

Chapter 9. A Real Intertemporal Model with Investment (Part 2 - Shocks Experiments)

1. Current government purchases increase temporarily (G);

DAE Model	Intertemporal model analysis
$G \uparrow \Rightarrow we, C ? \dots$	$G \uparrow \Rightarrow we, C ? \dots$
Balance budget Multiplier 1	Balance budget Multiplier1
Increases in C and Y come as a free lunch! Each dollar spent by the government increases GDP by more than one dollar. We would let the government grow infinitely large, which would make everyone infinitely wealthy.	Higher government spending and larger output come at a cost — no free lunch! Government expenditure crowds out private investment. Lower future productive capacity. Consumer consumes less and takes less leisure and he or she faces a lower real wage rate.

Intertemporal model analysis

Step 2:

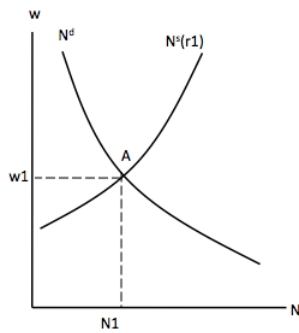
 $r \uparrow \Rightarrow N^S \text{ shifts } (\dots\dots\dots) \Rightarrow w \dots\dots$
 $r \uparrow \Rightarrow I^d \dots\dots\dots \text{ and } C^d \dots\dots$

Step 1 :

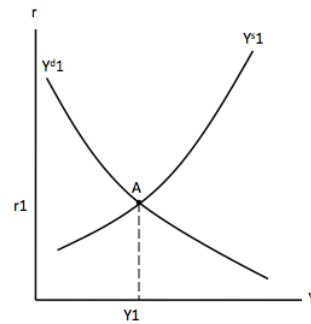
 $Y^S : PV(T) \uparrow \Rightarrow N^S \text{ shifts } (\dots\dots\dots)$
 $\Rightarrow Y^S \text{ shifts } (\dots\dots\dots)$
 $G \uparrow \Rightarrow Y^d \text{ shifts } (\dots\dots\dots \text{ by } \dots\dots\dots)$
 $Y^d \text{ shifts more than } Y^S : r \dots\dots\dots$

- current borrowing (bond sale)
- $B + I^d$ shifts to the
- PV (T) increases
- Savings shifts to the
- The real interest rate increases.

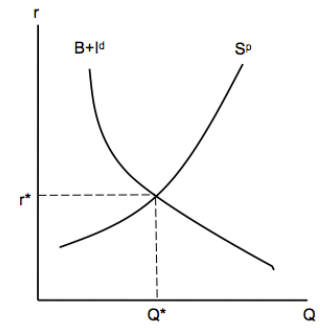
Labour Market



Output Market



Credit Market



2. A decrease in current capital stock (K)

Step 1 :

$$K \downarrow \Rightarrow MP_N \dots \Rightarrow N^d \text{ shifts (.....)}$$

$$\Rightarrow Y^S \text{ shifts (.....)}$$

$$K \downarrow \Rightarrow K' \dots \text{for all } I \Rightarrow MP'_K \dots \text{for all } I$$

$$\Rightarrow I^d \dots \text{for all } r$$

$$Y^d \text{ shifts (.....)}$$

Step 3.

$$I^d \text{ shifts (.....)}$$

$$B + I^d \text{ shifts (.....)}$$

$$S^p \text{ (depends on } Y-T)$$

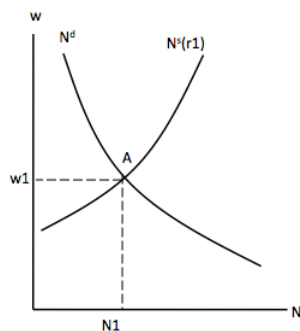
$$r \dots \dots \dots$$

Step 2: $K \downarrow \Rightarrow r \dots$

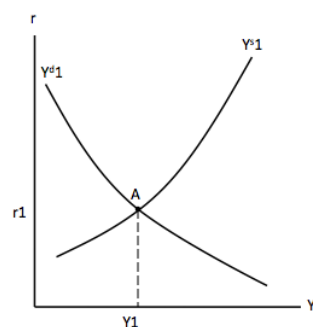
$$\Rightarrow N^S \text{ shifts (.....)} \Rightarrow w \dots \dots \dots$$

(A movement on the Y^S curve)

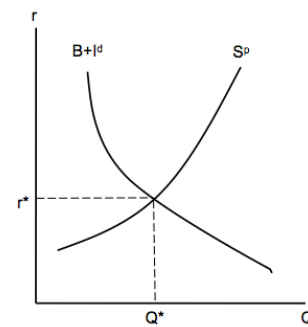
Labour Market



Output Market



Credit Market



- $K \downarrow \Rightarrow MP'_K \dots \Rightarrow I \dots \dots \Rightarrow \text{If } I \downarrow, K' \downarrow - \text{impossible. } K \downarrow \Rightarrow MP_K \uparrow \Rightarrow I \uparrow$
 $\Rightarrow r \dots \dots \Rightarrow I \dots \dots$

- A decrease in current K $\Rightarrow r \dots, I \dots, w \dots, \text{Employment and output } \dots \dots \dots$ (C and ℓ tends to $\downarrow$ because $r \uparrow$)

3. An increase in Current Total Factor Productivity (Z)

Step 2: $r \dots \dots \dots N^S \text{ shifts (.....)}$

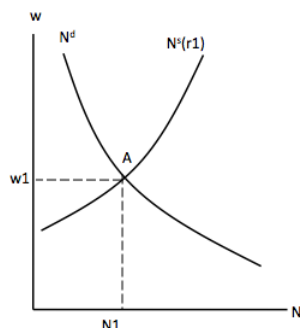
Step 1 : $z \uparrow \Rightarrow MP_N \dots \dots$

$N^d \text{ shifts } \dots \dots \dots Y^S \text{ shifts } \dots \dots \dots, r \dots$

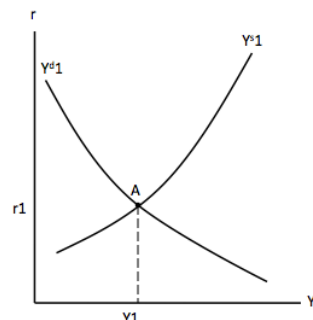
Step 3

$$(Y-T) \dots \dots \dots \Rightarrow S^P \dots \dots \dots$$

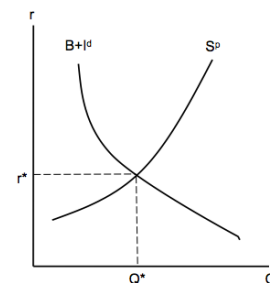
Labour Market



Output Market



Credit Market



4. An increase in future Total Factor Productivity (Z')

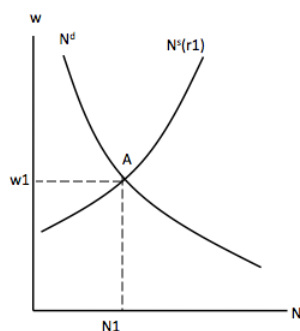
Step 2: $r \dots \dots \dots N^S \text{ shifts } \dots \dots \dots$

Step 1 : $z' \uparrow \Rightarrow MP'_K \dots \dots \dots I^d \dots \dots \dots; Y^d \text{ shifts } I^d \dots \dots \dots$

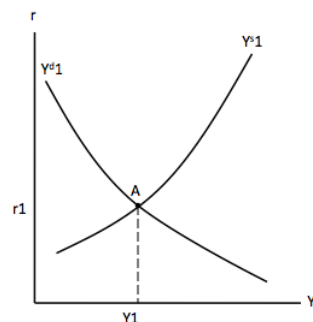
$\dots \dots \dots r \dots \dots \dots$

(Y-T) $\dots \dots \dots S^P \dots \dots \dots$

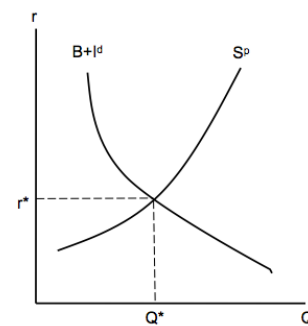
Labour Market



Output Market



Credit Market



- $I \uparrow \Leftarrow MP'_K$, partly offset by $r \uparrow$. $K' \uparrow \Leftarrow$ expected z' . r and Y increases. C may rise or fall due to higher Y but higher r . Employment increases with falling real wage.