The influence of monetary and fiscal policy on aggregate demand

(Chapter 35 in Mankiw and Taylor)
Effects of fiscal and monetary policy

- Already analysed **long run** effects
  - Seen how fiscal policy affects saving, investment and long-run economic growth (*via* the market for loanable funds)
    - Cf. your practice essay and effects of budget deficits
  - Seen how monetary policy affects, *via* the money supply, prices in the long run (the quantity theory, monetary neutrality and the classical dichotomy)
    - Prices adjust to equilibrate money demand & supply
Short run effects

- We will now use our AD-AS model to consider the short run effects of fiscal and monetary policy.
- We will see how they influence the position of the AD curve, and thereby affect short run economic fluctuations.
How monetary policy affects AD

• Aggregate-demand (AD) curve slopes downward because of 3 effects:
  • The wealth effect
  • The interest-rate effect
  • The exchange-rate effect

– When the price level falls
  • quantity of goods and services demanded increases, with all 3 effects working
– When the price level rises
  • quantity of goods and services demanded decreases, with all 3 effects working
Aggregate Demand

• For the U.K. economy

  – The wealth effect - least important
    • Money holdings are a small part of household wealth
  – The exchange-rate effect - larger
    • Exports and imports – growing fraction of GDP
  – The interest-rate effect
    • The most important. Stimulates investment and potentially immediately
    • Need to understand better how the interest rate is determined in the short run and, in turn, how monetary policy shifts the AD curve → a new theory for interest rates in the short run. (Have loanable funds in the LR)
The theory of liquidity preference

• Keynes’ 1936 theory
  – Interest rate adjusts:
    • To bring money supply and money demand into balance
      – As in IS-LM analysis (i.e., money supply and demand underlie the LM curve)
  – Explains both the nominal interest rate and the real interest rate since
    • Assumption: expected rate of inflation is constant, as assumed in short run analysis
Demand and Supply of Money

- **Money supply**
  - Controlled by the Central Bank
  - Quantity of money supplied
    - Fixed by Central Bank policy
    - Doesn’t vary with the interest rate
  - Central Bank alters the money supply
    - By changing the quantity of reserves in the banking system *via* the
      - Purchase and sale of government bonds in open-market operations
Demand and Supply of Money

• Money demand
  – Money – most liquid asset
    • Can be used to buy goods and services
  – Interest rate – opportunity cost of holding money
  – Money demand curve – downward sloping
    • Increase in the interest rate
      – Raises the cost of holding money
      – Reduces the quantity of money demanded
Demand and Supply of Money

• Equilibrium in the money market
  – Interest rate adjusts to balance the supply and demand for money
    • Equilibrium interest rate
    • Quantity of money demanded exactly balances the quantity of money supplied
Demand and Supply of Money

• If interest rate > equilibrium
  – Quantity of money people want to hold
    • Less than quantity supplied
  – People holding the surplus
    • Buy interest-bearing assets
  – Lowers the interest rate
  – People - more willing to hold money
  – Until: equilibrium
Demand and Supply of Money

• If interest rate < equilibrium
  – Quantity of money people want to hold
    • More than quantity supplied
  – People - increase their holdings of money
    • Sell interest-bearing assets
  – Increase interest rates
  – Until: equilibrium
Equilibrium in the Money Market

According to the theory of liquidity preference, the interest rate adjusts to bring the quantity of money supplied and the quantity of money demanded into balance. If the interest rate is above the equilibrium level (such as at $r_1$), the quantity of money people want to hold ($M^d_1$) is less than the quantity the Central Bank (the BoE) has created, and this surplus of money puts downward pressure on the interest rate.

Conversely, if the interest rate is below the equilibrium level (such as at $r_2$), the quantity of money people want to hold ($M^d_2$) is greater than the quantity the Central Bank has created, and this shortage of money puts upward pressure on the interest rate. Thus, the forces of supply and demand in the market for money push the interest rate toward the equilibrium interest rate, at which people are content holding the quantity of money the Central Bank has created.
Aggregate Demand

• Consider implications of the theory of liquidity preference for AD

• The downward slope of the AD curve

1. A higher price level
   – Raises money demand

2. Higher money demand
   – Leads to a higher interest rate

3. A higher interest rate
   – Reduces the quantity of goods and services demanded
An increase in the price level from $P_1$ to $P_2$ shifts the money-demand curve to the right, as in panel (a). This increase in money demand causes the interest rate to rise from $r_1$ to $r_2$. Because the interest rate is the cost of borrowing, the increase in the interest rate reduces the quantity of goods and services demanded from $Y_1$ to $Y_2$. This negative relationship between the price level and quantity demanded is represented with a downward-sloping aggregate-demand curve, as in panel (b).
Monetary Policy **Shifts AD**

- **Aggregate-demand curve shifts**
  - Quantity of goods and services demanded changes for a given price level
    - i.e. a shift in the AD curve, not a movement along it

- **Monetary policy shifts the AD curve**
  - Increase in money supply
  - Decrease in money supply
  - Shifts aggregate-demand curve
Monetary Policy Influences AD

• The Bank of England increases the money supply
  – Money-supply curve shifts right
  – Interest rate falls, as money demand curve is unchanged
  – At any given price level
    • Increase in quantity demanded of goods and services
  – Aggregate-demand curve shifts right
In panel (a), an increase in the money supply from $\text{MS}_1$ to $\text{MS}_2$ reduces the equilibrium interest rate from $r_1$ to $r_2$. Because the interest rate is the cost of borrowing, the fall in the interest rate raises the quantity of goods and services demanded at a given price level from $Y_1$ to $Y_2$. Thus, in panel (b), the aggregate-demand curve shifts to the right from $\text{AD}_1$ to $\text{AD}_2$. 

**Figure 3**

**A Monetary Injection**

**(a) The Money Market**

- Interest rate: $r_1$ to $r_2$
- Money supply: $\text{MS}_1$ to $\text{MS}_2$
- Money demand at price level $P$

**1. When the BoE increases the money supply . . .

2. . . . the equilibrium interest rate falls . . .

**(b) The Aggregate-Demand Curve**

- Aggregate demand: $\text{AD}_1$ to $\text{AD}_2$
- Quantity of output: $Y_1$ to $Y_2$

3. . . . which increases the quantity of goods and services demanded at a given price level.
Monetary Policy Influences AD

- The BoE decreases the money supply
  - Money-supply curve shifts left
  - Interest rate increases
  - At any given price level
    - Decrease in quantity demanded of goods and services
  - Aggregate-demand curve shifts left
The tool of Monetary Policy?

• We have treated the money supply as the BoE’s policy tool
• In reality the BoE adjusts the Repo rate
  – Interest rate banks charge one another for short-term loans
• But the theory of liquidity preference shows us that monetary policy changes can be affected either by adjusting the money supply or changing the interest rate
  – In reality, to achieve an interest rate target the central bank’s bond traders are told to supply enough money (buy/sell enough bonds in OMOs) to ensure the target is met
Summary

• Changes in monetary policy
  – Aimed at expanding aggregate demand
    • Increasing the money supply
    • Lowering the interest rate

• Changes in monetary policy
  – Aimed at contracting aggregate demand
    • Decreasing the money supply
    • Raising the interest rate
Why the Fed Watches the Stock Market (and Vice Versa)

• Fluctuations in stock prices
  – Sign of broader economic developments
  – Economic boom of the 1990s
    • Rapid GDP growth and falling unemployment
    • Rising stock prices (fourfold)
  – Deep recession of 2008 and 2009
    • Falling stock prices
      – From November 2007 to March 2009, the stock market lost about half its value
Why the Fed Watches the Stock Market (and Vice Versa)

• The Fed
  – Not interested in stock prices themselves
  – Monitor and respond to developments the overall economy

• Stock market boom expands the AD
  – Households – wealthier
    • Stimulates consumer spending
  – Firms – want to sell new shares of stock
    • Stimulates investment spending
• The Fed’s goal: stabilise AD
  – Greater stability in output and price level
• The Fed’s response to a stock-market boom
  – Keep money supply lower
  – Keep interest rates higher
• The Fed’s response to a stock-market fall
  – Increase money supply
  – Lower interest rates
Why the Fed Watches the Stock Market (and Vice Versa)

• Stock-market participants
  – Keep an eye on the Fed
  – The Fed can
    • Influence interest rates and economic activity
    • Alter the value of stocks

• The Fed - raises interest rates
  – Less attractive owning stocks
    • Bonds - earning a higher return
    • Reduced demand for goods and services
Fiscal Policy Influences AD

• Government policymakers set the level of government spending and taxation
  – We have seen how fiscal policy affects saving, investment and growth in the long run
  – But, in the short run, the main consequence is to shift the aggregate demand curve
  – But whether a £1 increase leads to AD rising by more or less than £1 depends on the balance of the:
    • Multiplier effect
      – Amplifies the effect on AD of an increase in autonomous expenditure
    • Crowding-out effect
      – Says shift in AD could be smaller than the initial increase
Fiscal Policy Influences AD

- The multiplier effect of an increase in government purchases by £20 billion
  - Aggregate-demand curve
    - Shifts right by exactly £20 billion
  - Consumers respond
    - Increase spending
  - Aggregate-demand curve
    - Shifts right again
An increase in government purchases of £20 billion can shift the aggregate-demand curve to the right by more than £20 billion. This multiplier effect arises because increases in aggregate income stimulate additional spending by consumers.
Fiscal Policy Influences AD

- **Multiplier effect**
  - Response of consumer spending
  - Response of investment

- **Investment accelerator**
  - Higher government demand
    - Higher demand for investment goods
  - Positive feedback from demand to investment
Fiscal Policy Influences AD

• Spending multiplier
  – Contingent on the marginal propensity to consume, MPC
    • Fraction of extra income that consumers spend
  – A larger MPC
    • Larger multiplier
Fiscal Policy Influences AD

• Because of multiplier effect
  – £1 of government purchases
    • Can generate > £1 of aggregate demand
  – £1 of consumption, investment, or net exports
    • Can generate > £1 of aggregate demand
Fiscal Policy Influences AD

• The crowding-out effect
  – Offset in aggregate demand
  – Results when expansionary fiscal policy raises the interest rate
  – Thereby reduces investment spending
Fiscal Policy Influences AD

• The crowding-out effect of an increase in government spending
  – Aggregate demand curve – shifts right
    • Increase in income
    • Money demand – increases
    • Interest rate – increases
      – Thereby reducing investment spending
    • Aggregate-demand curve shifts back to the left
Exhibit 5

The Crowding-Out Effect

Panel (a) shows the money market. When the government increases its purchases of goods and services, the resulting increase in income raises the demand for money from $MD_1$ to $MD_2$, and this causes the equilibrium interest rate to rise from $r_1$ to $r_2$. Panel (b) shows the effects on aggregate demand. The initial impact of the increase in government purchases shifts the aggregate-demand curve from $AD_1$ to $AD_2$. Yet because the interest rate is the cost of borrowing, the increase in the interest rate tends to reduce the quantity of goods and services demanded, particularly for investment goods. This crowding out of investment partially offsets the impact of the fiscal expansion on aggregate demand. In the end, the aggregate-demand curve shifts only to $AD_3$. 

Panel (a) shows the money market. When an increase in government purchases increases aggregate demand...

Panel (b) shows the aggregate-demand curve. The initial increase in government purchases shifts the aggregate-demand curve from $AD_1$ to $AD_2$. Yet because the interest rate is the cost of borrowing, the increase in the interest rate tends to reduce the quantity of goods and services demanded, particularly for investment goods. This crowding out of investment partially offsets the impact of the fiscal expansion on aggregate demand. In the end, the aggregate-demand curve shifts only to $AD_3$. 

Quantity of money

$20$ billion
Changes in taxes

• A decrease in personal income taxes
  – Households incomes increase
  – Multiplier effect
    • Aggregate demand increases
  – Crowding-out effect
    • Aggregate demand decreases
  – Efficacy of tax changes on AD also depends on whether the tax cut is permanent or temporary
    • Permanent tax cut - large impact on AD
    • Temporary tax cut - small impact on AD
Fiscal Policy and AS

- Fiscal policy may also have affects on AS
  - “Supply-side economics”
- This is because tax changes affect incentives
- People may work harder if taxes are reduced; and so AS curve may shift to the right
- Extra government expenditure on roads and schools increases capital stock and may also shift the AS curve to the right
Arguments for and against stabilisation

• The case for active stabilisation policy
  – A change in aggregate-demand
  • The government
    – Use fiscal policy
  • The Fed
    – Use monetary policy
  • To stabilise the economy
    – Ensure full-employment and stable inflation
    – In the face of shocks to the economy and waves of optimism and pessimism (animal spirits) which cause AD to fluctuate in the short run
Using Policy for Stabilisation

• Keynes
  – Key role of AD in explaining short-run economic fluctuations
  – The government should actively stimulate aggregate demand
    • When AD appeared insufficient to maintain production at its full-employment level
    • A key lesson from the Great Depression is that AD can be insufficient
Using Policy for Stabilisation

• Case against active stabilisation policy
  – Government
    • Should avoid active use of monetary and fiscal policy to try to stabilise the economy; as could make matters worse by intervening…
    • Since policy only affects the economy with ‘long and variable’ lags; and any effects still depend on unknown elasticities and multipliers etc.
      – Given this lag, it is necessary to condition policy on economic forecasts and these too can be unreliable
  – Policy instruments
    • Should be set to achieve long-run goals
    • The economy – left alone to deal with short-run fluctuations
Using Policy for Stabilisation

• **Automatic stabilisers**
  
  – But these operate without policymakers having to take deliberate actions
    • therefore they avoid the cons of active stabilisation policy

  – Changes in fiscal policy that stimulate aggregate demand when the economy goes into a recession
    • Operate principally through the tax system
      – Fewer taxes collected in a recession so AD↑
      – Also more unemployment benefit paid out in a recession
Using Policy for Stabilisation

• Automatic stabilisers
  – Not sufficiently strong to prevent recessions completely
  – Without them
    • Output and employment would probably be more volatile than they are

• Recession
  – Taxes fall, government spending rises
    • Government’s budget moves toward deficit
    • But as seen this can dampen the effect of these automatic stabilisers, by increasing interest rates
The Recession of 2008–2009

• 2008-2009, financial crisis, severe downturn in economic activity
  – Worst macroeconomic event in more than half a century

• Large contractionary shift in AD
  – Real GDP fell sharply
    • By 4% between the forth quarter of 2007 and the second quarter of 2009
  – Employment fell sharply
    • Unemployment rate rose from 4.4% in May 2007 to 10.1% in October 2009
The Recession of 2008–2009

• Three policy actions - aimed in part at returning AD to its previous level
  – The Central Banks in US, UK and Europe
    • Cut their targets for the repo rate
      – Cut essentially to about zero in late 2008
    • Started buying government bonds, mortgage-backed securities and other private loans
      – In open-market operations
      – Provided banks with additional funds
The Recession of 2008–2009

• Three policy actions
  – October 2008, In the US, Congress appropriated $700 billion
    • For the Treasury to use to rescue the financial system
    • To stem the financial crisis on Wall Street
    • To make loans easier to obtain
    • Equity injections into banks
    • U.S. and U.K. governments – temporarily (?) became a part owner of some banks
The Recession of 2008–2009

• Three policy actions
  – January 2009, Barack Obama
    • Large increase in government spending
    • $787 billion stimulus bill, February 17, 2009

• U.S. Economy, at least, appears to be
  – starting to recover from the economic downturn
  – Real GDP - growing again
  – Unemployment still persistent though
  – Even less clear-cut in U.K.