

ECON3102-005

CHAPTER 5: A CLOSED-ECONOMY  
ONE-PERIOD MACROECONOMIC MODEL  
(PART 2)

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Spring 2014

# INTRODUCTION

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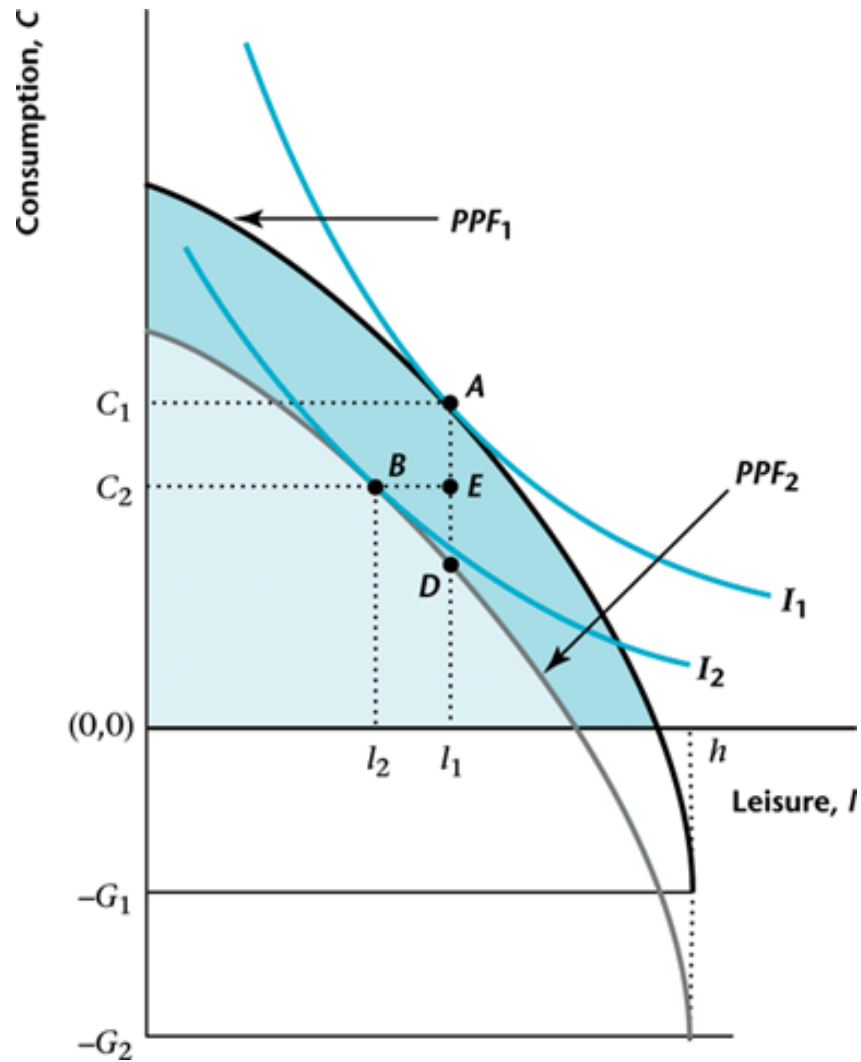
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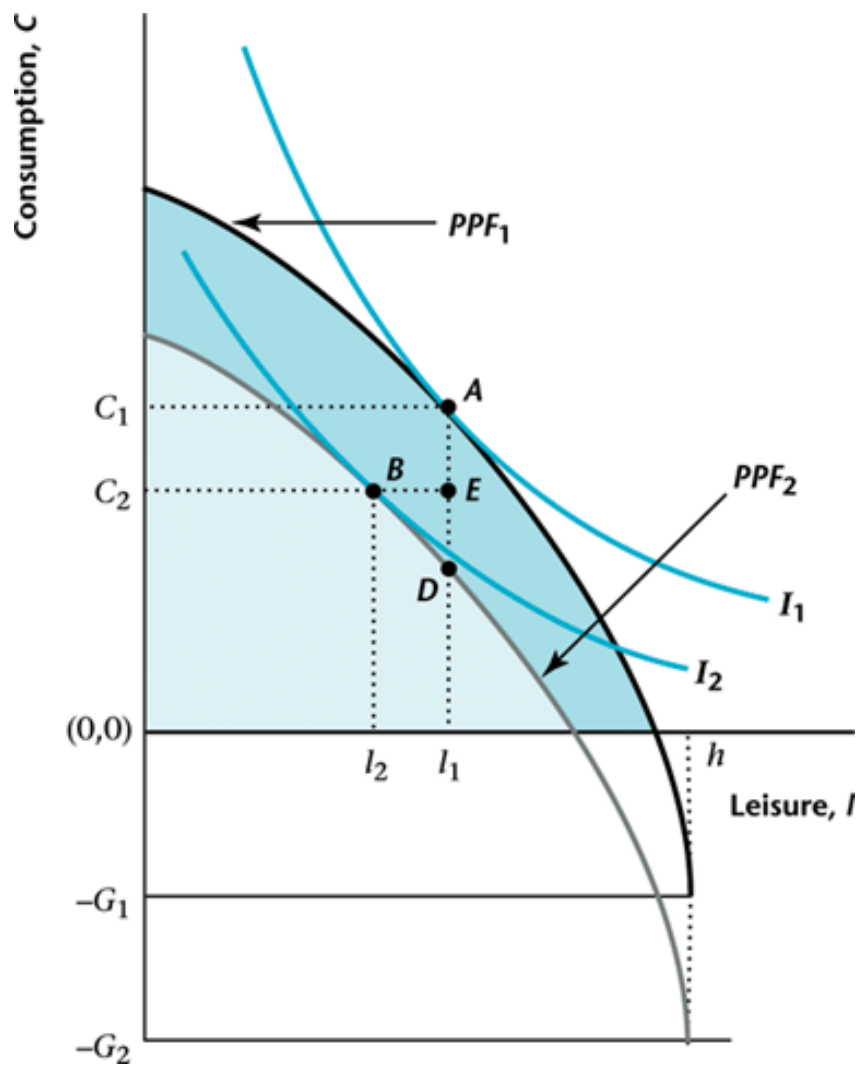
- From the planners problem we can get  $\{C^*, N^*, T^*, Y^*, w^*\}$  that are the competitive equilibrium values.
- We now inspect how changes in  $G, z, K$  affect these variables.
- **What is produced and consumed in the economy is determined jointly by the economys productive capacity and the preferences of the consumer.**

# EXPERIMENT 1: AN INCREASE IN $G$

- An increase in  $G$  from  $G_1$  to  $G_2$  shifts the PPF down.

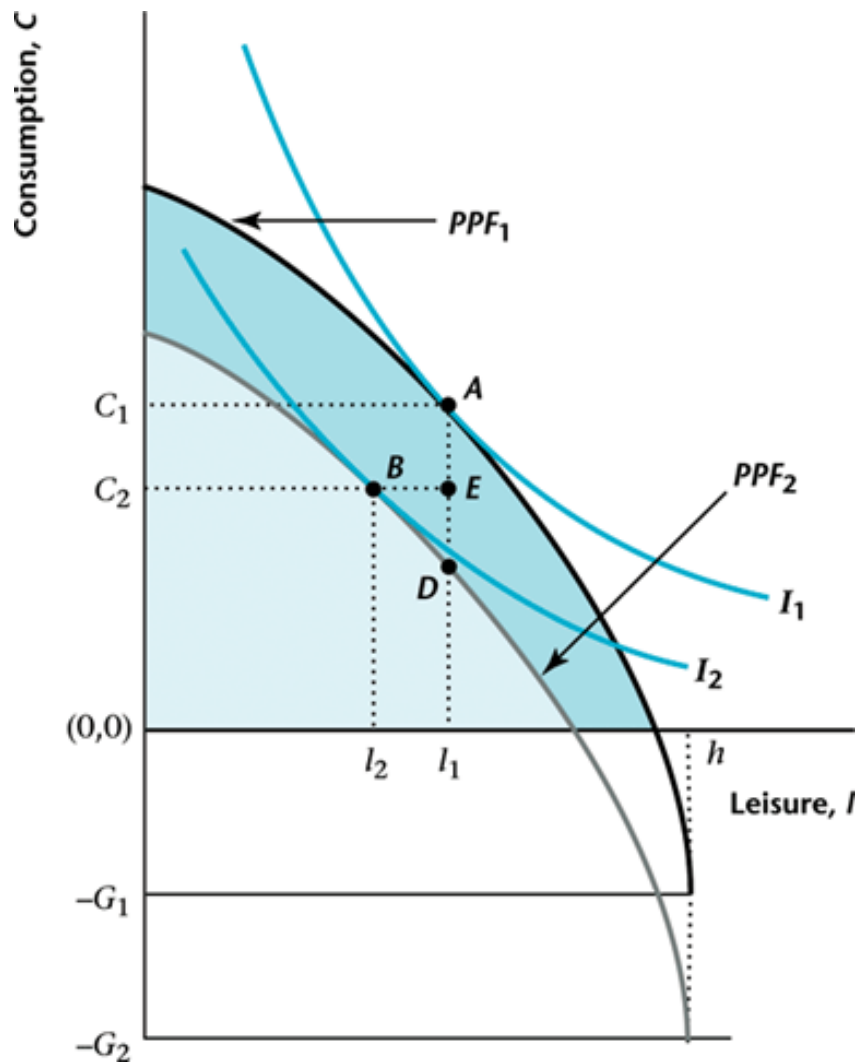


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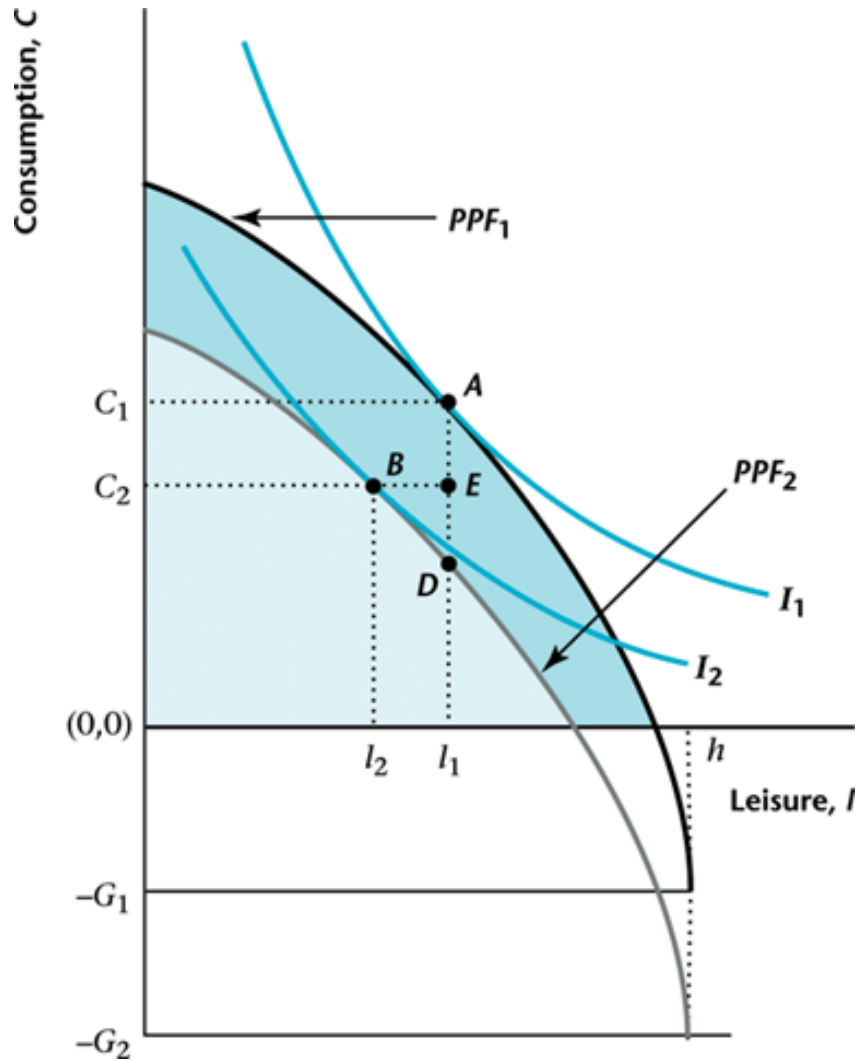
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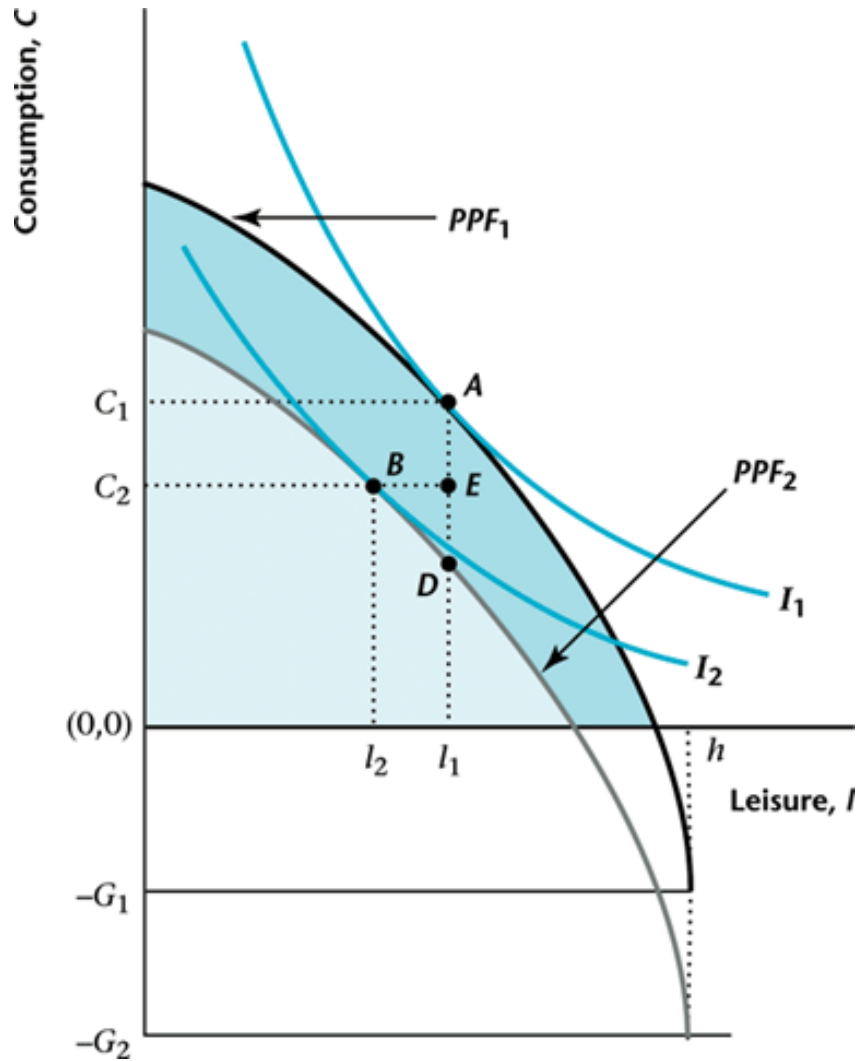
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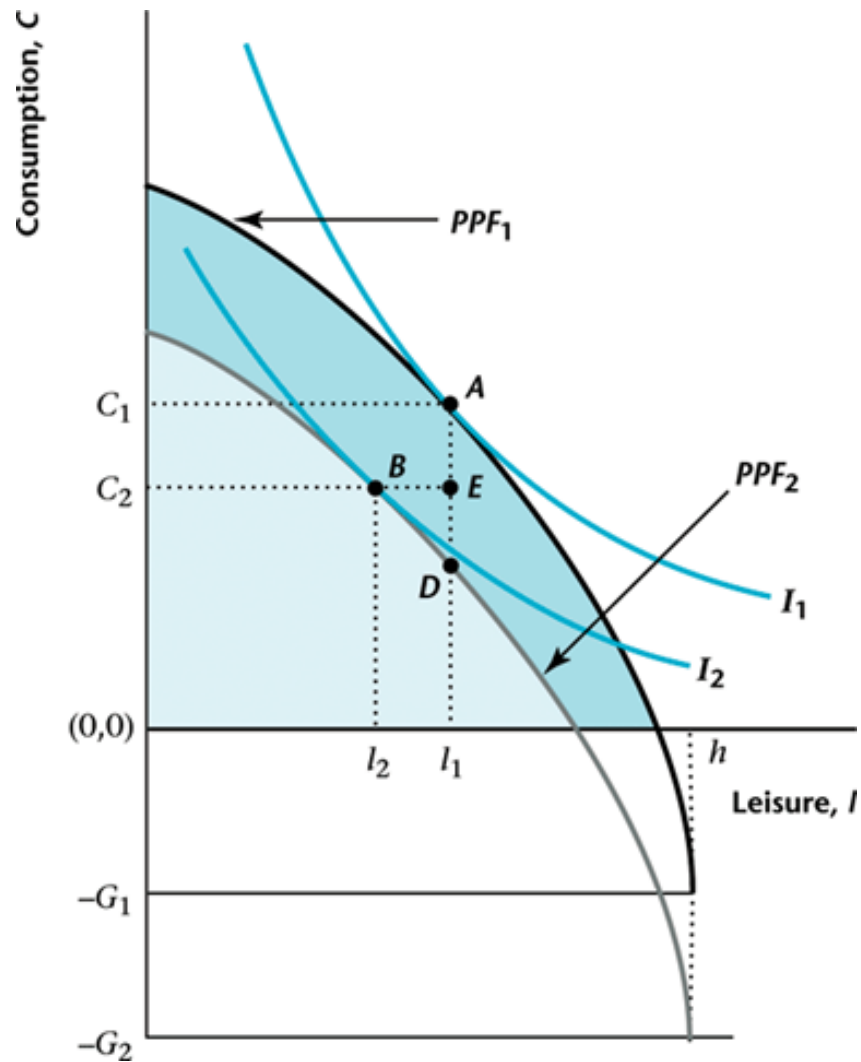


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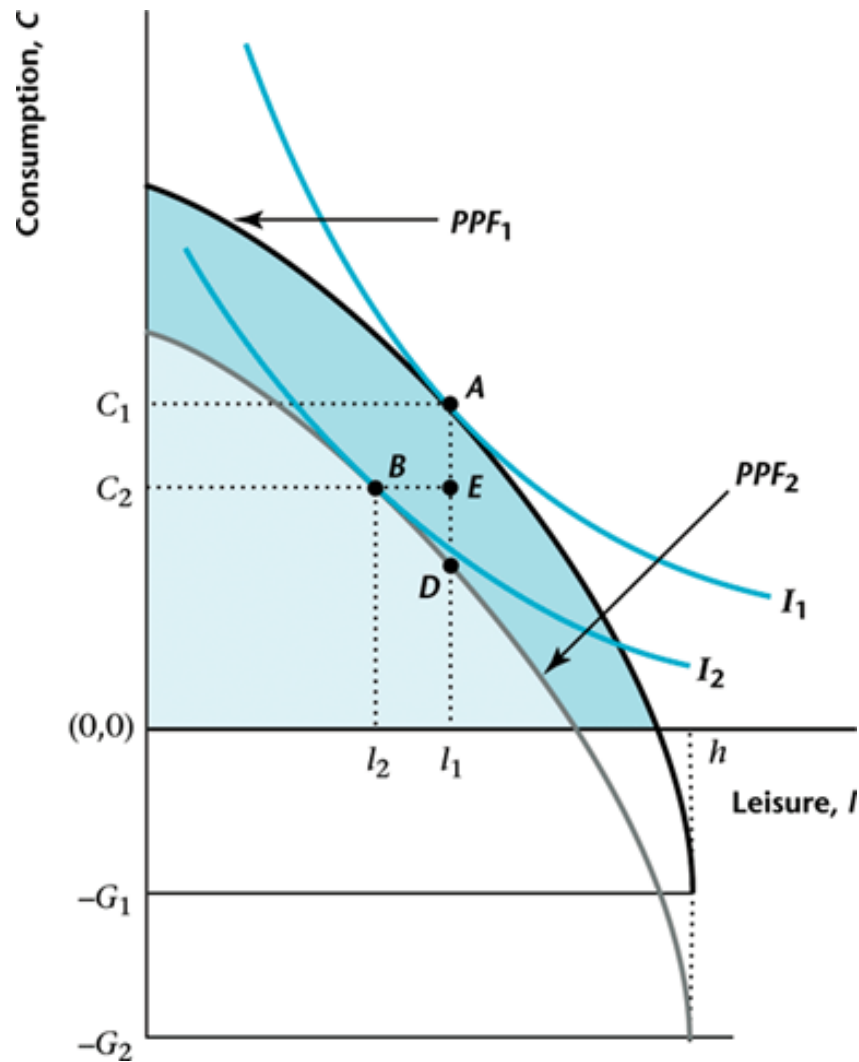
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- This is a pure income effect.
- Total effect is A to B.

## WHAT CAN WE CONCLUDE FROM THE GRAPH?



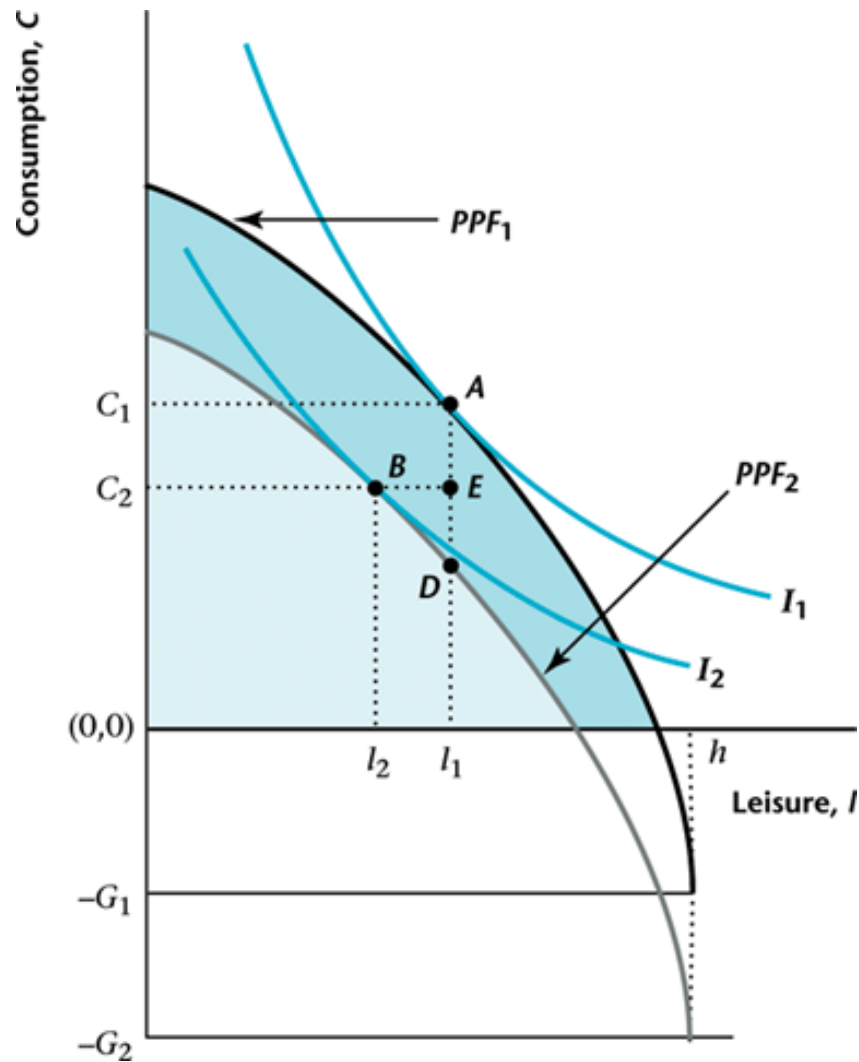
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- 1.  $c$  decreases, and  $\ell$  decreases, as they are both normal goods.
- 2. Since  $\ell$  falls, employment should go up, and consequently, output  $Y$ .

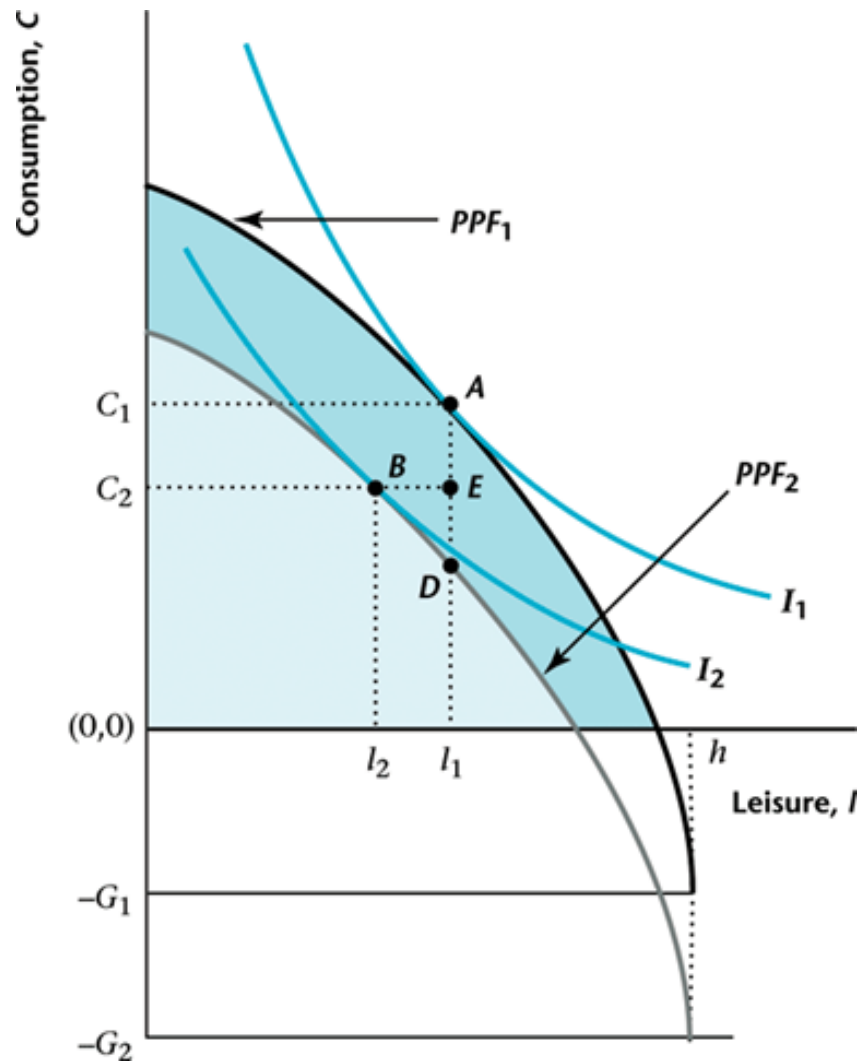
# WHAT CAN WE CONCLUDE FROM THE GRAPH?



- 3. Since the income-expenditure identity holds,  
 $C = Y - G$   
 and the following should also hold:  $\Delta C = \Delta Y - \Delta G$   
 then, given  $\Delta Y > 0$ ,

$$\Delta C > \Delta G$$

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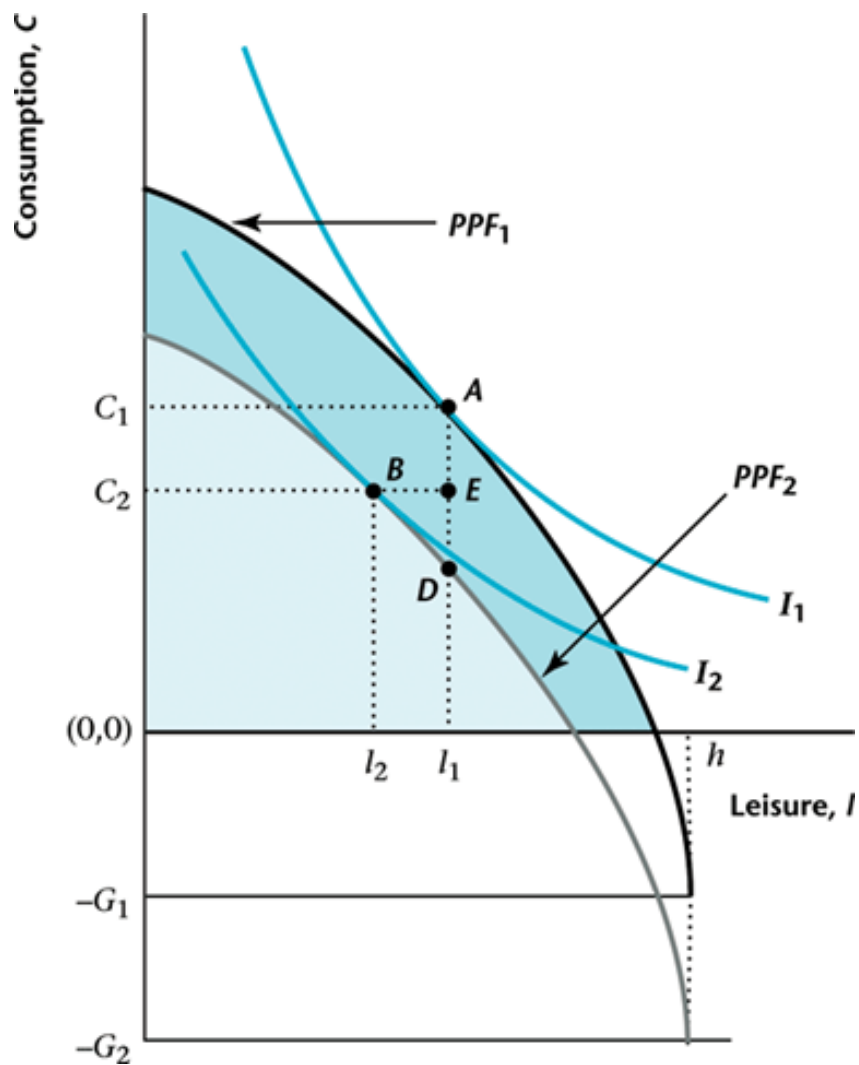


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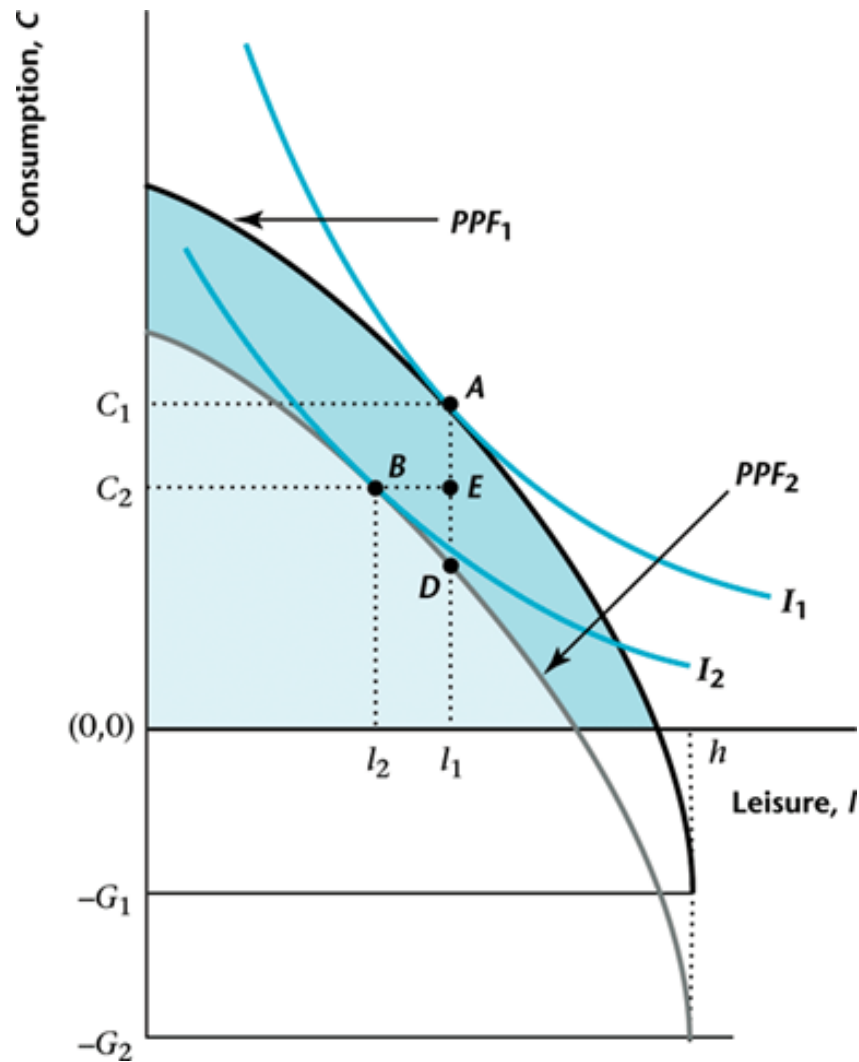
- Consumption is crowded out by the increase in government purchases.

# WHAT CAN WE CONCLUDE FROM THE GRAPH?



- 4. The real wage falls.

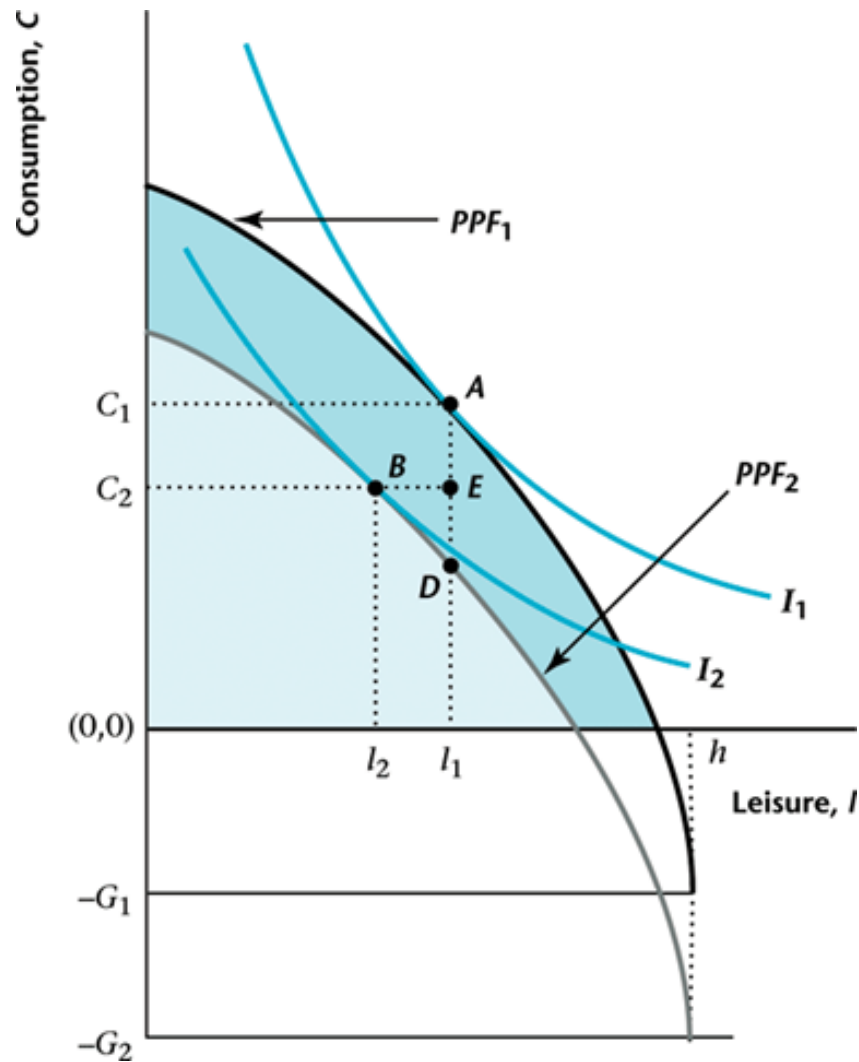
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- 4. The real wage falls.
- Why? Note that the slope of the PPF at  $l_1$  is bigger (in absolute terms) than the slope at  $l_2$ .

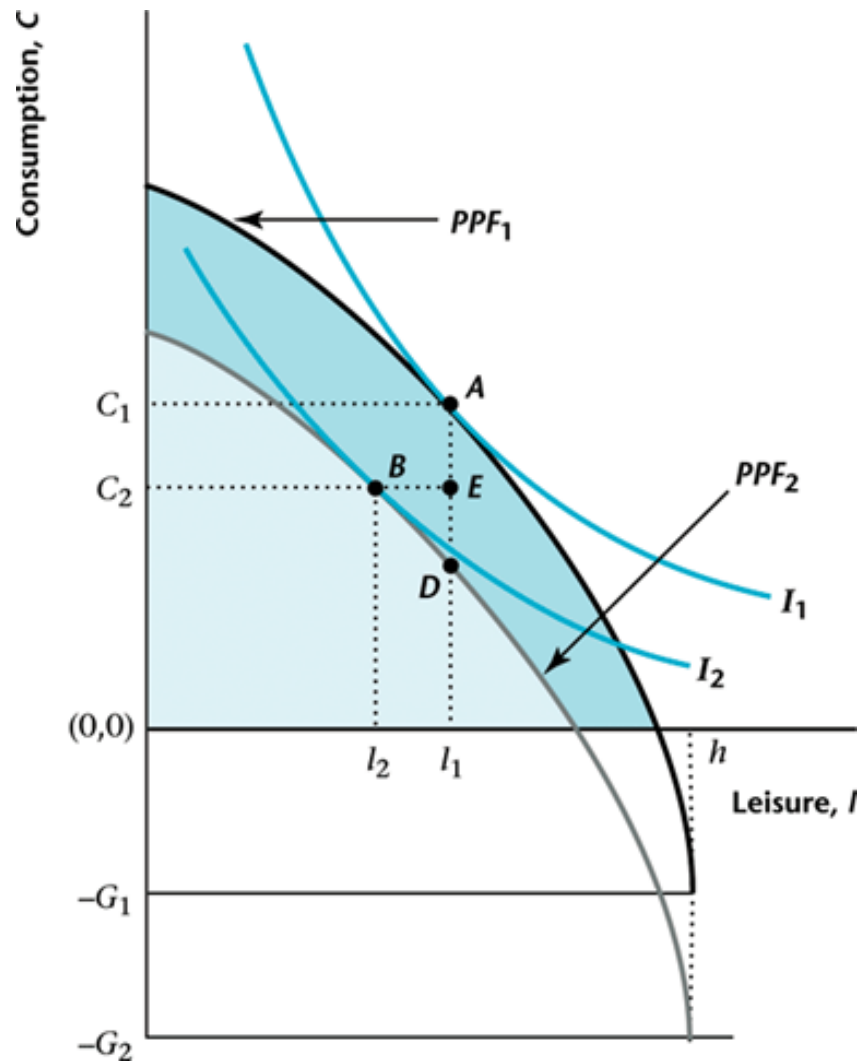
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- A larger government (measured by increased spending) results in more output being produced and reduced consumption.
- Overall:

$$C^* \downarrow$$

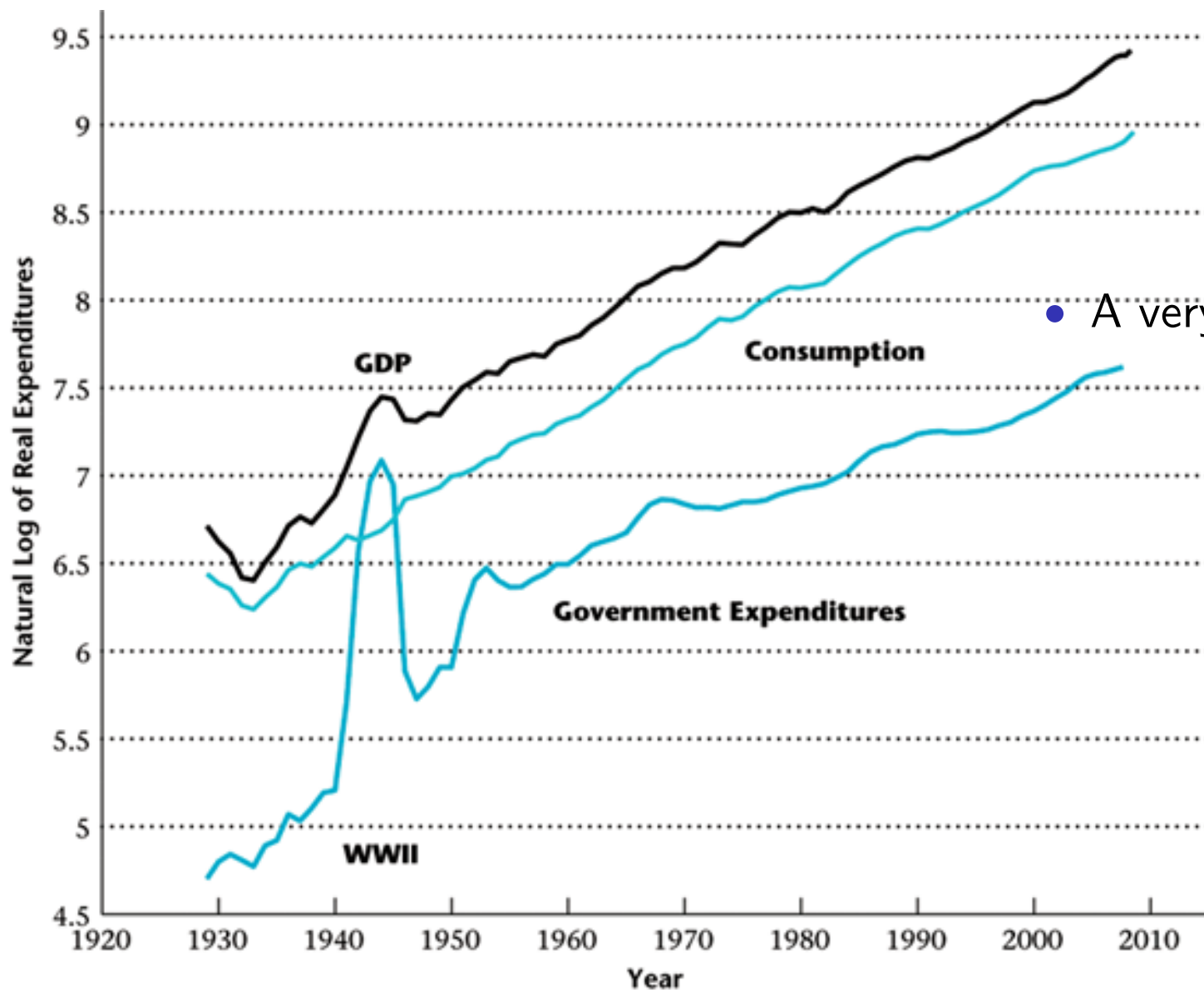
$$\ell^* \downarrow$$

$$Y^* \uparrow$$

$$T^* \uparrow$$

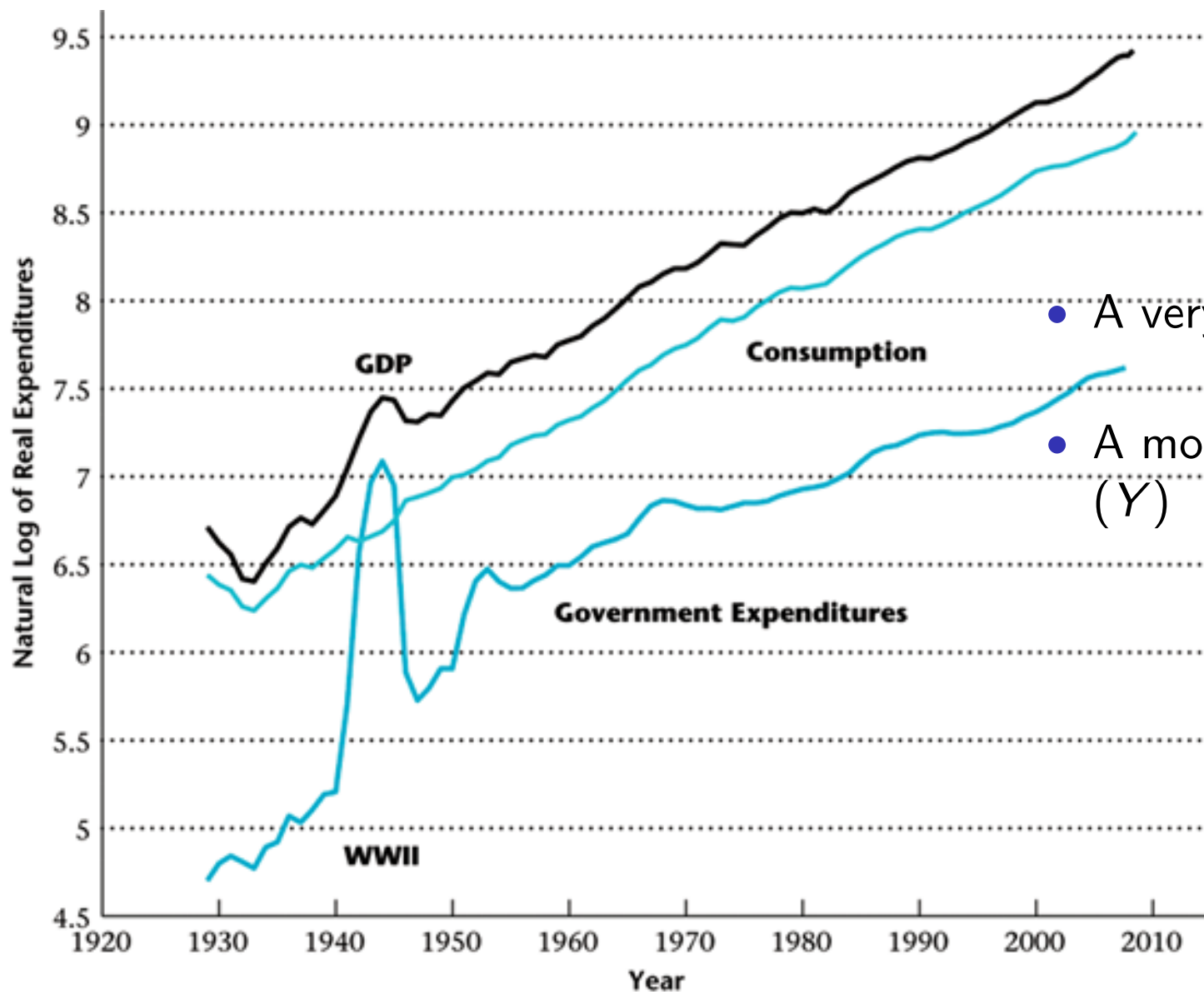
$w^*$  ↓

# DO WE OBSERVE THESE EFFECTS IN PRACTICE?



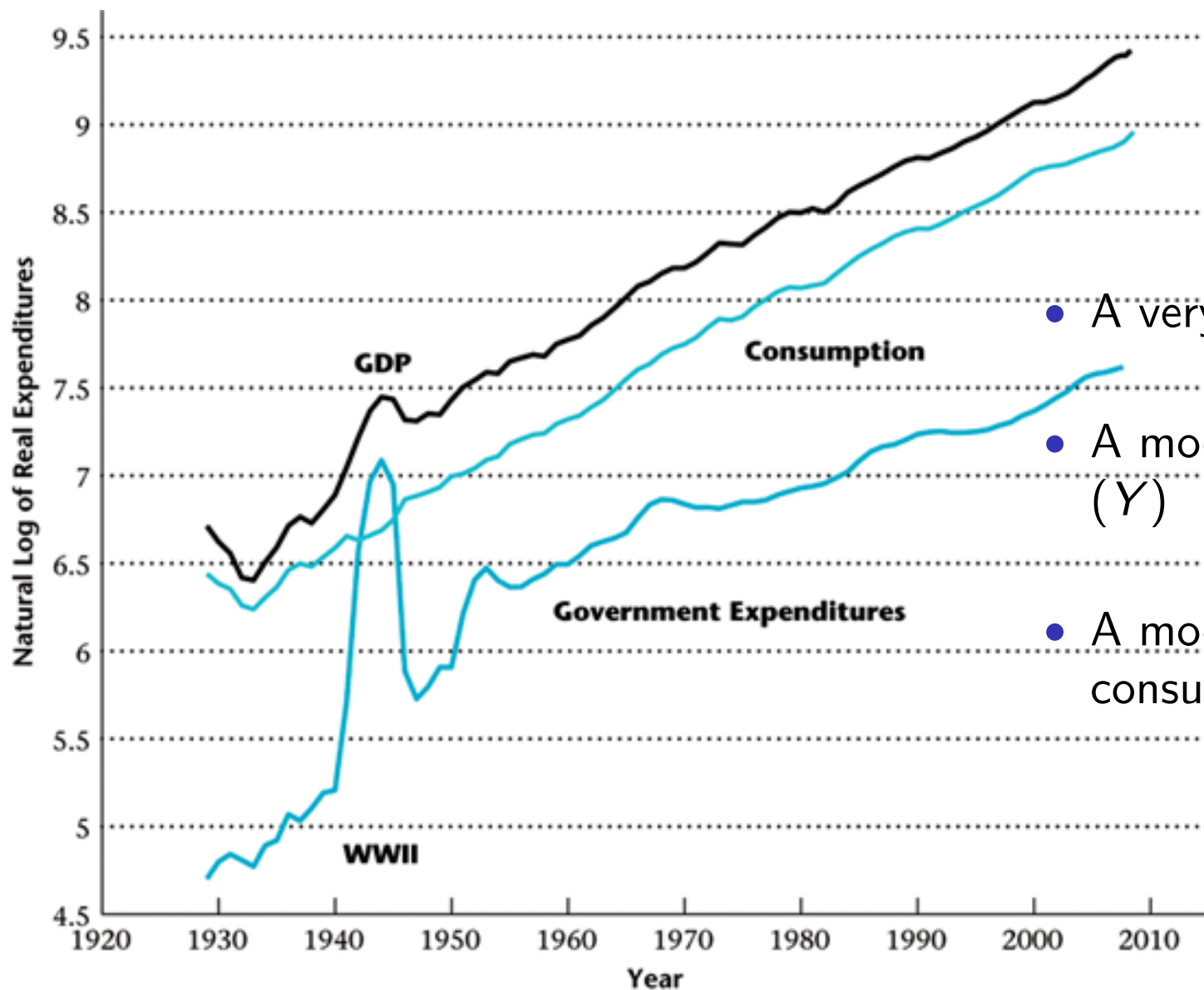
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- A very large increase in  $G$
- A moderate increase in GDP ( $Y$ )
- A moderate decline in consumption

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Real Wage	Procyclical	?	?
Average Labor Productivity	Procyclical	Coincident	Smaller



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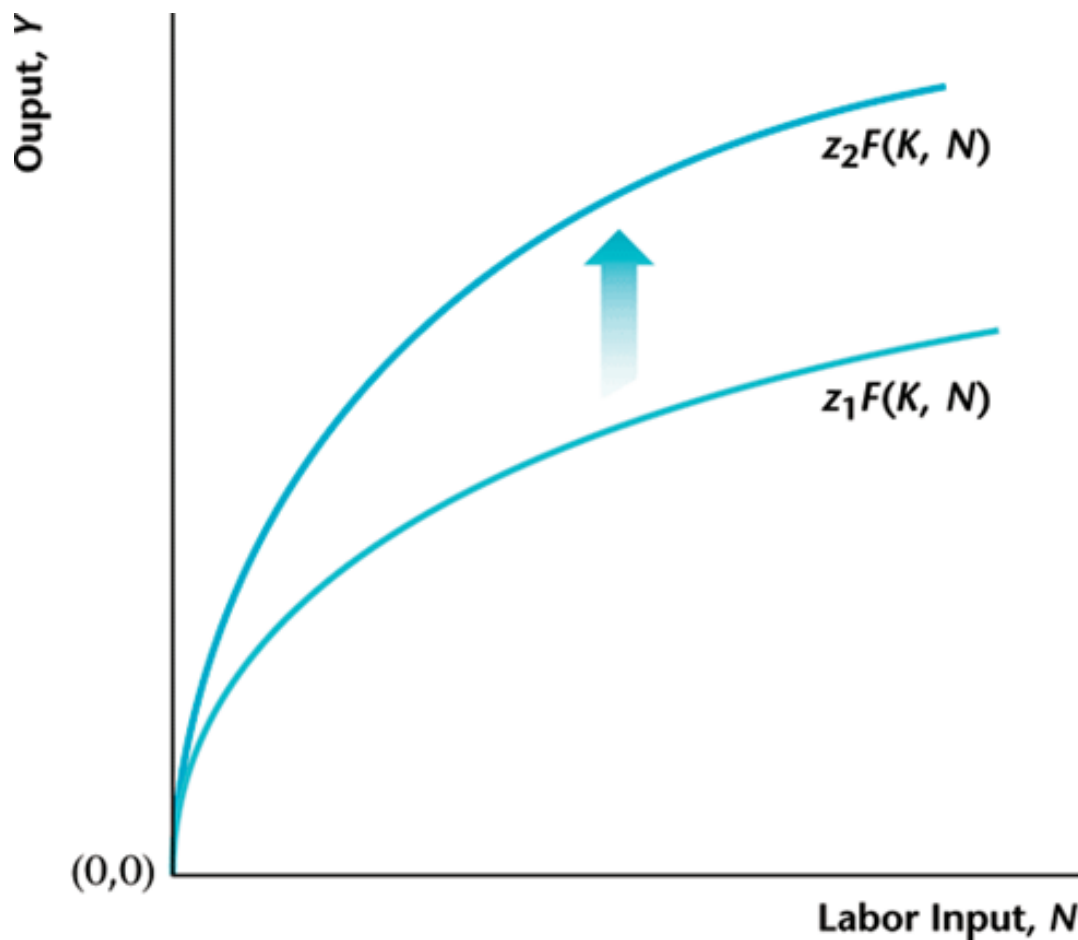
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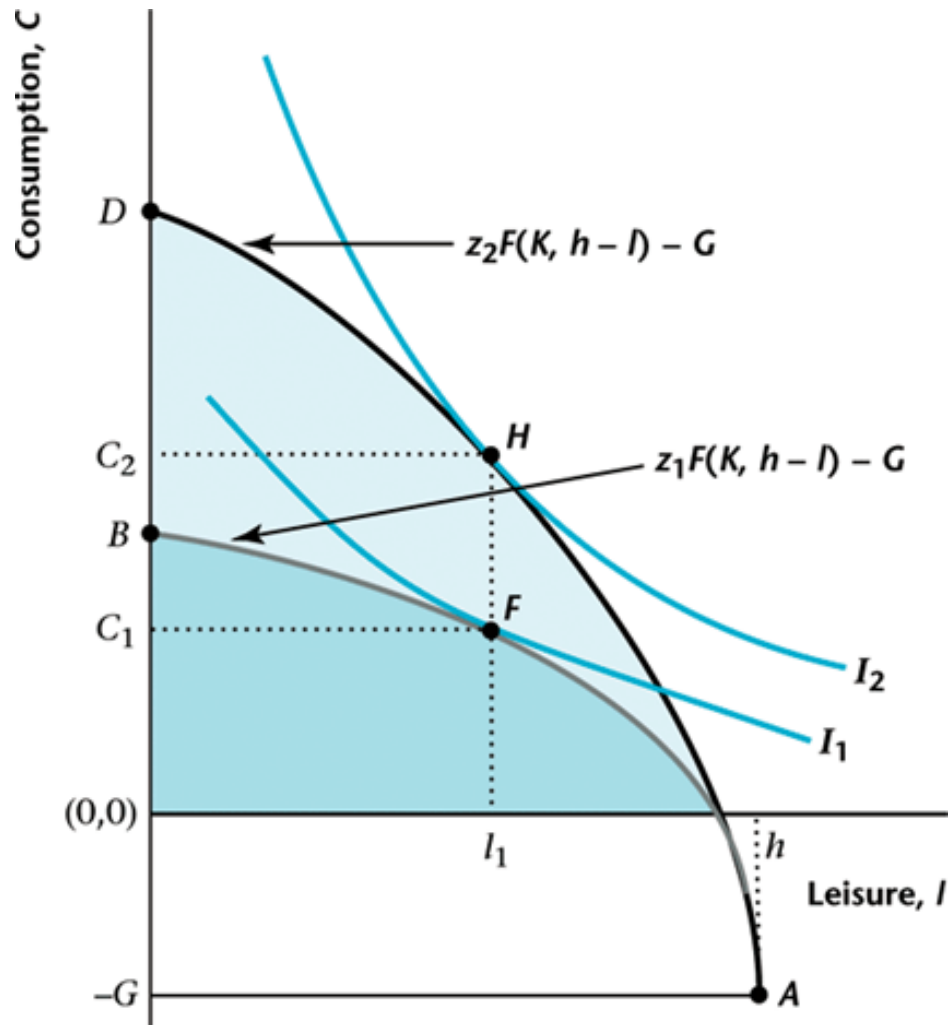
- The answer is NO.

## EXPERIMENT 2: AN INCREASE IN $z$

Recall from Chapter 4 that a change in TFP has direct effects over the production function; for  $z_2 > z_1$  we have that

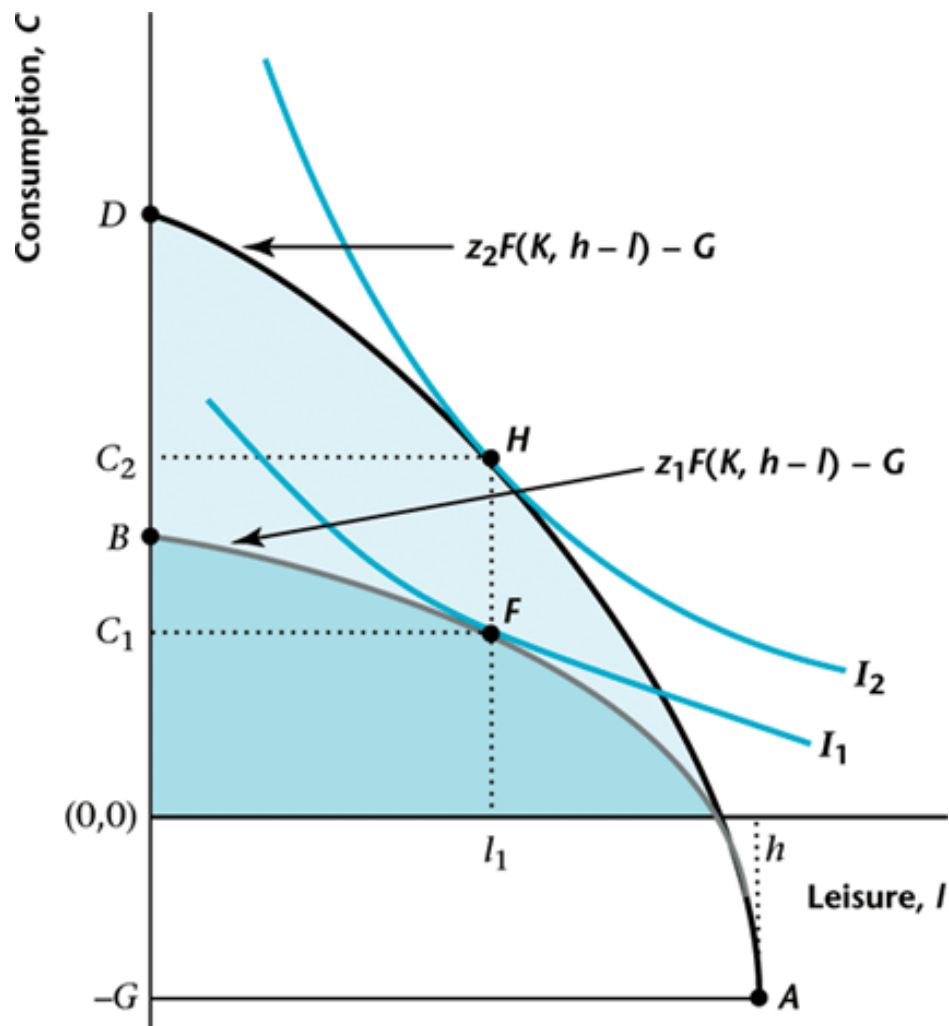


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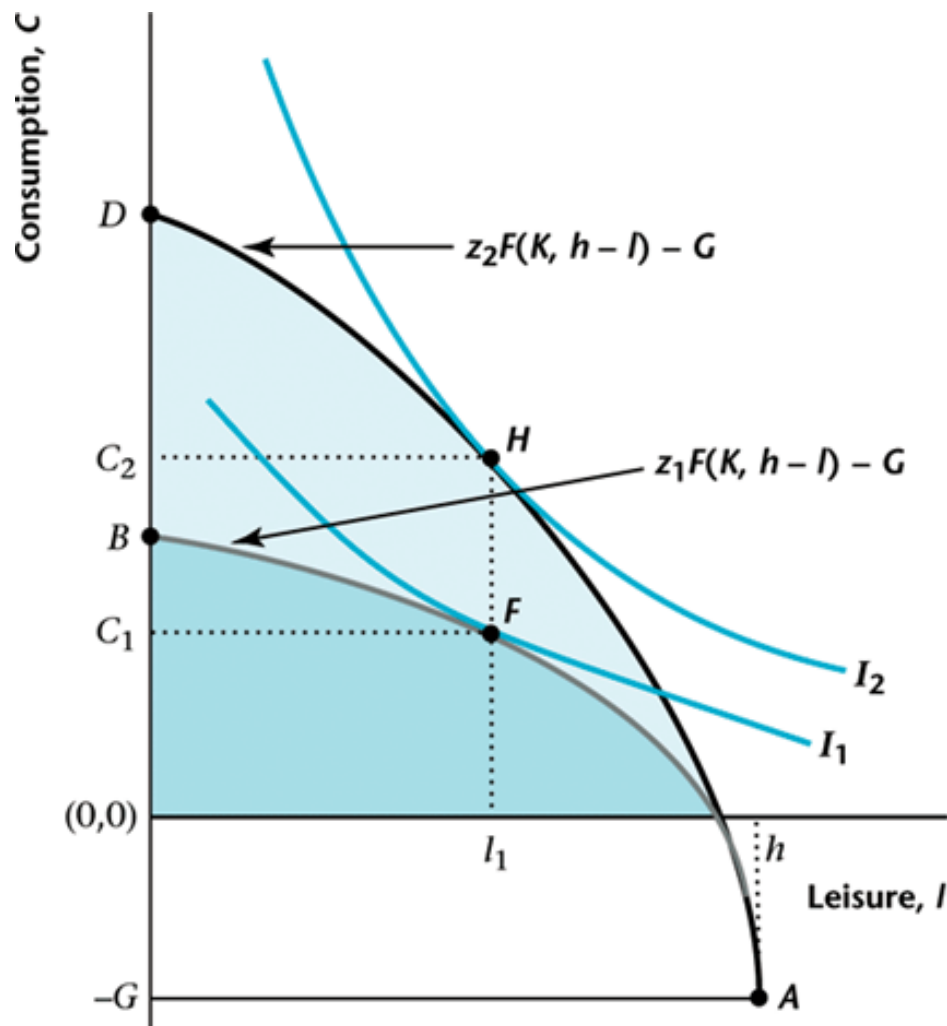
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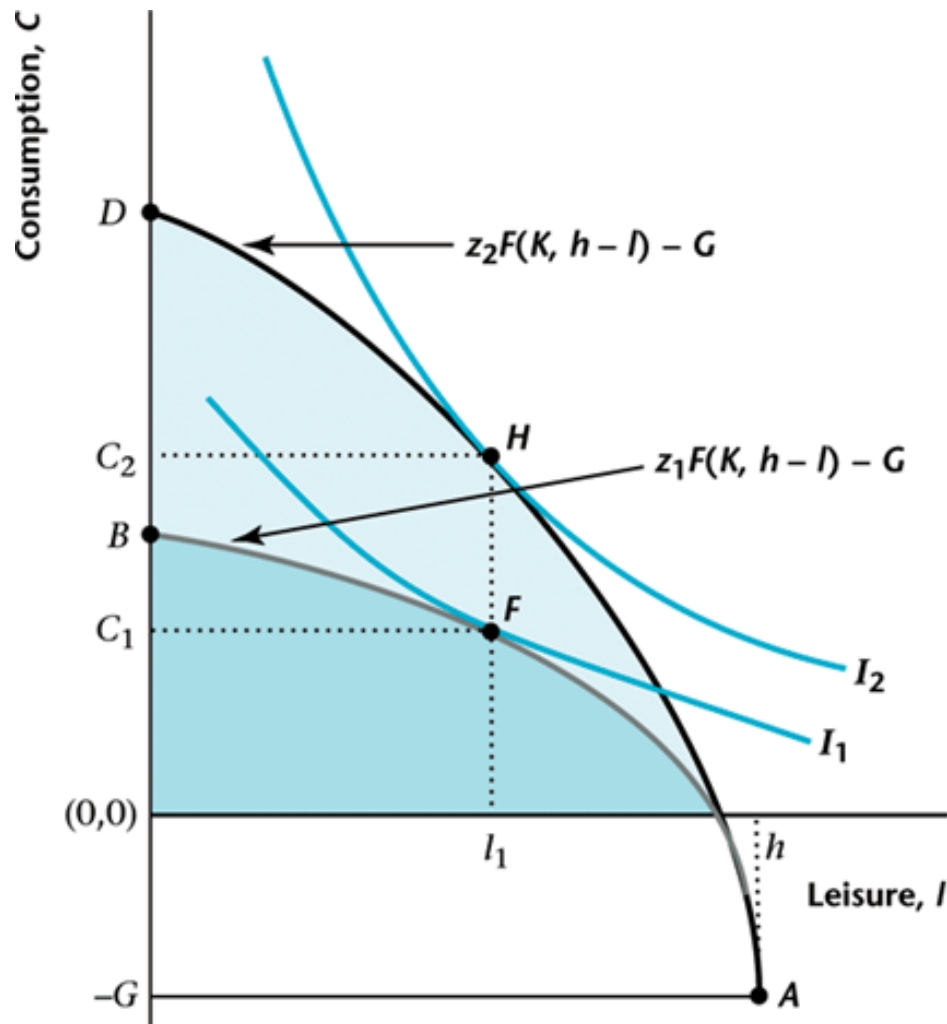
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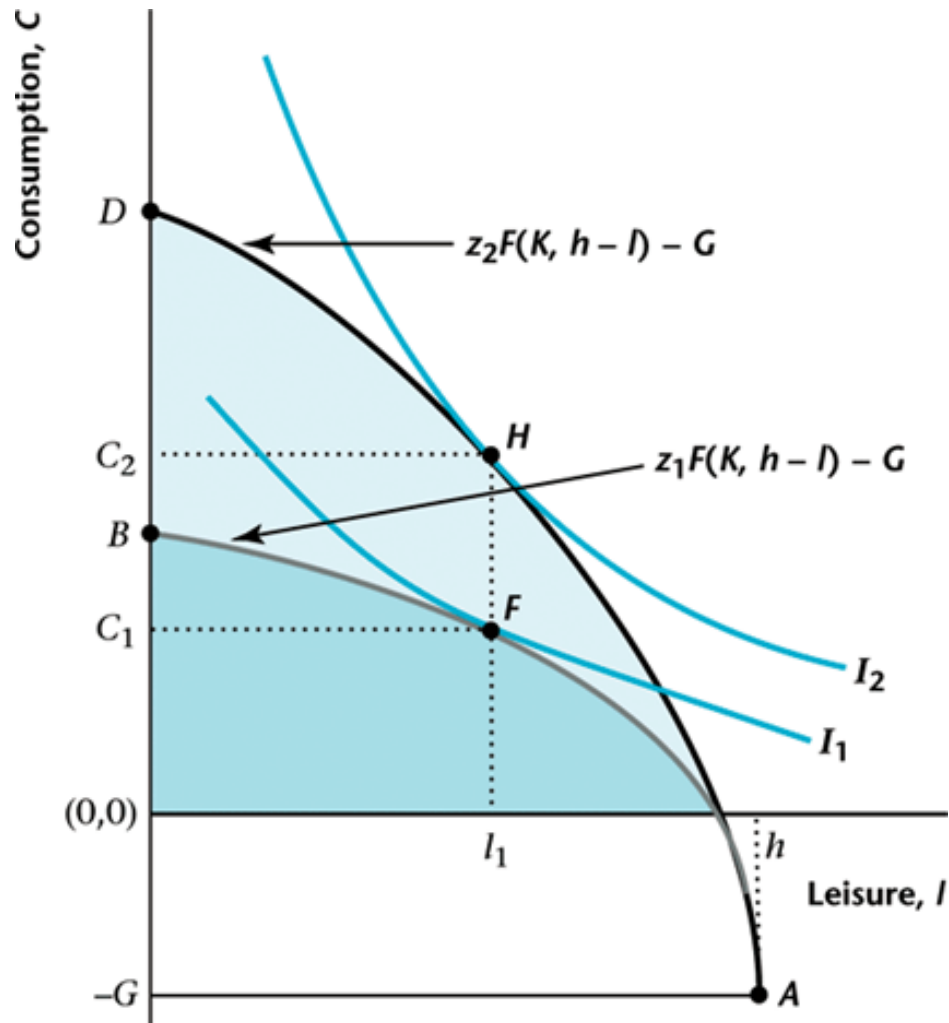
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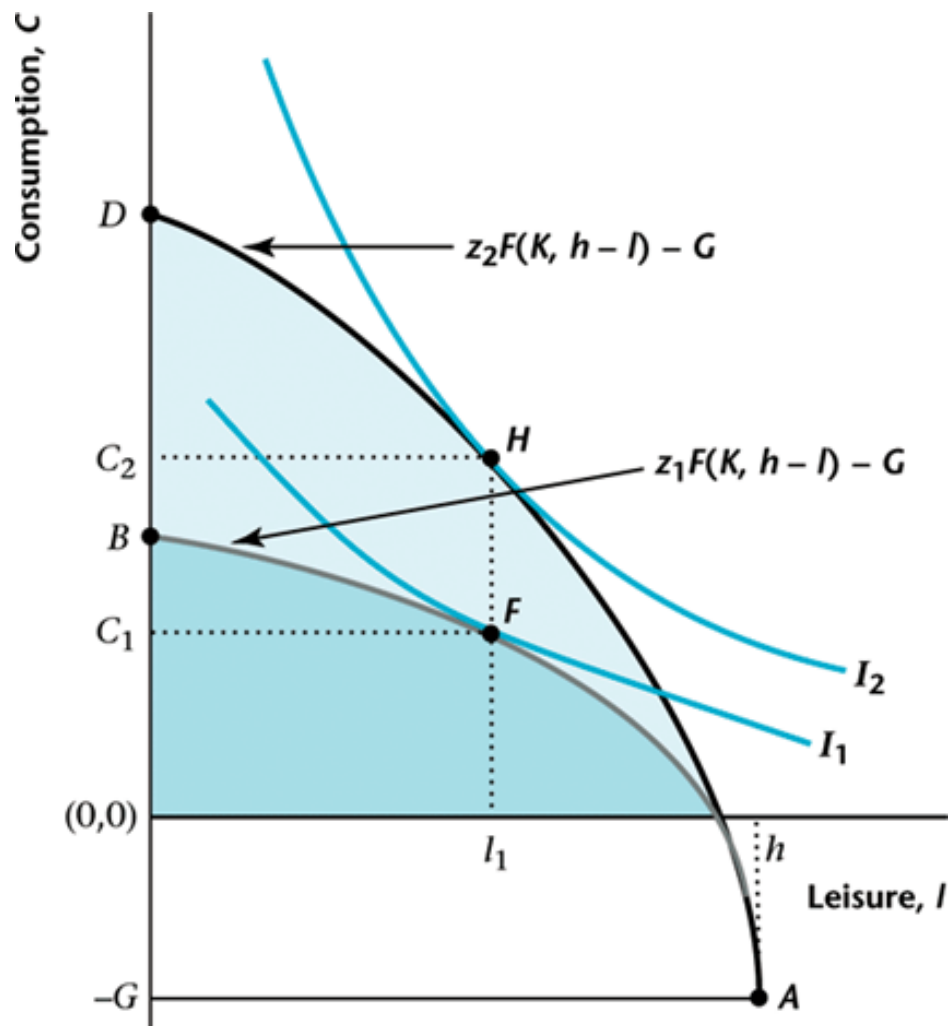
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- Consumption increases for sure.
- Leisure may rise or fall depending on the **income and substitution effects**.

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- Since  $Y = C + G$ , and  $G$  is constant, then output should increase!

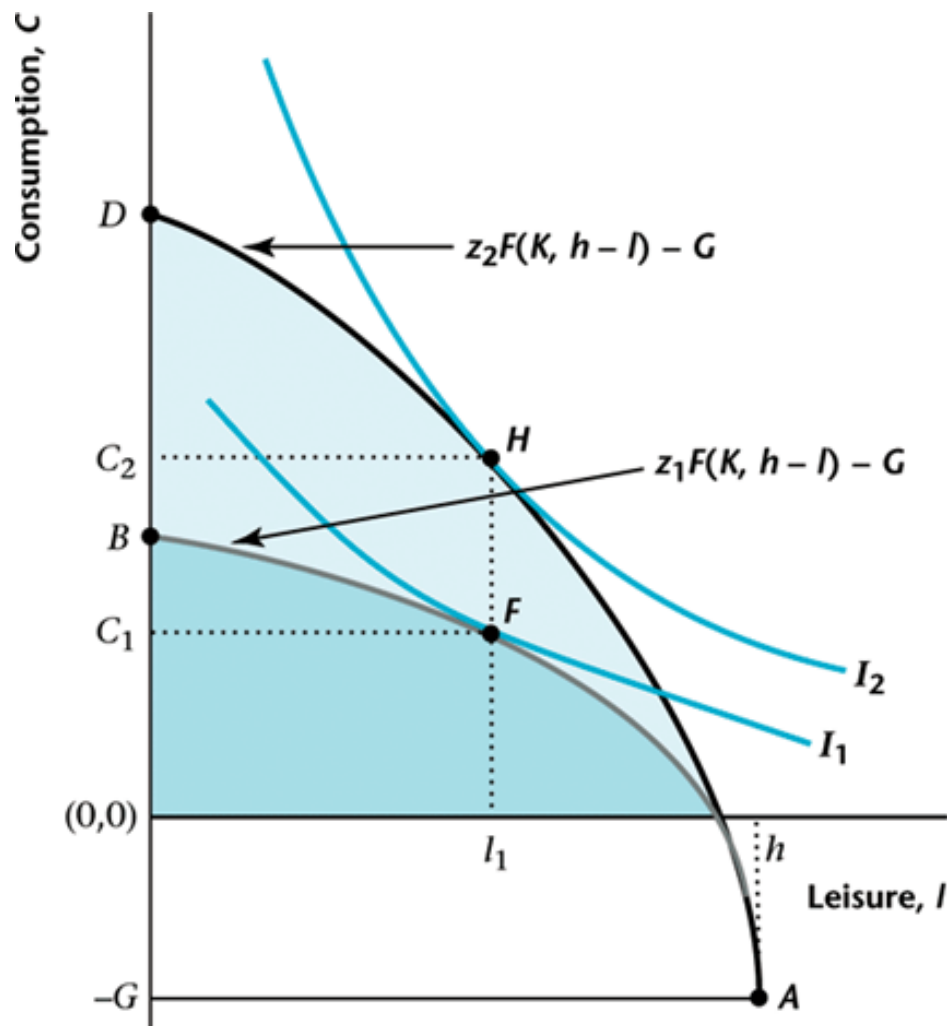
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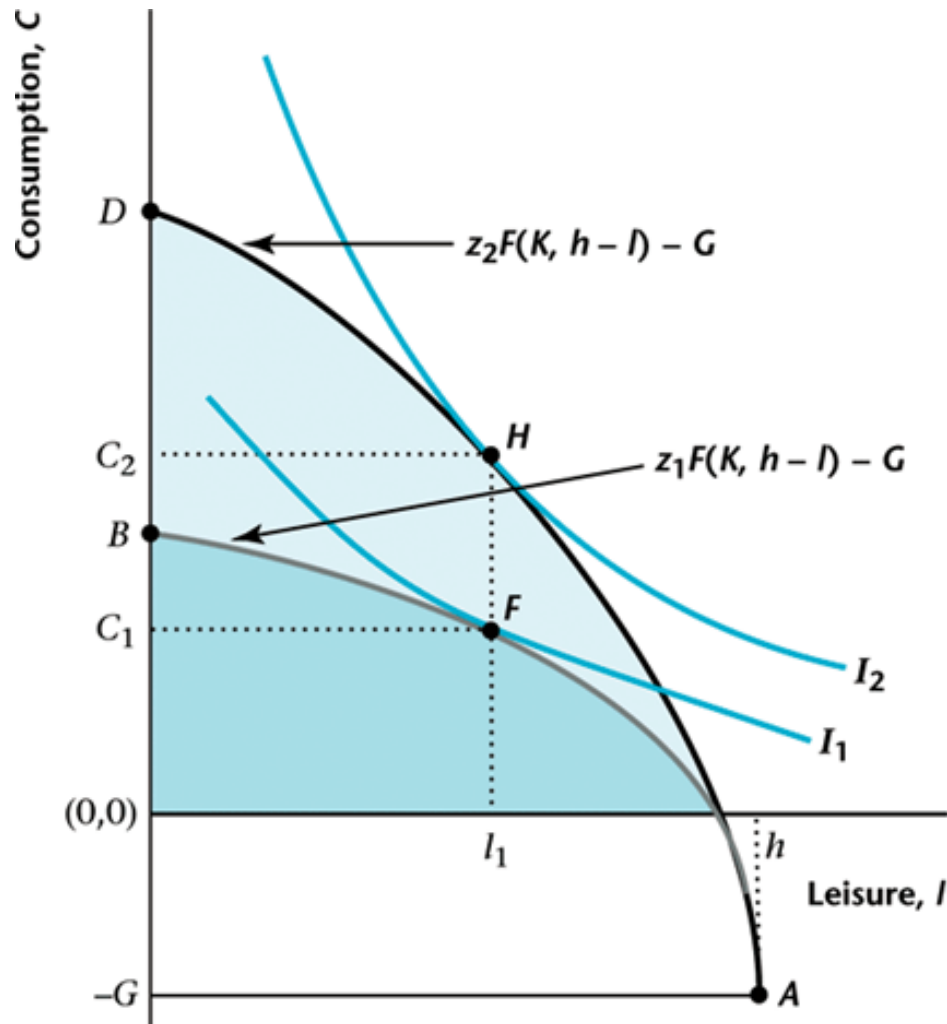


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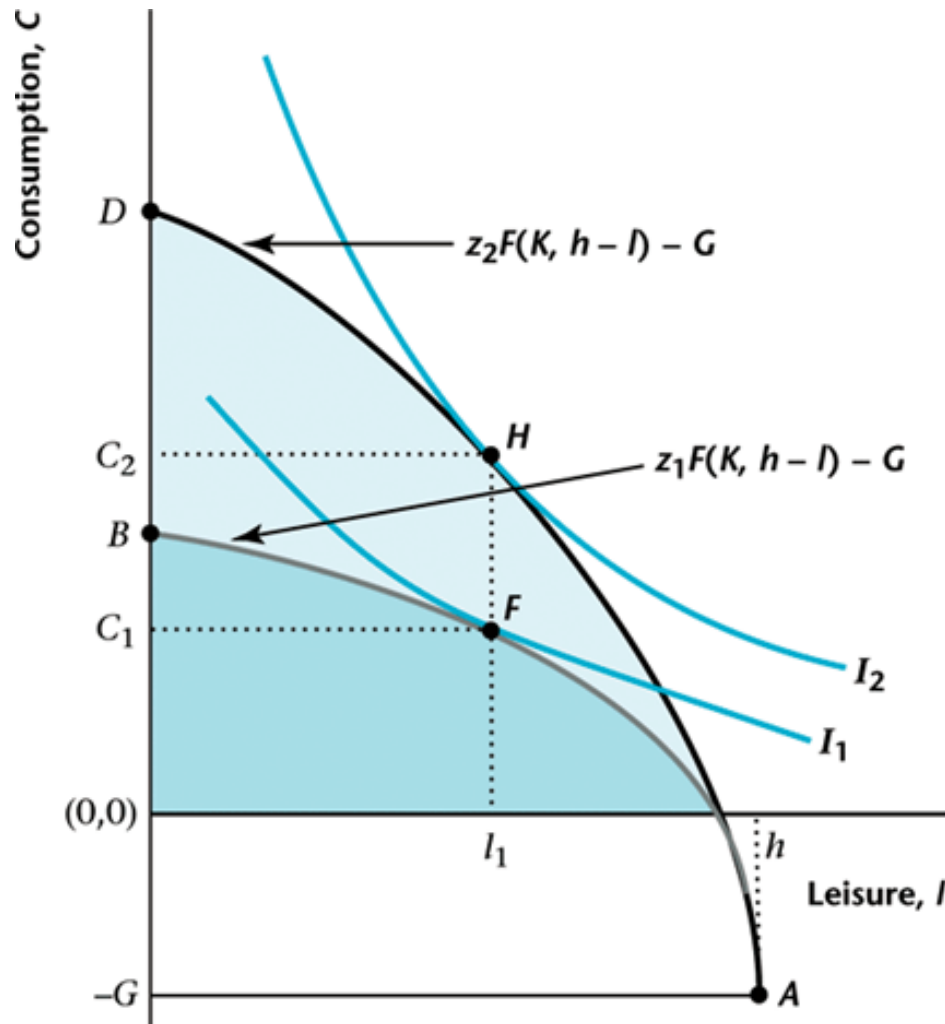
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- The real wage should go up.

# SUMMARY



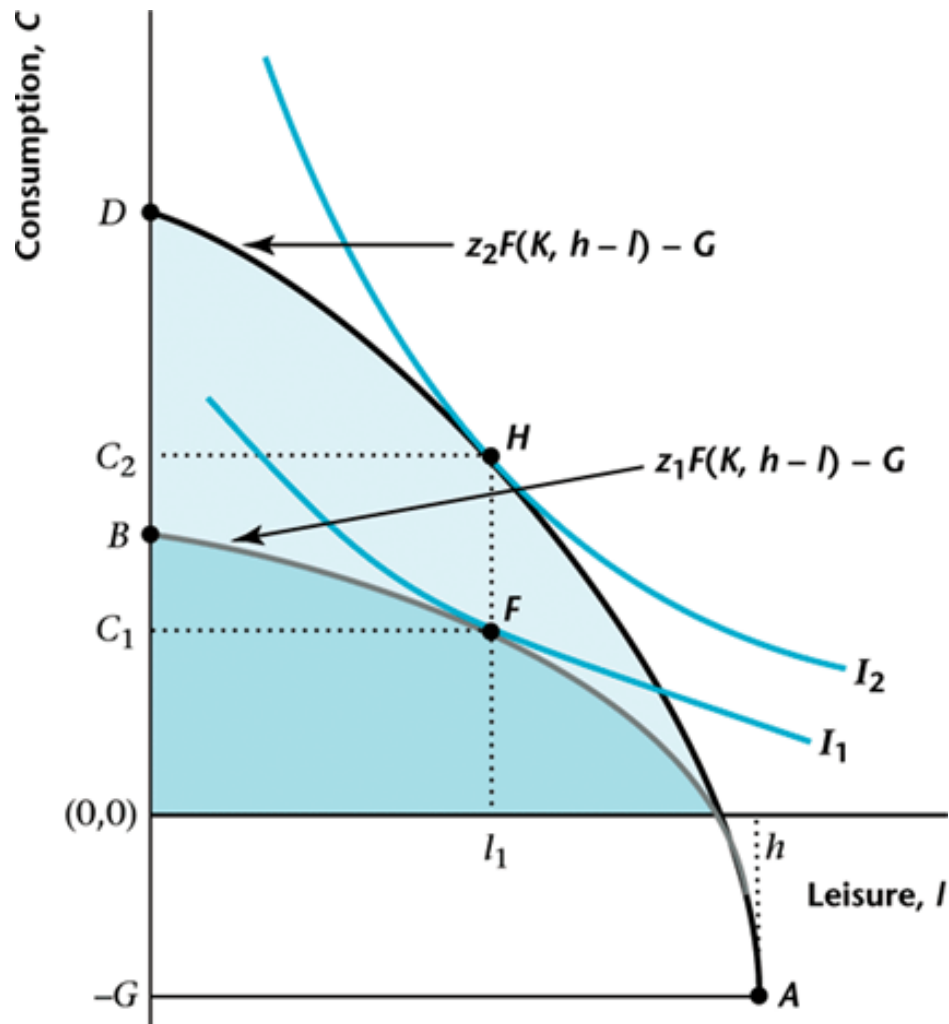
- The shift in  $z$  generates an increase in  $MP_N$ , moving both the demand for labor and the real wage up. Since workers have more income given the number of hours,  $C$  increases. However,  $\ell$  may increase or decrease due to the income and substitution effects.

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- The shift in  $z$  generates an increase in  $MP_N$ , moving both the demand for labor and the real wage up. Since workers have more income given the number of hours,  $C$  increases. However,  $l$  may increase or decrease due to the income and substitution effects.
- However, as  $z$  increases, the consumer is able to reach  $U_2$ . Hence, an increase in total factor productivity **unambiguously increases** the aggregate standard of living!

## SUMMARY



- Overall,

$$C^* \uparrow$$

$N^*?$

$$T^* \rightleftharpoons$$

$$Y^* \uparrow$$

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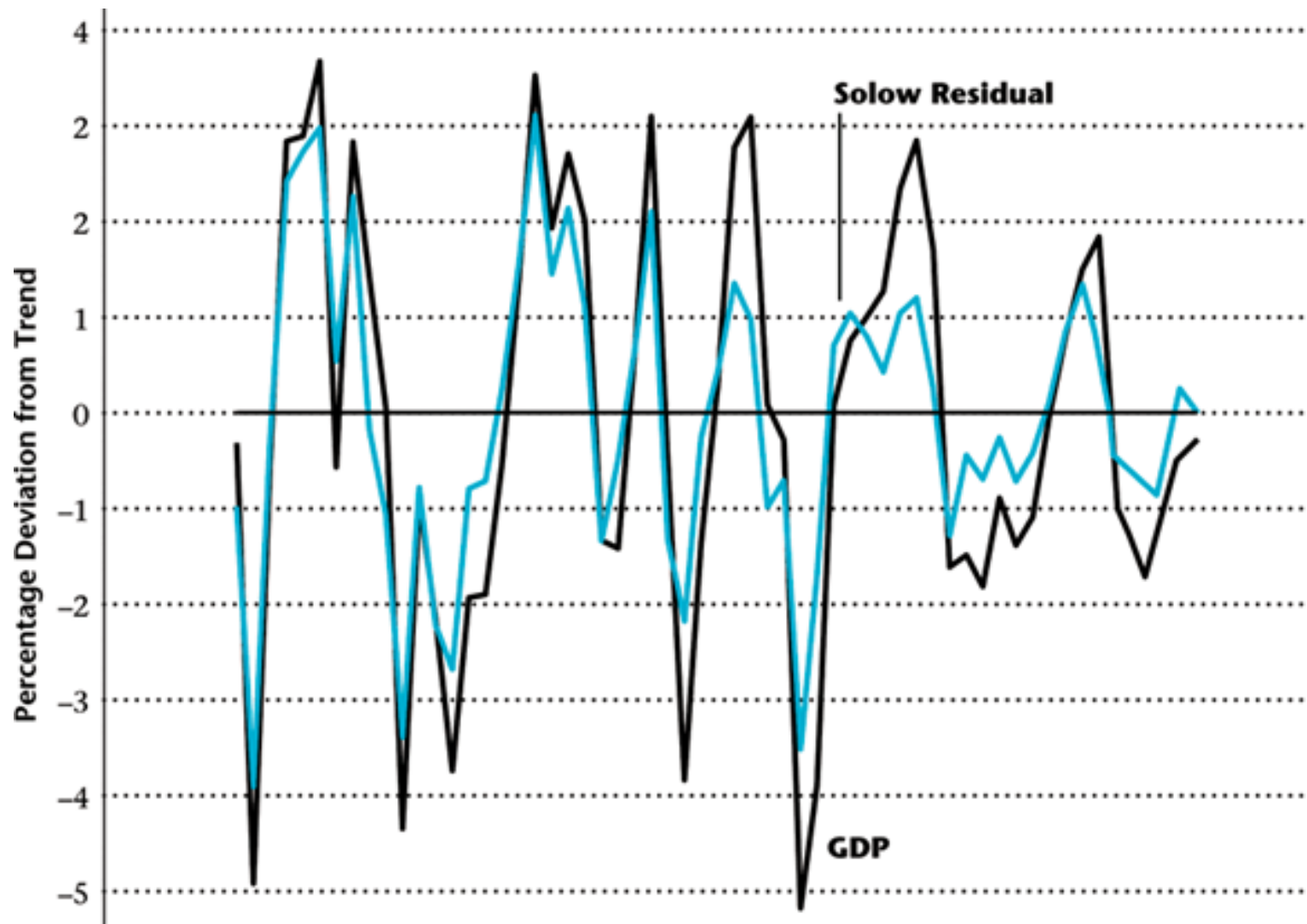
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- The answer is YES.

# HOW RELEVANT IS TFP FOR THE BUSINESS CYCLE?

If we measure TFP by the Solow Residual, then apparently, the answer is “very much”.



# CONCLUSION

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- So, it appears like fiscal policy is not able to replicate the relevant business cycle facts; changes in total factor productivity seem like better alternative.
- Although limited, our simple one-period model has been able to give us some insight on how the economy works. We'll be using a lot of this when we go into the two-period model framework.