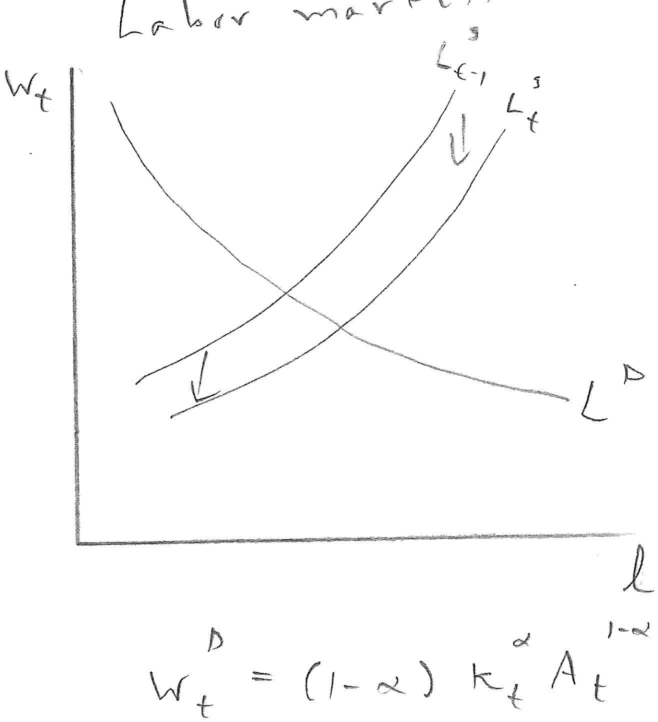
capital stock near LRSS this period,

$$\frac{K_t}{K_{t-1}} = e^{g+n}$$ (capital stock grew at rate $g+n$

Now, $\tilde{A}_t < 0$. A growth slowdown is $1 \leq \frac{A_t}{A_{t-1}} < e^g$

Technological regress is $\frac{A_t}{A_{t-1}} < 1$, $A_t < A_{t-1}$

Labor market:



$$w^s_t = b\,c_t \frac{1}{1 - l_t}$$

If $c_t < c_{t-1}$, L^S shifted down.

To make l fall, L^D must shift down enough to overcome this.

$$W^D_t = (1-\alpha)\, K_t^{\alpha} A_t^{1-\alpha} (N_t l_t)^{-\alpha}$$

Since $K_t > K_{t-1}$, to make l fall, A_t must be less than A_{t-1}.

Possible ways to make l fall as c falls: change assumptions so that

- L^S falls while c falls
- L^D falls even though $K_t > K_{t-1}$, $A_t = A_{t-1}$. A third factor?