Equilibrium in Two Markets


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## A Mathematical Digression

- $Y^{S}=Y^{D}(P, r)$
- $M^{D}(P, r)=M^{S} / P$
- Two equations; two unknowns


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The Y and M Curves


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A Mathematical Digression

- $Y^{S}=Y^{D}(P, r)$
- $M^{D}(P, r)=M^{S} / P$
- Y Curve = $\left\{\boldsymbol{P}, \boldsymbol{r} \mid \boldsymbol{Y}^{S}=\boldsymbol{Y}^{\boldsymbol{D}}(\mathbf{P}, r)\right\}$
- M Curve $=$ $\left\{P, r \mid M^{D}(P, r)=M^{S} / P\right\}$


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## Why the graphical solution?

- Work with equations and get into empirical debates. E.g.

$$
\begin{aligned}
& \frac{\Delta c}{\Delta z}>0 \\
& \frac{\Delta c}{\Delta z}=?
\end{aligned}
$$

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Why the graphical solution?

- Work with overly simplified equations


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## Instead

- Suppose the government
- The effect on the Y curve is ... and the effect on the M curve is....


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## An Example

- Suppose the government
- The effect on the Y curve is to shift up and to the right and ${ }^{\mathrm{P}^{\circ}}$ the effect on the M curve is to shift up and to the left.


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## An Example

Here, the

- effect of the government policy is to increase $P$. , $t$ The effect on $r$ ( is ambiguous. and to the left.


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## The four cases (1)

- Y curve shifts up and to the right
- The M curve shifts up and to the left.
- Price level goes up.
- Effect on interest rate is ambiguous.


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## The four cases (2)

- Y curve shifts up and to the right
- The M curve shifts down and to the right.
- Effect on price level is ambiguous.
- Interest rate rises.



## The four cases (3)

- Y curve shifts down and to the left
- The M curve shifts up and to the left.
- Effect on price level is ambiguous.

- Interest rate falls


## The four cases (4)

- Y curve shifts down and to the left
- The M curve shifts down and to the right.
- Price level falls.
- Effect on interest rate is ambiguous.



Up and to the right Up and to the left Up and to the right Down and to the left Down and to the left Down and to the righ Up and to the left
Down and to the righ


## What is Coming

- More Exercises
- Then More Exercises
- Then Some Applications


## End

