Economic Modelling

Lecture 7

Monetary Instruments for stabilising inflation and unemployment

Macroeconomic stabilization

Microeconomic Aspects of Stabilisation

Needs for Stabilisation: Costs of Inflation

- Inflation distorts relative prices and makes the market system less efficient as prices cannot signal relative scarcity.

- It transfers resources from creditors to debtors.
- Redistributes income from fixed income group to property holders.

- Taxes are not indexed for inflation, low income families are pushed up to the tax threshold.

- Shoe leather and bookkeeping costs rise with inflation.
- It creates uncertainty. Creates illusions, confusions and complicates economic calculation.

- It is harmful for economic growth; reduces saving and investment activities.
- It create social tension.

Needs for Stabilisation: Costs of Unemployment

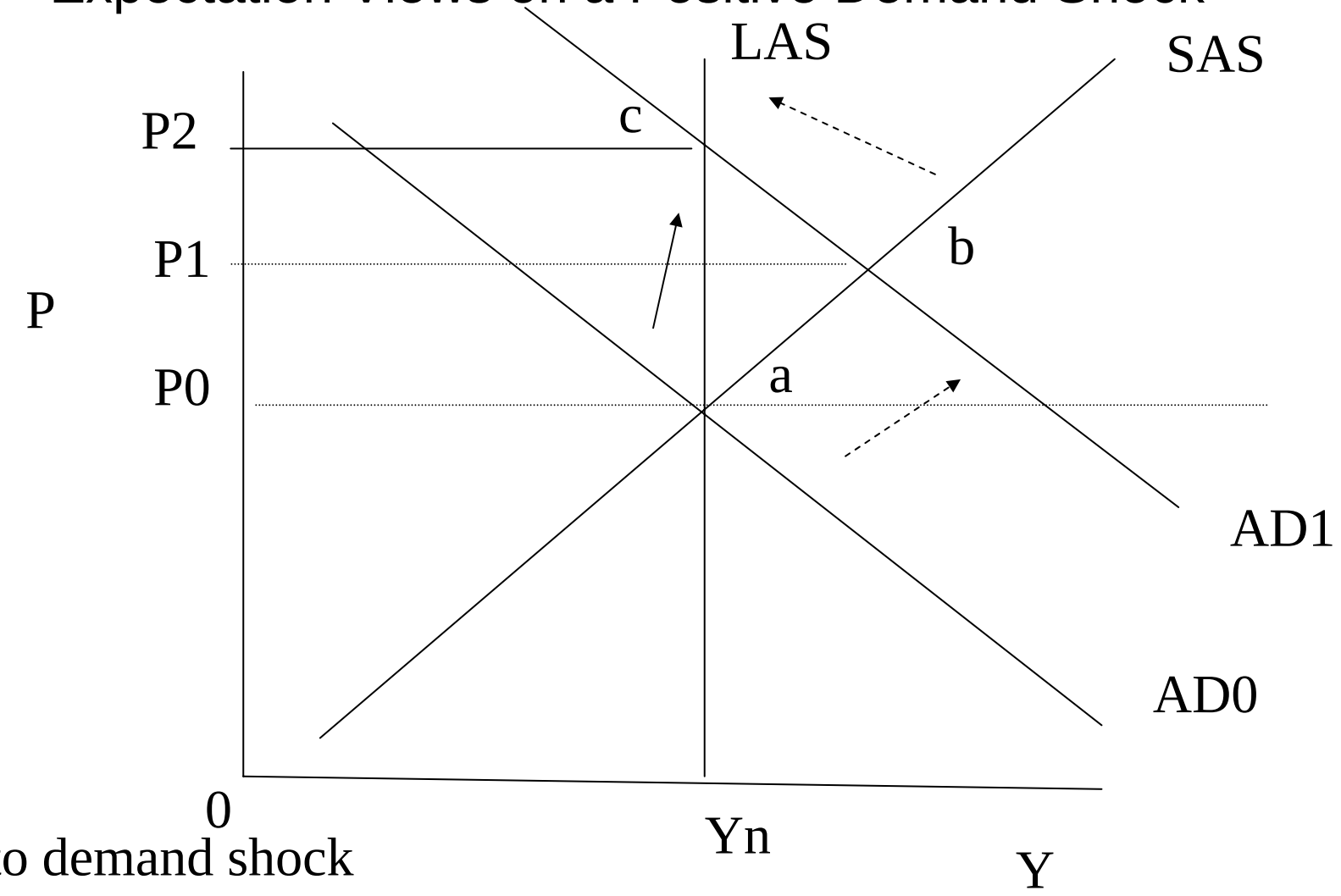
- Loss of output, income and utility
- Personal psychological costs
  - Unhappiness
  - Stress and tension
  - Discouragement and disappointment
  - Morale and motivation
  - Uncompetitive feeling
  - Dignity of human life
  - Insecurity

  Loss of productive skills and productivity

  Lack of learning by doing opportunity

  Rise in social unrest and crimes

Demand or Supply Side? Adaptive and Rational Expectation Views on a Positive Demand Shock

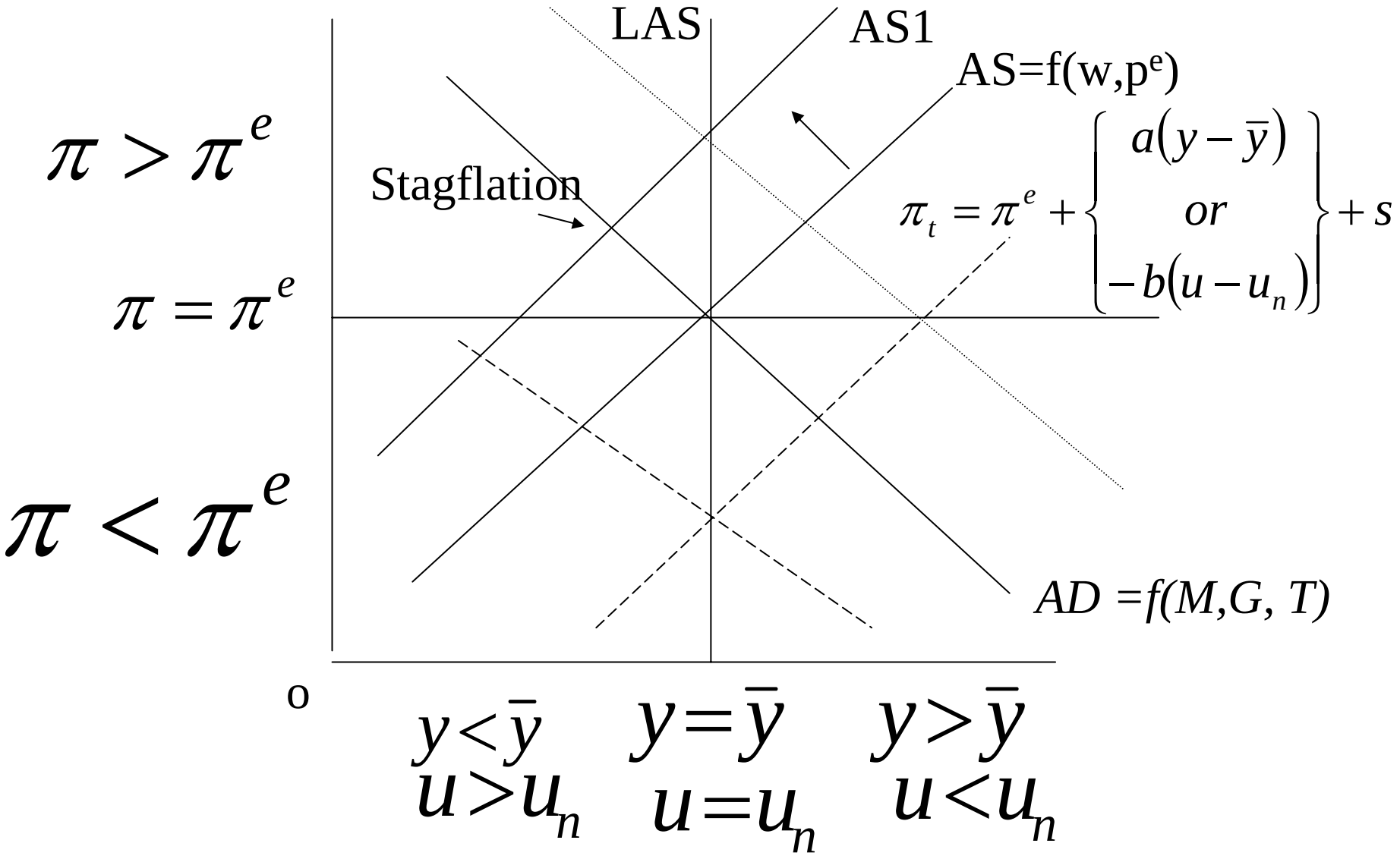


Reply to demand shock

Adaptive Expectation: a to b to c

Rational expectation: a to c

Supply Shock and Stagflation



Standard Measures of Stabilisation (Such as Stability and Growth Pact in the EU)

- Control of Aggregate Demand
  - Increase or decrease in money supply
  - Control in the tax and spending programme
  - Monetisation or contraction of the budget deficit
- Promotion of Aggregate supply
  - Wage renegotiations
  - Efficiency enhancing measures
- Sensible Trade and Exchange Rates Policies
  - Appreciation or depreciation of the currency
  - Trade and exchange rate agreements

Microeconomic Aspects of Stabilisation

- Let fundamentals of market work
- Let competitive market work on the basis of relative prices to represent scarcity
- Price and wage setting reflect the monopolistic power of firms and marginal productivity of workers
- Resource allocations be guided by the price system which reflects
  - the endowment and preferences
  - Investment horizon on the basis long term projections
- Inflows and outflows of capital as needed

Unemployment, Output and Inflation : Okun and Phillips Curves

Unemployment and Output gap (Okun's Curve)

$$u_t - u_{t-1} = -a\left(g_{y,t} - g_{y,n}\right)$$

Higher growth rate of output means lower rate of unemployment.

Inflation and unemployment gap (assuming adaptive expectation)

Higher unemployment rate means lower rate of inflation.

$$\pi_t - \pi_{t-1} = -b\left(u_t - u_n\right)$$

$$\pi_t^e = \pi_{t-1}$$

Inflation rate equals rate of growth money supply and output :

$$\pi_t = g_{m,t} - g_{y,t}$$

Sacrifice ratio:

$$sr = \frac{\left(u_t - u_n\right)}{\pi_t - \pi_{t-1}} = -\frac{1}{b}$$

Inflation Reduction Programme: Output, Inflation and Unemployment

Unemployment and output gap (Okun's law)

$$u_t - u_{t-1} = -a\left(g_{y,t} - g_{y,n}\right) \qquad (1)$$

Phillip's curve (expectation augmented):

$$\pi_t - \pi_{t-1} = -b\left(u_t - u_n\right) \qquad (2)$$

Relation between growth rates of money, output and inflation

$$g_{y,t} = g_{m,t} - \pi_t \quad (3)$$

$g_{y,t}$ is actual growth rate of output; $g_{y,n}$ is natural growth rate of output

$g_{m,t}$ is growth rate of money supply

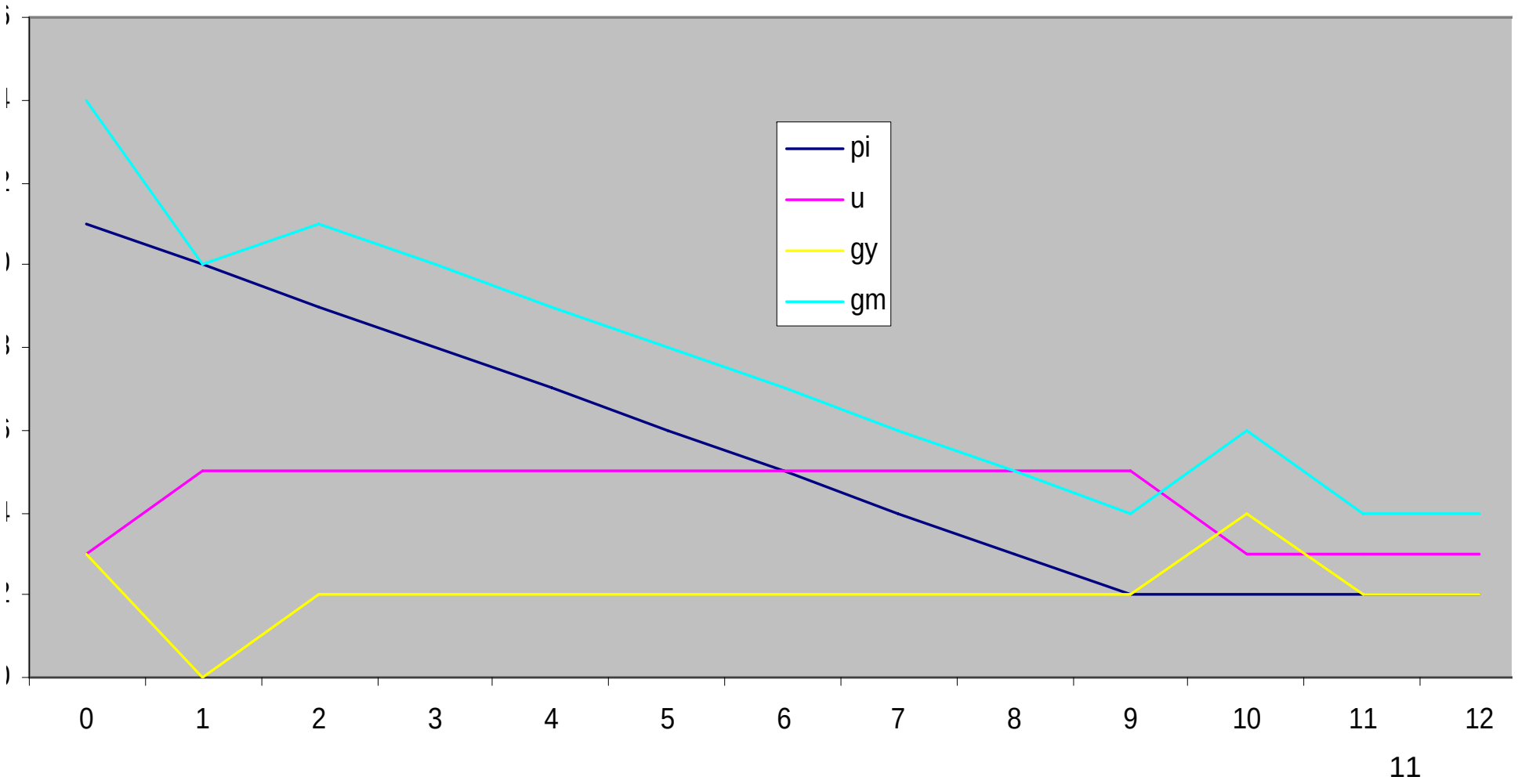
π_t is inflation rate; u_t is actual unemployment rate; u_n natural rate of unemployment

Stabilisation Process: Inflation Unemployment Trade-offs

$$u_t - u_{t-1} = -0.5(g_{yt} - 2\%) \quad \pi_t - \pi_{t-1} = -(u_t - 3\%); g_{yt} = g_{mt} - \pi_t$$

Year	Inflation	Unemployment rate	Growth rate of output	Growth rate of money supply
0	9	3	2	11
1	8	4	0	8
2	7	4	2	9
3	6	4	2	8
4	5	4	2	7
5	4	4	2	6
6	3	4	2	5
7	2	4	2	4
8	2	3	4	6
9	2	3	2	4

A Smooth Inflation Reduction Programme



Role of Expectation in An Economy

- Future is unknown and uncertain.
- Some consumers and investors are more optimistic and confident about the future the economy (about income, output and prices that affect their decision to work and invest) than others.
- These perceptions about the future affect all types of economic activities. How do these expectations affect macroeconomic behaviour? It is obvious from what we see in the markets.
- Prosperity follows from good expectations. Recession arises with dim expectations.
- Confidence of consumers and producers, which itself is based in a set of leading indicators of the economy, signals about the health of the economy as is discussed almost every hour in the media, particularly in case of highly integrated stocks and bonds markets around the globe.
- There are three different ways of forming expectations about unknown variables:
- Perfect foresight;
- Adaptive expectation and partial adjustment;
- Rational expectation.

Lucas Critique of the Macroeconometric Model

Consumption: $C = a + bY^d$ (1)

Disposable income: $Y^d = Y - T$ (2)

Investment: $I(r) = I_0 - q \cdot r$ (3)

Demand for real balances: $\frac{M}{P} = kY - \eta \cdot r$ (4) $r = \frac{1}{\eta}\left(kY - \frac{M}{P}\right)$

National income identity: $Y = C + I + G$ (5)

Model I: IS curve: $Y = \frac{a - bT + I_0 - qr + G}{1 - b}$ (6) $r = \frac{-(1-b)Y + a - bT + I_0 + G}{q}$

Model II: ISLM $Y = \frac{a - bT + I_0 - q\left[\frac{1}{\eta}\left(kY - \frac{M}{P}\right)\right] + G}{1 - b},$ $Y = \frac{a - bT + I_0 + \frac{q}{\eta}\frac{M}{P} + G}{1 - b + \frac{q}{\eta}k}$

Households and firms already know the parameters like a, b, q, I0, k. They fully anticipate and adjust their behaviour when G, T or M change. Anticipated fiscal and monetary policies do no have any impacts in Y, I or employment but only on prices and wages.

Rational Expectation

Conditional expectation about a variable X at time t+1
using all available information existing at time t

$$\left(_{E_t} X_{t+1} / \Omega_t\right) = \tilde{X}_t$$

Information set Ω_t

It contains past values of endogenous and policy variables
and future predicted values of exogenous variables.

Three methods of forming rational expectation

1. Survey of opinion –asking people, economist, CEOs, consumers, about the their opinion about a variable.
2. Using current value of variable as the best predictor of future.
3. Extrapolative model based forecasts
   (Lucas (1976), Wallis (1977), Lee et.a. (2000)).

References

- Blanchard (2003) Chapters 6-9.
- Pindyck and Rubinfeld, Chapters Pindyck and Rubinfeld (2005) Microeconomics, Chapters 9-12.
- Varian H (2003) Microeconomics, Chapters 14-16.
- Bank of England (1999) The Transmission Mechanism of Monetary Policy

  www.bankofengland.co.uk.