

Floating Exchange Rates

Econ 434 Lecture

Barry W. Ickes

The Pennsylvania State University

Fall 2009

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Floating rates give up monetary anchor

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Floating rates give up monetary anchor
- Floating rates provide *insulation* from foreign monetary shocks and real shocks

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Floating rates give up monetary anchor
- Floating rates provide *insulation* from foreign monetary shocks and real shocks
- Fear of floating comes from fears of destabilizing speculation

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Floating rates give up monetary anchor
- Floating rates provide *insulation* from foreign monetary shocks and real shocks
- Fear of floating comes from fears of destabilizing speculation
 - Is that possible?

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Floating rates give up monetary anchor
- Floating rates provide *insulation* from foreign monetary shocks and real shocks
- Fear of floating comes from fears of destabilizing speculation
 - Is that possible?
- Excessive volatility of exchange rates

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Floating rates give up monetary anchor
- Floating rates provide *insulation* from foreign monetary shocks and real shocks
- Fear of floating comes from fears of destabilizing speculation
 - Is that possible?
- Excessive volatility of exchange rates
 - Does this reduce trade?

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Floating rates give up monetary anchor
- Floating rates provide *insulation* from foreign monetary shocks and real shocks
- Fear of floating comes from fears of destabilizing speculation
 - Is that possible?
- Excessive volatility of exchange rates
 - Does this reduce trade?
- All would be easy if PPP were true

Fixed versus Floating Rates

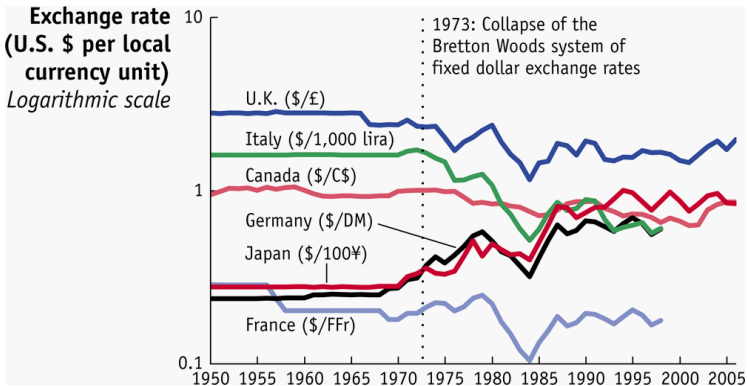
Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics



Floating Rates in Developed Countries

Lecture Note

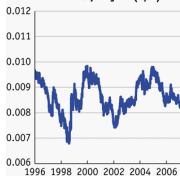
Ickes

Floating
Exchange
Rates

Insulation

Dynamics

U.S. \$ per yen (\$/¥)



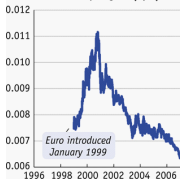
U.S. \$ per pound (\$/£)



U.S. \$ per Canadian \$ (\$/C\$)



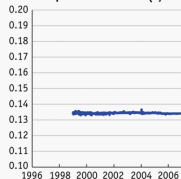
Euros per yen (€/¥)



Euros per pound (€/£)



Euros per Danish krone (€/DKr)



Floating Rates in Developing Countries

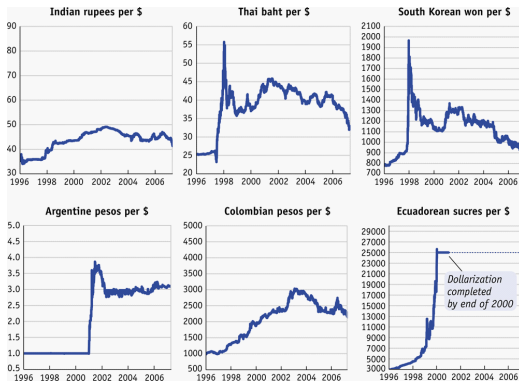
Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics



How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Exchange rate adjusts instead of international reserves

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Exchange rate adjusts instead of international reserves
- Recall the balance of payments equation

$$CA_t + KO_t = \Delta IR_t \quad (1)$$

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Exchange rate adjusts instead of international reserves
- Recall the balance of payments equation

$$CA_t + KO_t = \Delta IR_t \quad (1)$$

- now $CA_t + KO_t = 0$.

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Exchange rate adjusts instead of international reserves
- Recall the balance of payments equation

$$CA_t + KO_t = \Delta IR_t \quad (1)$$

- now $CA_t + KO_t = 0$.
 - implies if current account is in balance so is capital account, and vice versa

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Exchange rate adjusts instead of international reserves
- Recall the balance of payments equation

$$CA_t + KO_t = \Delta IR_t \quad (1)$$

- now $CA_t + KO_t = 0$.
 - implies if current account is in balance so is capital account, and vice versa
 - if $CA > 0$ then $KO < 0$, and vice versa

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Exchange rate adjusts instead of international reserves
- Recall the balance of payments equation

$$CA_t + KO_t = \Delta IR_t \quad (1)$$

- now $CA_t + KO_t = 0$.
 - implies if current account is in balance so is capital account, and vice versa
 - if $CA > 0$ then $KO < 0$, and vice versa
 - since $\Delta IR = 0$ shocks to CA or KO effect e not MB

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Exchange rate adjusts instead of international reserves
- Recall the balance of payments equation

$$CA_t + KO_t = \Delta IR_t \quad (1)$$

- now $CA_t + KO_t = 0$.
 - implies if current account is in balance so is capital account, and vice versa
 - if $CA > 0$ then $KO < 0$, and vice versa
 - since $\Delta IR = 0$ shocks to CA or KO effect e not MB
 - insulation

How do Floating Rates Work?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Exchange rate adjusts instead of international reserves
- Recall the balance of payments equation

$$CA_t + KO_t = \Delta IR_t \quad (1)$$

- now $CA_t + KO_t = 0$.
 - implies if current account is in balance so is capital account, and vice versa
 - if $CA > 0$ then $KO < 0$, and vice versa
 - since $\Delta IR = 0$ shocks to CA or KO effect e not MB
 - insulation
 - monetary autonomy

Simple Model

- Flexible prices, assume PPP holds

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Simple Model

- Flexible prices, assume PPP holds
- PPP implies P and e are positively related (since P^* is exogenous)

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Simple Model

- Flexible prices, assume PPP holds
- PPP implies P and e are positively related (since P^* is exogenous)
- Money market equilibrium implies

$$\frac{M}{P} = I(i^* + \delta, Y) \quad (2)$$

Simple Model

- Flexible prices, assume PPP holds
- PPP implies P and e are positively related (since P^* is exogenous)
- Money market equilibrium implies

$$\frac{M}{P} = I(i^* + \delta, Y) \quad (2)$$

- where we have used interest parity condition to substitute for i

Simple Model

- Flexible prices, assume PPP holds
- PPP implies P and e are positively related (since P^* is exogenous)
- Money market equilibrium implies

$$\frac{M}{P} = I(i^* + \delta, Y) \quad (2)$$

- where we have used interest parity condition to substitute for i
- notice that e does not appear.

Simple Model

- Flexible prices, assume PPP holds
- PPP implies P and e are positively related (since P^* is exogenous)
- Money market equilibrium implies

$$\frac{M}{P} = I(i^* + \delta, Y) \quad (2)$$

- where we have used interest parity condition to substitute for i
- notice that e does not appear.
 - in full equilibrium $\delta = 0$

Simple Model

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Flexible prices, assume PPP holds
- PPP implies P and e are positively related (since P^* is exogenous)
- Money market equilibrium implies

$$\frac{M}{P} = I(i^* + \delta, Y) \quad (2)$$

- where we have used interest parity condition to substitute for i
- notice that e does not appear.
 - in full equilibrium $\delta = 0$
- so if M is given, there is only one P that satisfies (2)

Simple Model

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Flexible prices, assume PPP holds
- PPP implies P and e are positively related (since P^* is exogenous)
- Money market equilibrium implies

$$\frac{M}{P} = I(i^* + \delta, Y) \quad (2)$$

- where we have used interest parity condition to substitute for i
- notice that e does not appear.
 - in full equilibrium $\delta = 0$
 - so if M is given, there is only one P that satisfies (2)
- We have figure 1

Full Equilibrium

Figure 1

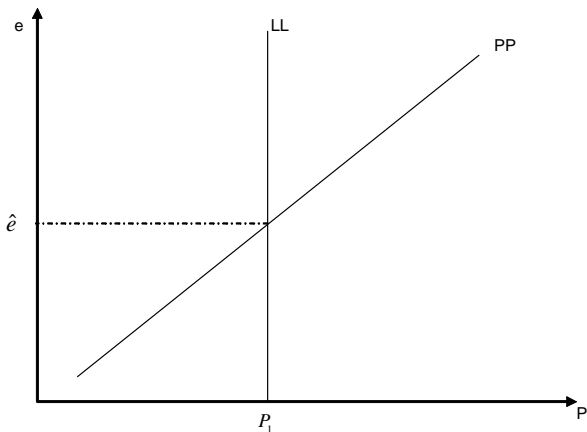


Figure: Full Equilibrium

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose money supply increases

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose money supply increases
 - PP does not move, but LL shifts to right

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose money supply increases
 - PP does not move, but LL shifts to right
 - e must rise (dollar depreciates)

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose money supply increases
 - PP does not move, but LL shifts to right
 - e must rise (dollar depreciates)
- $P^* \uparrow \implies e \uparrow$ for any value of P

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose money supply increases
 - PP does not move, but LL shifts to right
 - e must rise (dollar depreciates)
- $P^* \uparrow \implies e \uparrow$ for any value of P
 - PP shifts upwards

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose money supply increases
 - PP does not move, but LL shifts to right
 - e must rise (dollar depreciates)
- $P^* \uparrow \implies e \uparrow$ for any value of P
 - PP shifts upwards
 - insulation against foreign price shocks

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose money supply increases
 - PP does not move, but LL shifts to right
 - e must rise (dollar depreciates)
- $P^* \uparrow \implies e \uparrow$ for any value of P
 - PP shifts upwards
 - insulation against foreign price shocks
- What about rise in Y ?

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose money supply increases
 - PP does not move, but LL shifts to right
 - e must rise (dollar depreciates)
- $P^* \uparrow \implies e \uparrow$ for any value of P
 - PP shifts upwards
 - insulation against foreign price shocks
- What about rise in Y ?
 - from (2) money demand rises, so given M , P must fall
 $\implies LL$ shifts left, $e \downarrow$

Full Equilibrium

Lecture Note

Ickes

Floating
Exchange
Rates

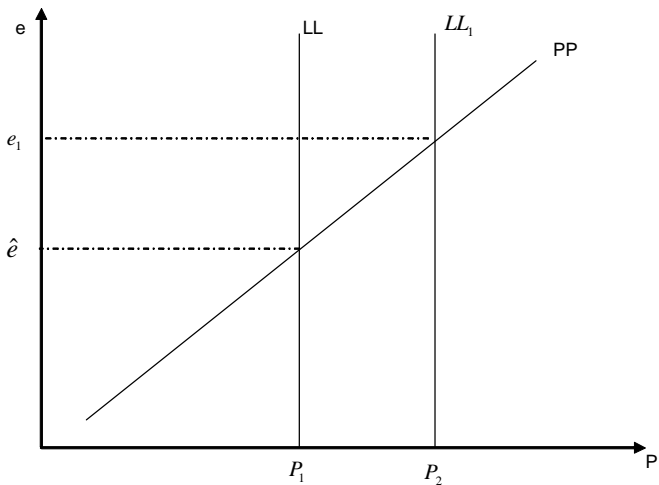
Insulation

Dynamics

- Suppose money supply increases
 - PP does not move, but LL shifts to right
 - e must rise (dollar depreciates)
- $P^* \uparrow \implies e \uparrow$ for any value of P
 - PP shifts upwards
 - insulation against foreign price shocks
- What about rise in Y ?
 - from (2) money demand rises, so given M , P must fall
 $\implies LL$ shifts left, $e \downarrow$
 - same for fall in i^*

Statics

Figure 10



Insulation

- Insulation properties of flexible exchange rates in real model

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Insulation

- Insulation properties of flexible exchange rates in real model
- Assume domestic price level is given and study output changes

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Insulation properties of flexible exchange rates in real model
- Assume domestic price level is given and study output changes
- Goods market equilibrium requires $Y = AD$, so

$$Y = \alpha [\bar{A} - br + \bar{T} + \phi q] \quad (3)$$

$$= \alpha [\bar{A} - b(i - \pi^e) + \bar{T} + \phi q] \quad (4)$$

which is the open-economy *IS* curve (and $\alpha \equiv \frac{1}{1-a+m}$).

Insulation

- Insulation properties of flexible exchange rates in real model
- Assume domestic price level is given and study output changes
- Goods market equilibrium requires $Y = AD$, so

$$Y = \alpha [\bar{A} - br + \bar{T} + \phi q] \quad (3)$$

$$= \alpha [\bar{A} - b(i - \pi^e) + \bar{T} + \phi q] \quad (4)$$

which is the open-economy *IS* curve (and $\alpha \equiv \frac{1}{1-a+m}$).

- Assume perfect capital mobility, $i = i^* + \delta$, and for now let $\delta = 0$. Then,

$$Y = \alpha [\bar{A} - b(i^* - \pi^e) + \bar{T} + \phi q] \quad (5)$$

Insulation

- Insulation properties of flexible exchange rates in real model
- Assume domestic price level is given and study output changes
- Goods market equilibrium requires $Y = AD$, so

$$Y = \alpha [\bar{A} - br + \bar{T} + \phi q] \quad (3)$$

$$= \alpha [\bar{A} - b(i - \pi^e) + \bar{T} + \phi q] \quad (4)$$

which is the open-economy *IS* curve (and $\alpha \equiv \frac{1}{1-a+m}$).

- Assume perfect capital mobility, $i = i^* + \delta$, and for now let $\delta = 0$. Then,

$$Y = \alpha [\bar{A} - b(i^* - \pi^e) + \bar{T} + \phi q] \quad (5)$$

- Income depends positively on \bar{T} , q , and \bar{A} , and negatively on the interest rate.

Insulation

- Insulation properties of flexible exchange rates in real model
- Assume domestic price level is given and study output changes
- Goods market equilibrium requires $Y = AD$, so

$$Y = \alpha [\bar{A} - br + \bar{T} + \phi q] \quad (3)$$

$$= \alpha [\bar{A} - b(i - \pi^e) + \bar{T} + \phi q] \quad (4)$$

which is the open-economy *IS* curve (and $\alpha \equiv \frac{1}{1-a+m}$).

- Assume perfect capital mobility, $i = i^* + \delta$, and for now let $\delta = 0$. Then,

$$Y = \alpha [\bar{A} - b(i^* - \pi^e) + \bar{T} + \phi q] \quad (5)$$

- Income depends positively on \bar{T} , q , and \bar{A} , and negatively on the interest rate.
- Since $q \equiv \frac{eP^*}{P}$, $\implies \frac{\Delta Y}{\Delta e} > 0$, this is *YY* curve

IS Curve

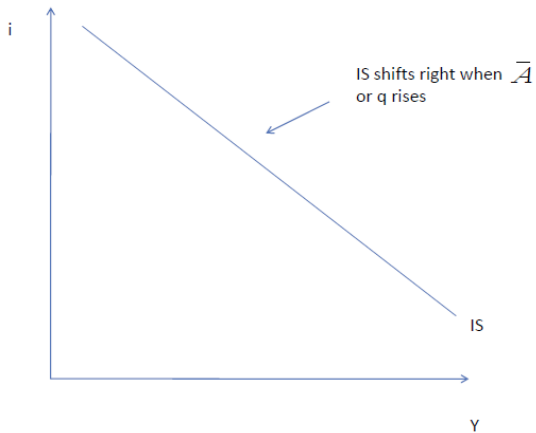
Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics



Increase in Money Supply

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

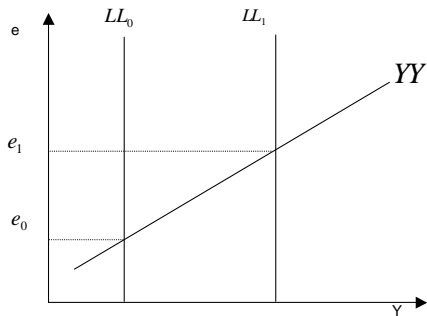


Figure: Output and the Exchange Rate

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise
 - monetary policy can affect income

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise
 - monetary policy can affect income
- What about shifts in YY ?

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise
 - monetary policy can affect income
- What about shifts in YY ?
 - fiscal policy, trade policy ($\Delta \bar{T}$), or change in i^* shifts YY

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise
 - monetary policy can affect income
- What about shifts in YY ?
 - fiscal policy, trade policy ($\Delta \bar{T}$), or change in i^* shifts YY
 - hence it only affects the exchange rate

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise
 - monetary policy can affect income
- What about shifts in YY ?
 - fiscal policy, trade policy ($\Delta \bar{T}$), or change in i^* shifts YY
 - hence it only affects the exchange rate
- tariff or oil discovery raises \bar{T} , YY shifts right, e rises \implies no effect on Y

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise
 - monetary policy can affect income
- What about shifts in YY ?
 - fiscal policy, trade policy ($\Delta \bar{T}$), or change in i^* shifts YY
 - hence it only affects the exchange rate
- tariff or oil discovery raises \bar{T} , YY shifts right, e rises \implies no effect on Y
 - fiscal policy is impotent (with respect to Y)

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise
 - monetary policy can affect income
- What about shifts in YY ?
 - fiscal policy, trade policy ($\Delta \bar{T}$), or change in i^* shifts YY
 - hence it only affects the exchange rate
- tariff or oil discovery raises \bar{T} , YY shifts right, e rises \implies no effect on Y
 - fiscal policy is impotent (with respect to Y)
 - but it does effect NX ; fall in e implies less competitive, so if output is unchanged the composition has switched towards domestic goods

Insulation

Lecture Note

Issues

Floating
Exchange
Rates

Insulation

Dynamics

- Increase in $\frac{M}{P}$ shifts LL right, causes e to rise
 - monetary policy can affect income
- What about shifts in YY ?
 - fiscal policy, trade policy ($\Delta \bar{T}$), or change in i^* shifts YY
 - hence it only affects the exchange rate
- tariff or oil discovery raises \bar{T} , YY shifts right, e rises \implies no effect on Y
 - fiscal policy is impotent (with respect to Y)
 - but it does effect NX ; fall in e implies less competitive, so if output is unchanged the composition has switched towards domestic goods
- flexible exchange rate *insulates* economy from real shocks

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Notice that monetary policy is still important to determination of e

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Notice that monetary policy is still important to determination of e
- shocks to M lead to changes in e

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Notice that monetary policy is still important to determination of e
- shocks to M lead to changes in e
 - it is not the case that flexible exchange rates means market determines e instead of policy

Insulation

Lecture Note

Lockes

Floating
Exchange
Rates

Insulation

Dynamics

- Notice that monetary policy is still important to determination of e
- shocks to M lead to changes in e
 - it is not the case that flexible exchange rates means market determines e instead of policy
- main difference is how shocks are translated into ΔM vs. Δe

Insulation

Lecture Note

Issues

Floating
Exchange
Rates

Insulation

Dynamics

- Notice that monetary policy is still important to determination of e
- shocks to M lead to changes in e
 - it is not the case that flexible exchange rates means market determines e instead of policy
- main difference is how shocks are translated into ΔM vs. Δe
- But what matters for welfare are shocks to q not e

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Notice that monetary policy is still important to determination of e
- shocks to M lead to changes in e
 - it is not the case that flexible exchange rates means market determines e instead of policy
- main difference is how shocks are translated into ΔM vs. Δe
- But what matters for welfare are shocks to q not e
- If we lived in PPP world, adjustment to shocks via ΔP and $e = \bar{e}$ would work as well as adjustment via Δe

Insulation

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Notice that monetary policy is still important to determination of e
- shocks to M lead to changes in e
 - it is not the case that flexible exchange rates means market determines e instead of policy
- main difference is how shocks are translated into ΔM vs. Δe
- But what matters for welfare are shocks to q not e
- If we lived in PPP world, adjustment to shocks via ΔP and $e = \bar{e}$ would work as well as adjustment via Δe
 - It is when there are nominal rigidities that Δe may be preferred

Exception

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- The exception to *insulation* result is money demand shocks

Exception

- The exception to *insulation* result is money demand shocks
 - fixed rates provide better insulation if money demand is volatile

Exception

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- The exception to *insulation* result is money demand shocks
 - fixed rates provide better insulation if money demand is volatile
- under flexible exchange rates a shock to $I(\cdot) \implies LL$ shifts $\longrightarrow Y$ or P to change

Exception

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- The exception to *insulation* result is money demand shocks
 - fixed rates provide better insulation if money demand is volatile
- under flexible exchange rates a shock to $I(\cdot) \implies LL$ shifts $\longrightarrow Y$ or P to change
 - under fixed exchange rates money supply is endogenous

Exception

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- The exception to *insulation* result is money demand shocks
 - fixed rates provide better insulation if money demand is volatile
- under flexible exchange rates a shock to $I(\cdot) \implies LL$ shifts $\longrightarrow Y$ or P to change
 - under fixed exchange rates money supply is endogenous
 - Money market equilibrium condition is $\frac{M}{P} = I(i^* + \delta, Y)$

Exception

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- The exception to *insulation* result is money demand shocks
 - fixed rates provide better insulation if money demand is volatile
- under flexible exchange rates a shock to $I(\cdot) \implies LL$ shifts $\longrightarrow Y$ or P to change
 - under fixed exchange rates money supply is endogenous
 - Money market equilibrium condition is $\frac{M}{P} = I(i^* + \delta, Y)$
 - if $e = \bar{e}, \delta = 0$. If $I(\cdot) \uparrow$ then $M \uparrow$, LL does not shift

Exception

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- The exception to *insulation* result is money demand shocks
 - fixed rates provide better insulation if money demand is volatile
- under flexible exchange rates a shock to $I(\cdot) \implies LL$ shifts $\longrightarrow Y$ or P to change
 - under fixed exchange rates money supply is endogenous
 - Money market equilibrium condition is $\frac{M}{P} = I(i^* + \delta, Y)$
 - if $e = \bar{e}, \delta = 0$. If $I(\cdot) \uparrow$ then $M \uparrow$, LL does not shift
 - rise in $I(\cdot)$ would cause $i > i^*$, but this attracts capital inflow

Exception

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- The exception to *insulation* result is money demand shocks
 - fixed rates provide better insulation if money demand is volatile
- under flexible exchange rates a shock to $I(\cdot) \implies LL$ shifts $\longrightarrow Y$ or P to change
 - under fixed exchange rates money supply is endogenous
 - Money market equilibrium condition is $\frac{M}{P} = I(i^* + \delta, Y)$
 - if $e = \bar{e}, \delta = 0$. If $I(\cdot) \uparrow$ then $M \uparrow$, LL does not shift
 - rise in $I(\cdot)$ would cause $i > i^*$, but this attracts capital inflow
 - with $e = \bar{e}$, excess supply of foreign exchange causes $M \uparrow$, restoring $i = i^*$

Exception

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- The exception to *insulation* result is money demand shocks
 - fixed rates provide better insulation if money demand is volatile
- under flexible exchange rates a shock to $I(\cdot) \implies LL$ shifts $\longrightarrow Y$ or P to change
 - under fixed exchange rates money supply is endogenous
 - Money market equilibrium condition is $\frac{M}{P} = I(i^* + \delta, Y)$
 - if $e = \bar{e}, \delta = 0$. If $I(\cdot) \uparrow$ then $M \uparrow$, LL does not shift
 - rise in $I(\cdot)$ would cause $i > i^*$, but this attracts capital inflow
 - with $e = \bar{e}$, excess supply of foreign exchange causes $M \uparrow$, restoring $i = i^*$
- Easy to see with IS-LM diagram

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium
- LM curve is money market equilibrium

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium
- LM curve is money market equilibrium
- BB curve is external balance condition with perfect capital mobility

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium
- LM curve is money market equilibrium
- BB curve is external balance condition with perfect capital mobility
- Start at point *A*

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium
- LM curve is money market equilibrium
- BB curve is external balance condition with perfect capital mobility
- Start at point A
 - rise in $I(\cdot)$ causes $LM \rightarrow LM'$

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium
- LM curve is money market equilibrium
- BB curve is external balance condition with perfect capital mobility
- Start at point A
 - rise in $I(\cdot)$ causes $LM \rightarrow LM'$
 - would cause $i \uparrow$ in closed economy

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium
- LM curve is money market equilibrium
- BB curve is external balance condition with perfect capital mobility
- Start at point A
 - rise in $I(\cdot)$ causes $LM \longrightarrow LM'$
 - would cause $i \uparrow$ in closed economy
 - with $e = \bar{e}$, capital inflow $\implies M \uparrow, LM' \longrightarrow LM$

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium
- LM curve is money market equilibrium
- BB curve is external balance condition with perfect capital mobility
- Start at point A
 - rise in $I(\cdot)$ causes $LM \rightarrow LM'$
 - would cause $i \uparrow$ in closed economy
 - with $e = \bar{e}$, capital inflow $\implies M \uparrow, LM' \rightarrow LM$
 - with flexible e , $e \downarrow \implies$ fall in competitiveness shifts IS to left \rightarrow end at C

Money Demand Shock

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- IS curve is goods market equilibrium
- LM curve is money market equilibrium
- BB curve is external balance condition with perfect capital mobility
- Start at point A
 - rise in $I(\cdot)$ causes $LM \rightarrow LM'$
 - would cause $i \uparrow$ in closed economy
 - with $e = \bar{e}$, capital inflow $\implies M \uparrow, LM' \rightarrow LM$
 - with flexible e , $e \downarrow \implies$ fall in competitiveness shifts IS to left \rightarrow end at C
- So best insulation depends on source of shocks to economy

BB Curve

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- BP condition, $B = CA + KO = 0$

BB Curve

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- BP condition, $B = CA + KO = 0$
- $KO = \beta(i - i^* - \delta)$, where β measures capital market integration

BB Curve

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- BP condition, $B = CA + KO = 0$
- $KO = \beta(i - i^* - \delta)$, where β measures capital market integration
- If $\delta = 0$ in full equilibrium, then we have
$$B = CA + \beta(i - i^*) = 0$$

BB Curve

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- BP condition, $B = CA + KO = 0$
- $KO = \beta(i - i^* - \delta)$, where β measures capital market integration
- If $\delta = 0$ in full equilibrium, then we have
$$B = CA + \beta(i - i^*) = 0$$
- Let $CA = \bar{T} - mY + \phi q$

BB Curve

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- BP condition, $B = CA + KO = 0$
- $KO = \beta(i - i^* - \delta)$, where β measures capital market integration
- If $\delta = 0$ in full equilibrium, then we have
$$B = CA + \beta(i - i^*) = 0$$
- Let $CA = \bar{T} - mY + \phi q$
- or, $i = i^* + \frac{1}{\beta} (\bar{T} - mY + \phi q)$: equation of BB curve

BB Curve

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- BP condition, $B = CA + KO = 0$
- $KO = \beta(i - i^* - \delta)$, where β measures capital market integration
- If $\delta = 0$ in full equilibrium, then we have
$$B = CA + \beta(i - i^*) = 0$$
- Let $CA = \bar{T} - mY + \phi q$
- or, $i = i^* + \frac{1}{\beta} (\bar{T} - mY + \phi q)$: equation of BB curve
- If $\beta \rightarrow \infty$ we have perfect capital mobility and BB is horizontal: i must equal i^*

Money Demand Shock

IS-LM diagram

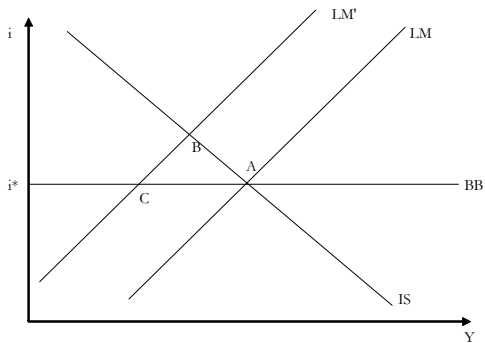
Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics



Volatility

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Why are exchange rates so volatile?

Volatility

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Why are exchange rates so volatile?
- Key is that currencies are assets

Volatility

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Why are exchange rates so volatile?
- Key is that currencies are assets
- Information gets absorbed quickly into asset prices

Volatility

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Why are exchange rates so volatile?
- Key is that currencies are assets
- Information gets absorbed quickly into asset prices
- Changes in information mean that asset prices move quickly

Volatility

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Why are exchange rates so volatile?
- Key is that currencies are assets
- Information gets absorbed quickly into asset prices
- Changes in information mean that asset prices move quickly
- Asset prices adjust faster than other prices

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium
- Now $\delta \neq 0$, money market equil. depends on expectations

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium
- Now $\delta \neq 0$, money market equil. depends on expectations
- Now $\delta \equiv \frac{\widehat{e}_{t+1} - e_t}{e_t}$

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium
- Now $\delta \neq 0$, money market equil. depends on expectations
- Now $\delta \equiv \frac{\hat{e}_{t+1} - e_t}{e_t}$
 - what is \hat{e}_{t+1} ? Assume rational expectations

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium
- Now $\delta \neq 0$, money market equil. depends on expectations
- Now $\delta \equiv \frac{\hat{e}_{t+1} - e_t}{e_t}$
 - what is \hat{e}_{t+1} ? Assume rational expectations
 - we know that $e \rightarrow \tilde{e}$, its long-run equilibrium value

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium
- Now $\delta \neq 0$, money market equil. depends on expectations
- Now $\delta \equiv \frac{\widehat{e}_{t+1} - e_t}{e_t}$
 - what is \widehat{e}_{t+1} ? Assume rational expectations
 - we know that $e \rightarrow \widetilde{e}$, its long-run equilibrium value
- Key assumption: prices (or Y) adjust slower than e

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium
- Now $\delta \neq 0$, money market equil. depends on expectations
- Now $\delta \equiv \frac{\hat{e}_{t+1} - e_t}{e_t}$
 - what is \hat{e}_{t+1} ? Assume rational expectations
 - we know that $e \rightarrow \tilde{e}$, its long-run equilibrium value
- Key assumption: prices (or Y) adjust slower than e
 - Then e does not move to \tilde{e} instantaneously.

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium
- Now $\delta \neq 0$, money market equil. depends on expectations
- Now $\delta \equiv \frac{\hat{e}_{t+1} - e_t}{e_t}$
 - what is \hat{e}_{t+1} ? Assume rational expectations
 - we know that $e \rightarrow \tilde{e}$, its long-run equilibrium value
- Key assumption: prices (or Y) adjust slower than e
 - Then e does not move to \tilde{e} instantaneously.
 - Suppose that θ is the speed of adjustment to the new equilibrium

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Adjustment to full equilibrium
- Now $\delta \neq 0$, money market equil. depends on expectations
- Now $\delta \equiv \frac{\hat{e}_{t+1} - e_t}{e_t}$
 - what is \hat{e}_{t+1} ? Assume rational expectations
 - we know that $e \rightarrow \tilde{e}$, its long-run equilibrium value
- Key assumption: prices (or Y) adjust slower than e
 - Then e does not move to \tilde{e} instantaneously.
 - Suppose that θ is the speed of adjustment to the new equilibrium
 - higher $\theta \implies$ quicker adjustment to full equilibrium

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Money demand is now

$$\frac{M}{P} = I \left[i^* + \theta \left(\frac{\tilde{e} - e_t}{e_t} \right), Y \right] \quad (6)$$

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Money demand is now

$$\frac{M}{P} = I \left[i^* + \theta \left(\frac{\tilde{e} - e_t}{e_t} \right), Y \right] \quad (6)$$

- If $e_t > \tilde{e} \implies$ lower cost of holding money $\implies I[\cdot] \uparrow$

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Money demand is now

$$\frac{M}{P} = I \left[i^* + \theta \left(\frac{\tilde{e} - e_t}{e_t} \right), Y \right] \quad (6)$$

- If $e_t > \tilde{e} \implies$ lower cost of holding money $\implies I[\cdot] \uparrow$
- Notice higher $P \implies$ lower $\frac{M}{P}$, money market equilibrium requires lower $I()$. Requires higher i

Dynamics

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Money demand is now

$$\frac{M}{P} = I \left[i^* + \theta \left(\frac{\tilde{e} - e_t}{e_t} \right), Y \right] \quad (6)$$

- If $e_t > \tilde{e} \implies$ lower cost of holding money $\implies I[\cdot] \uparrow$
- Notice higher $P \implies$ lower $\frac{M}{P}$, money market equilibrium requires lower $I()$. Requires higher i
 - requires $e < \tilde{e} \implies MM$ curve is negatively sloped

Overshooting

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Overshooting

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e
 - with $\Delta P = 0$ $\frac{M}{P} > I(i^*, Y)$

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e
 - with $\Delta P = 0$ $\frac{M}{P} > I(i^*, Y)$
 - so e must rise so money demand will increase

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e
 - with $\Delta P = 0$ $\frac{M}{P} > I(i^*, Y)$
 - so e must rise so money demand will increase
 - $e \nearrow e_1$ in figure 3

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e
 - with $\Delta P = 0$ $\frac{M}{P} > I(i^*, Y)$
 - so e must rise so money demand will increase
 - $e \nearrow e_1$ in figure 3
 - as $P_0 \nearrow P_1$ we move along MM to \bar{e}

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e
 - with $\Delta P = 0$ $\frac{M}{P} > I(i^*, Y)$
 - so e must rise so money demand will increase
 - $e \nearrow e_1$ in figure 3
 - as $P_0 \nearrow P_1$ we move along MM to \bar{e}
 - notice MM anchored by rational expectations

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e
 - with $\Delta P = 0$ $\frac{M}{P} > I(i^*, Y)$
 - so e must rise so money demand will increase
 - $e \nearrow e_1$ in figure 3
 - as $P_0 \nearrow P_1$ we move along MM to \bar{e}
 - notice MM anchored by rational expectations
 - we follow the path of arrows

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e
 - with $\Delta P = 0$ $\frac{M}{P} > I(i^*, Y)$
 - so e must rise so money demand will increase
 - $e \nearrow e_1$ in figure 3
 - as $P_0 \nearrow P_1$ we move along MM to \bar{e}
 - notice MM anchored by rational expectations
 - we follow the path of arrows
 - notice the exchange rate overshoots its full equilibrium change

Overshooting

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Suppose we start in equilibrium (e_0, P_0) and then $\Delta M > 0$
 - we know in long run $e \uparrow$
 - new equilibrium is \bar{e}, P_1
- Suppose P adjusts slower than e
 - with $\Delta P = 0$ $\frac{M}{P} > I(i^*, Y)$
 - so e must rise so money demand will increase
 - $e \nearrow e_1$ in figure 3
 - as $P_0 \nearrow P_1$ we move along MM to \bar{e}
 - notice MM anchored by rational expectations
 - we follow the path of arrows
 - notice the exchange rate overshoots its full equilibrium change
 - $e_1 - e_0 > \bar{e} - e_0$

Overshooting

Figure 3

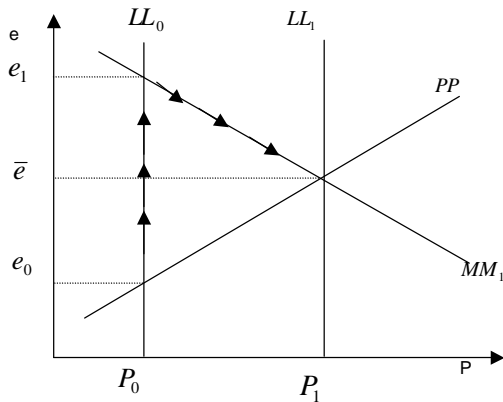


Figure: Overshooting

Intuition

- Why does the exchange rate overshoot?

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Intuition

- Why does the exchange rate overshoot?
 - This follows from the assumptions about adjustment speed.

Intuition

- Why does the exchange rate overshoot?
 - This follows from the assumptions about adjustment speed.
 - Notice that $\Delta M > 0 \implies$ that at unchanged prices there is an excess supply of money.

Intuition

- Why does the exchange rate overshoot?
 - This follows from the assumptions about adjustment speed.
 - Notice that $\Delta M > 0 \implies$ that at unchanged prices there is an excess supply of money.
 - To restore money market equilibrium the opportunity cost of holding domestic money must fall so that money demand can increase. The only way this can happen is if agents expect that $\delta < 0$ so that $i^* + \delta$ can fall.

Intuition

- Why does the exchange rate overshoot?
 - This follows from the assumptions about adjustment speed.
 - Notice that $\Delta M > 0 \implies$ that at unchanged prices there is an excess supply of money.
 - To restore money market equilibrium the opportunity cost of holding domestic money must fall so that money demand can increase. The only way this can happen is if agents expect that $\delta < 0$ so that $i^* + \delta$ can fall.
 - But the only way that agents can rationally expect the exchange rate to *depreciate* is if the exchange rate immediately jumps above the new full equilibrium value.

Intuition

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Why does the exchange rate overshoot?
 - This follows from the assumptions about adjustment speed.
 - Notice that $\Delta M > 0 \implies$ that at unchanged prices there is an excess supply of money.
 - To restore money market equilibrium the opportunity cost of holding domestic money must fall so that money demand can increase. The only way this can happen is if agents expect that $\delta < 0$ so that $i^* + \delta$ can fall.
 - But the only way that agents can rationally expect the exchange rate to *depreciate* is if the exchange rate immediately jumps above the new full equilibrium value.
- As P rises M is now fixed, so $\frac{M}{P}$ falls, equilibrium requires $I(\cdot)$ to fall

Intuition

Lecture Note

lckes

Floating
Exchange
Rates

Insulation

Dynamics

- Why does the exchange rate overshoot?
 - This follows from the assumptions about adjustment speed.
 - Notice that $\Delta M > 0 \implies$ that at unchanged prices there is an excess supply of money.
 - To restore money market equilibrium the opportunity cost of holding domestic money must fall so that money demand can increase. The only way this can happen is if agents expect that $\delta < 0$ so that $i^* + \delta$ can fall.
 - But the only way that agents can rationally expect the exchange rate to *depreciate* is if the exchange rate immediately jumps above the new full equilibrium value.
- As P rises M is now fixed, so $\frac{M}{P}$ falls, equilibrium requires $I(\cdot)$ to fall
 - requires e to fall along the adjustment path, but this means e must *initially* overshoot

Arbitrage

- We can see that arbitrage opportunities would arise if e did not overshoot.

Arbitrage

- We can see that arbitrage opportunities would arise if e did not overshoot.
 - In the full equilibrium we know that $\delta = 0$ and that $i = i^*$.

Arbitrage

- We can see that arbitrage opportunities would arise if e did not overshoot.
 - In the full equilibrium we know that $\delta = 0$ and that $i = i^*$.
 - Because $\bar{e} > e_0$, no overshooting would imply that the exchange rate would appreciate – and the currency depreciate – on the path to the new equilibrium.

Arbitrage

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- We can see that arbitrage opportunities would arise if e did not overshoot.
 - In the full equilibrium we know that $\delta = 0$ and that $i = i^*$.
 - Because $\bar{e} > e_0$, no overshooting would imply that the exchange rate would appreciate – and the currency depreciate – on the path to the new equilibrium.
- But if the currency depreciates in value and domestic interest rates equal foreign interest rates why would anyone hold domestic currency?

Arbitrage

Lecture Note

Lockes

Floating
Exchange
Rates

Insulation

Dynamics

- We can see that arbitrage opportunities would arise if e did not overshoot.
 - In the full equilibrium we know that $\delta = 0$ and that $i = i^*$.
 - Because $\bar{e} > e_0$, no overshooting would imply that the exchange rate would appreciate – and the currency depreciate – on the path to the new equilibrium.
- But if the currency depreciates in value and domestic interest rates equal foreign interest rates why would anyone hold domestic currency?
- They will dump dollars and buy foreign currency. This will make the exchange rate increase. When will the dumping of domestic currency end?

Arbitrage

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- We can see that arbitrage opportunities would arise if e did not overshoot.
 - In the full equilibrium we know that $\delta = 0$ and that $i = i^*$.
 - Because $\bar{e} > e_0$, no overshooting would imply that the exchange rate would appreciate – and the currency depreciate – on the path to the new equilibrium.
- But if the currency depreciates in value and domestic interest rates equal foreign interest rates why would anyone hold domestic currency?
- They will dump dollars and buy foreign currency. This will make the exchange rate increase. When will the dumping of domestic currency end?
 - Until agents expect sufficient currency appreciation to make them once again willing to hold domestic currency.

Implications

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Does this imply that arbitrage profits can be made?

Implications

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Does this imply that arbitrage profits can be made?
- On the contrary, it is only when the exchange rate overshoots to e_1 today that there are no arbitrage profits.

Implications

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Does this imply that arbitrage profits can be made?
- On the contrary, it is only when the exchange rate overshoots to e_1 today that there are no arbitrage profits.
- The overshooting model thus offers an explanation of why asset prices respond rapidly to new information.

Implications

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- Does this imply that arbitrage profits can be made?
- On the contrary, it is only when the exchange rate overshoots to e_1 today that there are no arbitrage profits.
- The overshooting model thus offers an explanation of why asset prices respond rapidly to new information.
- Of course in practice the economy is subject to many shocks, so asset prices fluctuate in the kind of saw-tooth pattern that is characteristic of these markets.

Implications

- This is a great model: important result, not obvious, and simple assumptions

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Implications

- This is a great model: important result, not obvious, and simple assumptions
 - Paul Samuelson once remarked that there are very few ideas in economics that are both (a) true and (b), not obvious. Overshooting model is certainly one of those rare ideas.

Implications

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

- This is a great model: important result, not obvious, and simple assumptions
 - Paul Samuelson once remarked that there are very few ideas in economics that are both (a) true and (b), not obvious. Overshooting model is certainly one of those rare ideas.
- Explains an important element of flexible exchange rates
→ immense volatility (unexpected)

Implications

- This is a great model: important result, not obvious, and simple assumptions
 - Paul Samuelson once remarked that there are very few ideas in economics that are both (a) true and (b), not obvious. Overshooting model is certainly one of those rare ideas.
- Explains an important element of flexible exchange rates
→ immense volatility (unexpected)
- How does it fit with the facts?

Implications

- This is a great model: important result, not obvious, and simple assumptions
 - Paul Samuelson once remarked that there are very few ideas in economics that are both (a) true and (b), not obvious. Overshooting model is certainly one of those rare ideas.
- Explains an important element of flexible exchange rates
→ immense volatility (unexpected)
- How does it fit with the facts?
 - not as good as hoped

Implications

- This is a great model: important result, not obvious, and simple assumptions
 - Paul Samuelson once remarked that there are very few ideas in economics that are both (a) true and (b), not obvious. Overshooting model is certainly one of those rare ideas.
- Explains an important element of flexible exchange rates
→ immense volatility (unexpected)
- How does it fit with the facts?
 - not as good as hoped
 - model implies that in the wake of monetary shocks, the spot rate would be more volatile than forward rate; we don't tend to see this

Implications

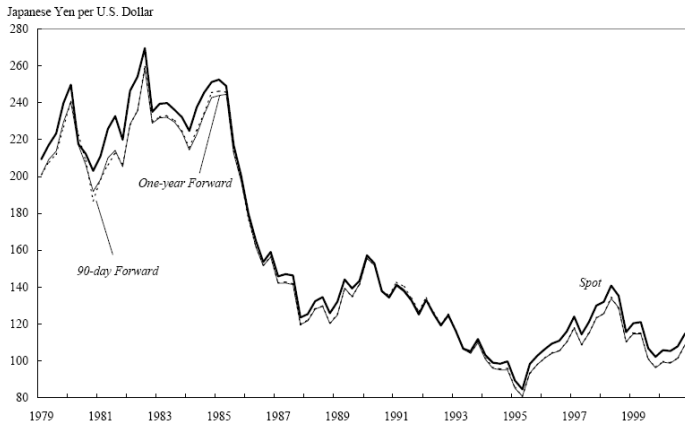
Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics



Source: IMF, *International Financial Statistics*.

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.
 - At impact, however, $\Delta Y = 0$ (or $\Delta P = 0$).

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.
 - At impact, however, $\Delta Y = 0$ (or $\Delta P = 0$).
 - So asset prices bear the full brunt of the change

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.
 - At impact, however, $\Delta Y = 0$ (or $\Delta P = 0$).
 - So asset prices bear the full brunt of the change
 - Notice that \tilde{e} increases as in the case of an unexpected increase in the money stock.

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.
 - At impact, however, $\Delta Y = 0$ (or $\Delta P = 0$).
 - So asset prices bear the full brunt of the change
 - Notice that \tilde{e} increases as in the case of an unexpected increase in the money stock.
 - So the MM curve shifts up, and e overshoots

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.
 - At impact, however, $\Delta Y = 0$ (or $\Delta P = 0$).
 - So asset prices bear the full brunt of the change
 - Notice that \tilde{e} increases as in the case of an unexpected increase in the money stock.
 - So the MM curve shifts up, and e overshoots
- Note that e increases *before* the money supply rises.

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.
 - At impact, however, $\Delta Y = 0$ (or $\Delta P = 0$).
 - So asset prices bear the full brunt of the change
 - Notice that \tilde{e} increases as in the case of an unexpected increase in the money stock.
 - So the MM curve shifts up, and e overshoots
- Note that e increases *before* the money supply rises.
 - $\implies Y \uparrow$ starts to rise even before the money supply \uparrow

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.
 - At impact, however, $\Delta Y = 0$ (or $\Delta P = 0$).
 - So asset prices bear the full brunt of the change
 - Notice that \tilde{e} increases as in the case of an unexpected increase in the money stock.
 - So the MM curve shifts up, and e overshoots
- Note that e increases *before* the money supply rises.
 - $\implies Y \uparrow$ starts to rise even before the money supply \uparrow
 - $\uparrow q$ causes net exports to \uparrow

Anticipated Policies

- Overshooting model \implies that *anticipated* policies have immediate effects.
- Consider announcement $\Delta M > 0$ next period.
 - This will cause an appreciation of e and a rise in Y in the new full equilibrium.
 - At impact, however, $\Delta Y = 0$ (or $\Delta P = 0$).
 - So asset prices bear the full brunt of the change
 - Notice that \tilde{e} increases as in the case of an unexpected increase in the money stock.
 - So the MM curve shifts up, and e overshoots
- Note that e increases *before* the money supply rises.
 - $\implies Y \uparrow$ starts to rise even before the money supply \uparrow
 - $\uparrow q$ causes net exports to \uparrow
- When $\Delta M > 0$ actually occurs, there is no discontinuous effect on e , because that has already been *absorbed* in the price.

Anticipated Policies

- Of course in practice anticipated policies are not fully believed.

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Anticipated Policies

- Of course in practice anticipated policies are not fully believed.
 - We may expect the money supply to rise, but only probabilistically.

Lecture Note

Ickes

Floating
Exchange
Rates

Insulation

Dynamics

Anticipated Policies

- Of course in practice anticipated policies are not fully believed.
 - We may expect the money supply to rise, but only probabilistically.
 - A still relatively simple case would be a 50-50 bet that the money supply will increase. Let π be the probability that it rises, so that the exchange rate would be \tilde{e}_1 .

Anticipated Policies

- Of course in practice anticipated policies are not fully believed.
 - We may expect the money supply to rise, but only probabilistically.
 - A still relatively simple case would be a 50-50 bet that the money supply will increase. Let π be the probability that it rises, so that the exchange rate would be \tilde{e}_1 .
 - Then with probability $1 - \pi$ the exchange rate would stay at \tilde{e}_0 .

Anticipated Policies

- Of course in practice anticipated policies are not fully believed.
 - We may expect the money supply to rise, but only probabilistically.
 - A still relatively simple case would be a 50-50 bet that the money supply will increase. Let π be the probability that it rises, so that the exchange rate would be \tilde{e}_1 .
 - Then with probability $1 - \pi$ the exchange rate would stay at \tilde{e}_0 .
 - In that case the expected exchange rate will be $E(\tilde{e}) = \pi\tilde{e}_1 + (1 - \pi)\tilde{e}_2$.

Anticipated Policies

- Of course in practice anticipated policies are not fully believed.
 - We may expect the money supply to rise, but only probabilistically.
 - A still relatively simple case would be a 50-50 bet that the money supply will increase. Let π be the probability that it rises, so that the exchange rate would be \tilde{e}_1 .
 - Then with probability $1 - \pi$ the exchange rate would stay at \tilde{e}_0 .
 - In that case the expected exchange rate will be $E(\tilde{e}) = \pi\tilde{e}_1 + (1 - \pi)\tilde{e}_2$.
 - Hence, the *MM* curve would shift up only half way.

Anticipated Policies

- Of course in practice anticipated policies are not fully believed.
 - We may expect the money supply to rise, but only probabilistically.
 - A still relatively simple case would be a 50-50 bet that the money supply will increase. Let π be the probability that it rises, so that the exchange rate would be \tilde{e}_1 .
 - Then with probability $1 - \pi$ the exchange rate would stay at \tilde{e}_0 .
 - In that case the expected exchange rate will be $E(\tilde{e}) = \pi\tilde{e}_1 + (1 - \pi)\tilde{e}_2$.
 - Hence, the *MM* curve would shift up only half way.
 - Then once the uncertainty is resolved (the Fed raises the money stock or does not), the *MM* curve either shifts up again or down.

Anticipated Policies

- Of course in practice anticipated policies are not fully believed.
 - We may expect the money supply to rise, but only probabilistically.
 - A still relatively simple case would be a 50-50 bet that the money supply will increase. Let π be the probability that it rises, so that the exchange rate would be \tilde{e}_1 .
 - Then with probability $1 - \pi$ the exchange rate would stay at \tilde{e}_0 .
 - In that case the expected exchange rate will be $E(\tilde{e}) = \pi\tilde{e}_1 + (1 - \pi)\tilde{e}_2$.
 - Hence, the *MM* curve would shift up only half way.
 - Then once the uncertainty is resolved (the Fed raises the money stock or does not), the *MM* curve either shifts up again or down.
- The key point is that asset prices move when there is news, or new information. Not on old information.