

Diploma Macro Paper 2

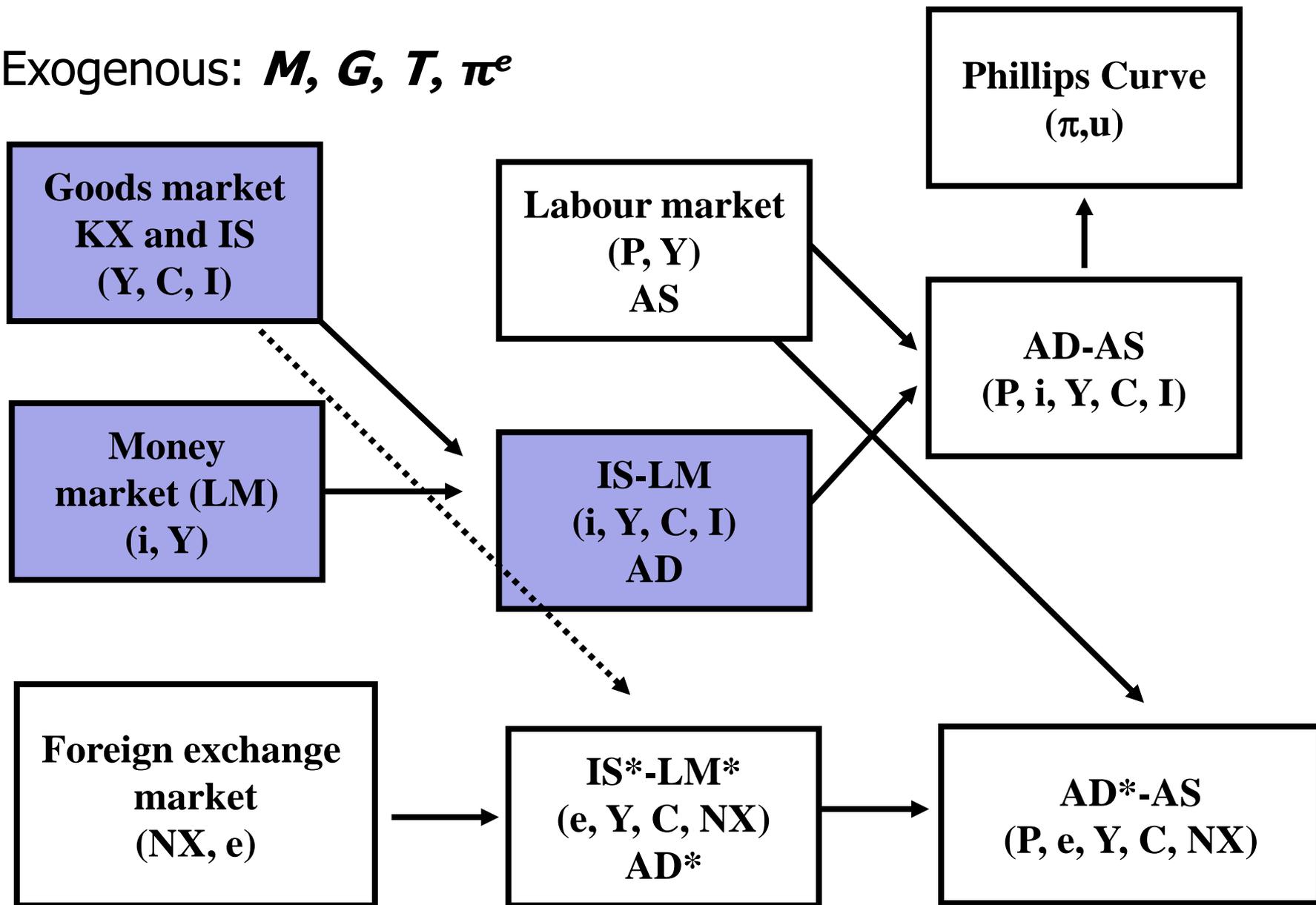
Monetary Macroeconomics

Lecture 4

Aggregate demand: Using IS-LM to understand fiscal and monetary policy

Mark Hayes

Exogenous: M, G, T, π^e



Outline

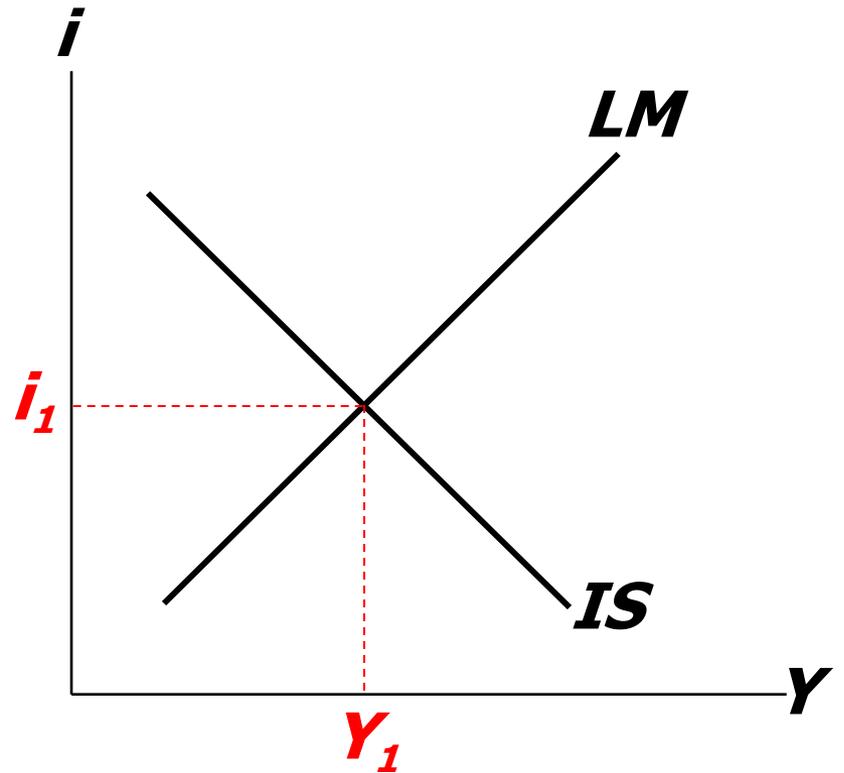
- Applying the IS-LM model:
 - Fiscal policy
 - Monetary policy
 - Interaction between them
- UK experience since 2008

Equilibrium in the *IS-LM* model

The *IS* curve represents equilibrium in the goods market.

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The *LM* curve represents money market equilibrium.

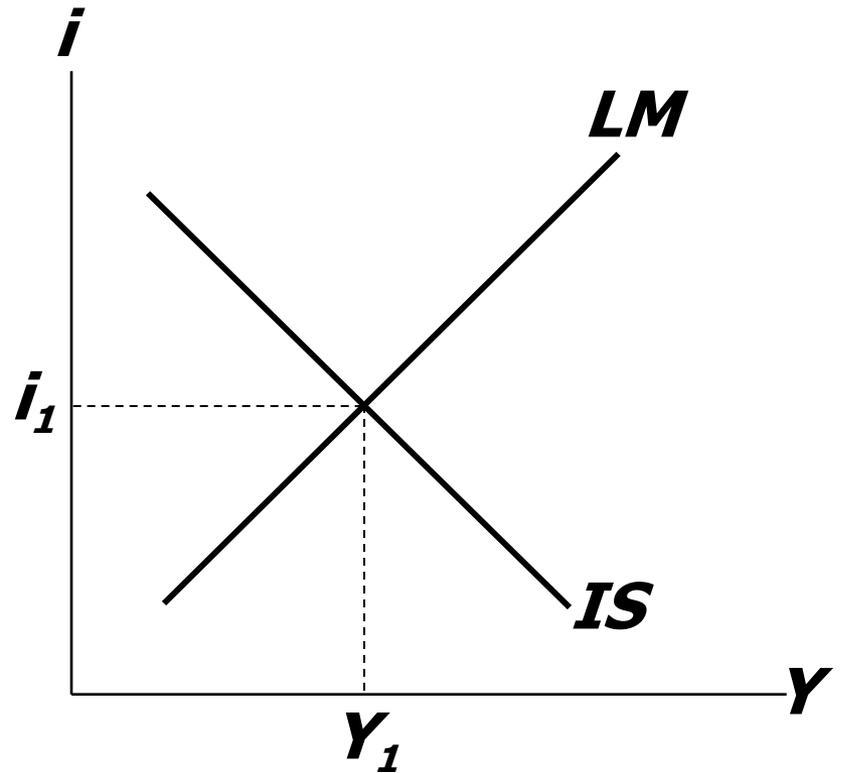


The intersection determines the unique combination of Y and i that satisfies equilibrium in both markets.

Policy analysis with the *IS-LM* model

We can use the *IS-LM* model to analyze the effects of

- fiscal policy: ***G*** and/or ***T***
- monetary policy: ***M***



An increase in government purchases

1. IS curve shifts right

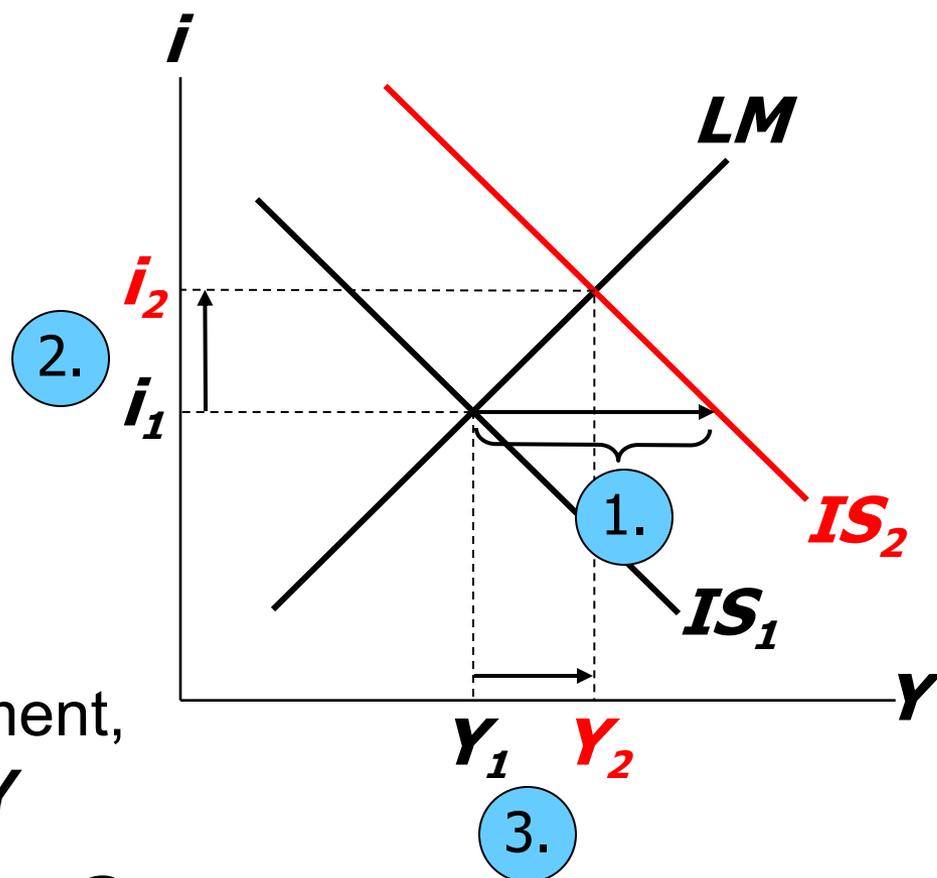
by $\frac{1}{1-MPC} \Delta G$

causing output & income to rise.

2. This raises money demand, causing the interest rate to rise...

3. ...which reduces investment, so the final increase in Y

is smaller than $\frac{1}{1-MPC} \Delta G$

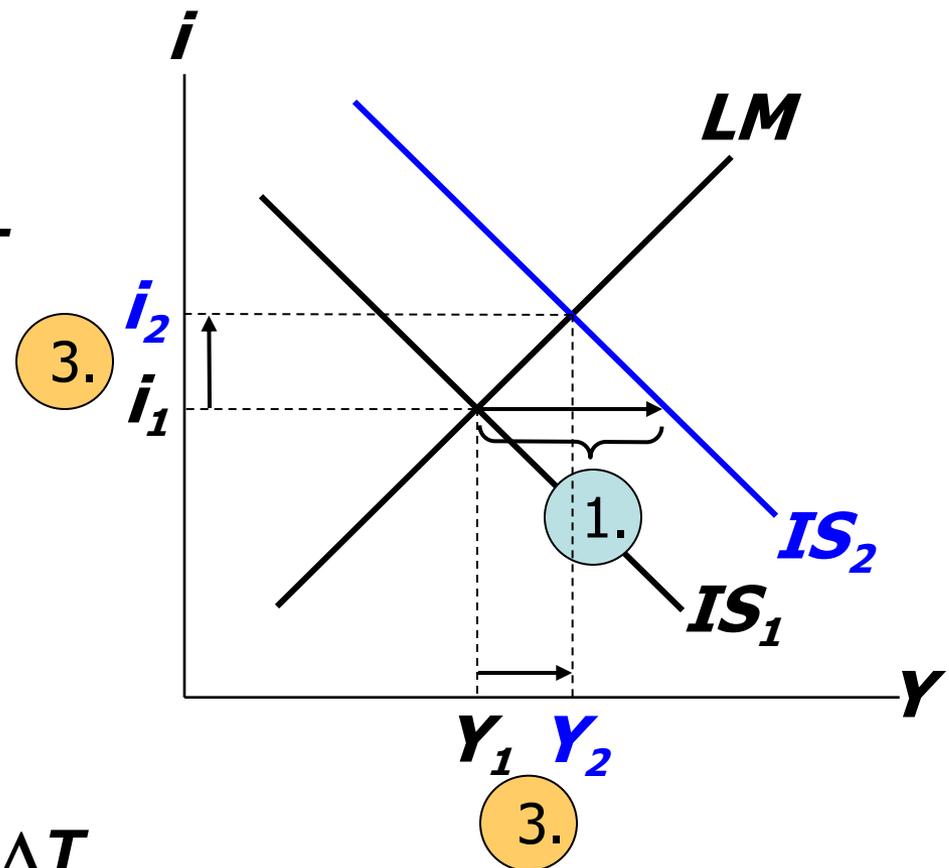


A tax cut

Consumers save $(1-MPC)$ of the tax cut, so the initial boost in spending is smaller for ΔT than for an equal ΔG ... and the IS curve shifts by

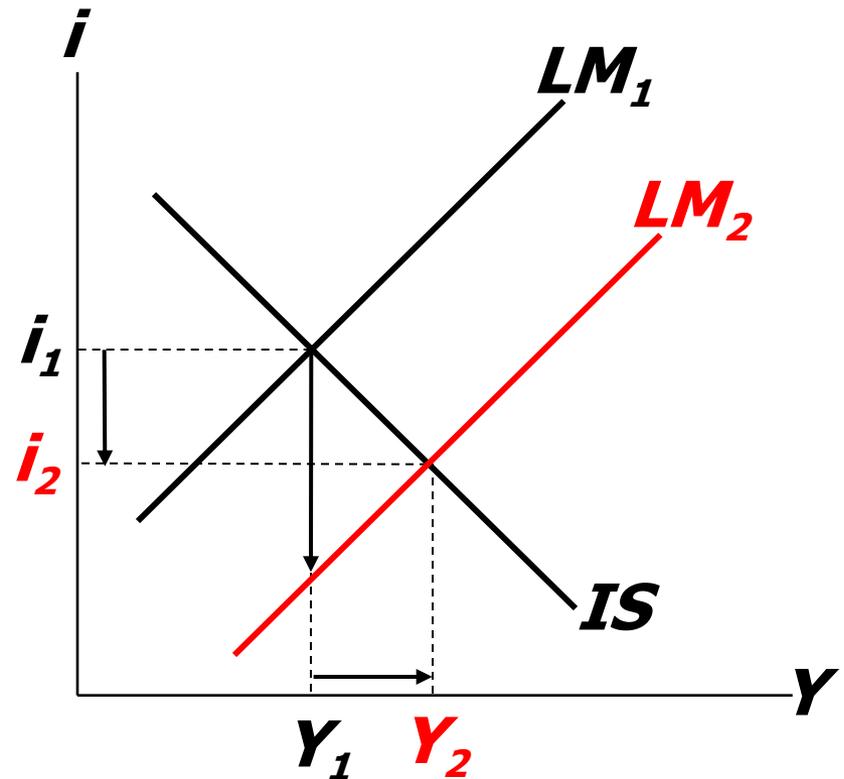
1.
$$\frac{-MPC}{1-MPC} \Delta T$$

2. ...so the effects on i and Y are smaller for ΔT than for an equal ΔG .



Monetary policy: An increase in M

1. $\Delta M > 0$ shifts the LM curve down (or to the right)
2. ...causing the interest rate to fall
3. ...which increases investment, causing output & income to rise.



Interaction between monetary & fiscal policy

- Model:
Monetary & fiscal policy variables (M , G , and T) are exogenous.
- Real world:
Monetary policymakers may adjust M in response to changes in fiscal policy, or vice versa.
- Such interaction may alter the impact of the original policy change.

The Bank's response to $\Delta G > 0$

- Suppose HM Treasury increases G .
- Possible Bank of England responses:
 1. hold M constant
 2. hold i constant
 3. hold Y constant
- In each case, the effects of the ΔG are different...

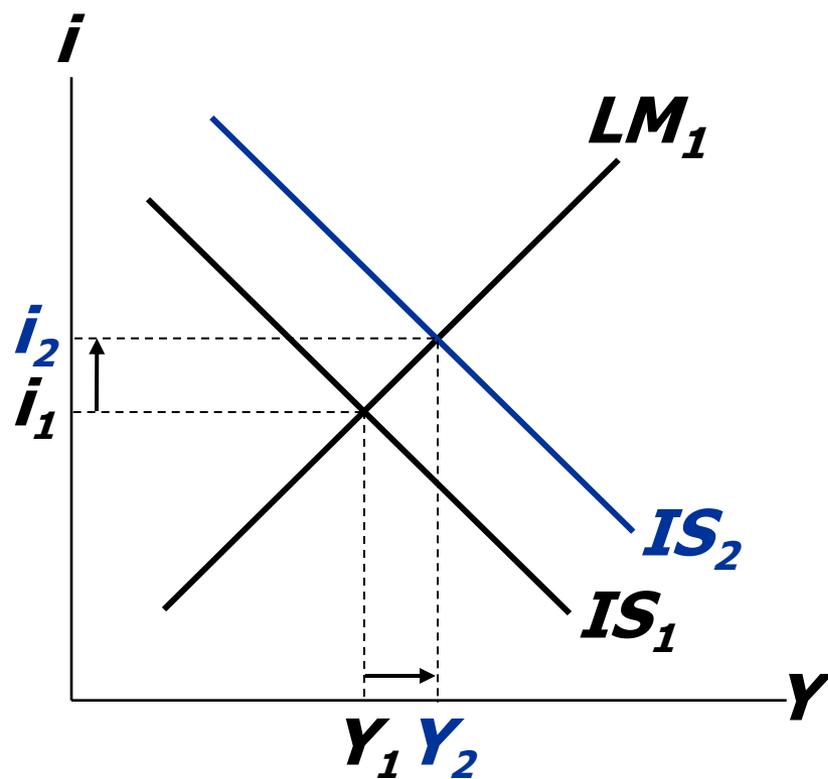
Response 1: Hold M constant

If Treasury raises G ,
the IS curve shifts right.

If Bank holds M
constant, then LM curve
doesn't shift.

Results:

$$\Delta Y = Y_2 - Y_1$$



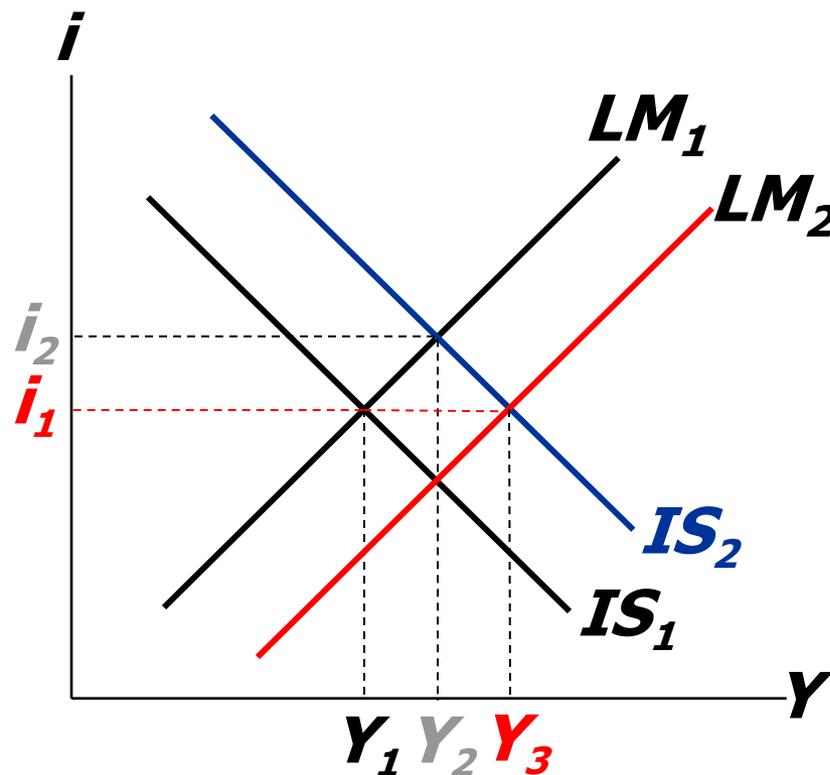
Response 2: Hold i constant

If Treasury raises G ,
the IS curve shifts right.

To keep i constant,
Bank increases M
to shift LM curve right.

Results:

$$\Delta Y = Y_3 - Y_1$$



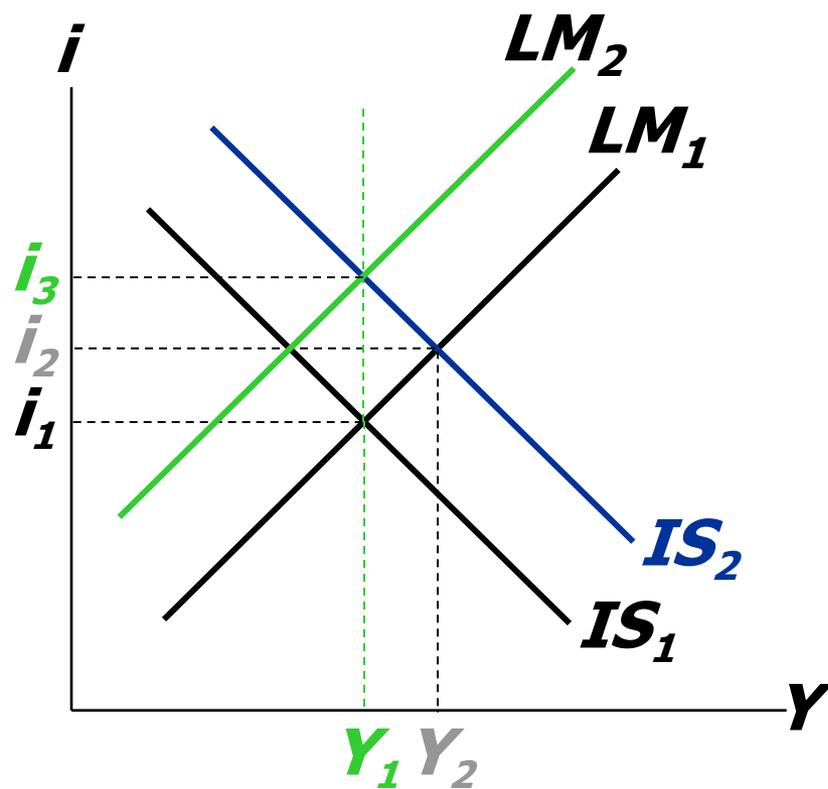
Response 3: Hold Y constant

If Treasury raises G ,
the IS curve shifts right.

To keep Y constant,
Bank reduces M
to shift LM curve left.

Results:

$$\Delta Y = 0$$



Estimates of fiscal policy multipliers

from the US DRI macroeconomic model

<i>Assumption about monetary policy</i>	<i>Estimated value of $\Delta Y/\Delta G$</i>	<i>Estimated value of $\Delta Y/\Delta T$</i>
Fed holds money supply constant	0.60	-0.26
Fed holds nominal interest rate constant	1.93	-1.19

Shocks in the *IS-LM* model

IS shocks : exogenous changes in the demand for goods & services. Also known as **'real demand shocks'**

Examples:

- stock market crash
 - ⇒ change in households' wealth
 - ⇒ ΔC
- change in business or consumer confidence or expectations
 - ⇒ ΔI and/or ΔC

Shocks in the *IS-LM* model

LM shocks: exogenous changes in the demand for money. Also known as '**nominal demand shocks**'

Examples:

- Northern Rock failure makes foreign depositors withdraw funds from banks
- increased uncertainty makes people prefer to hold money rather than securities

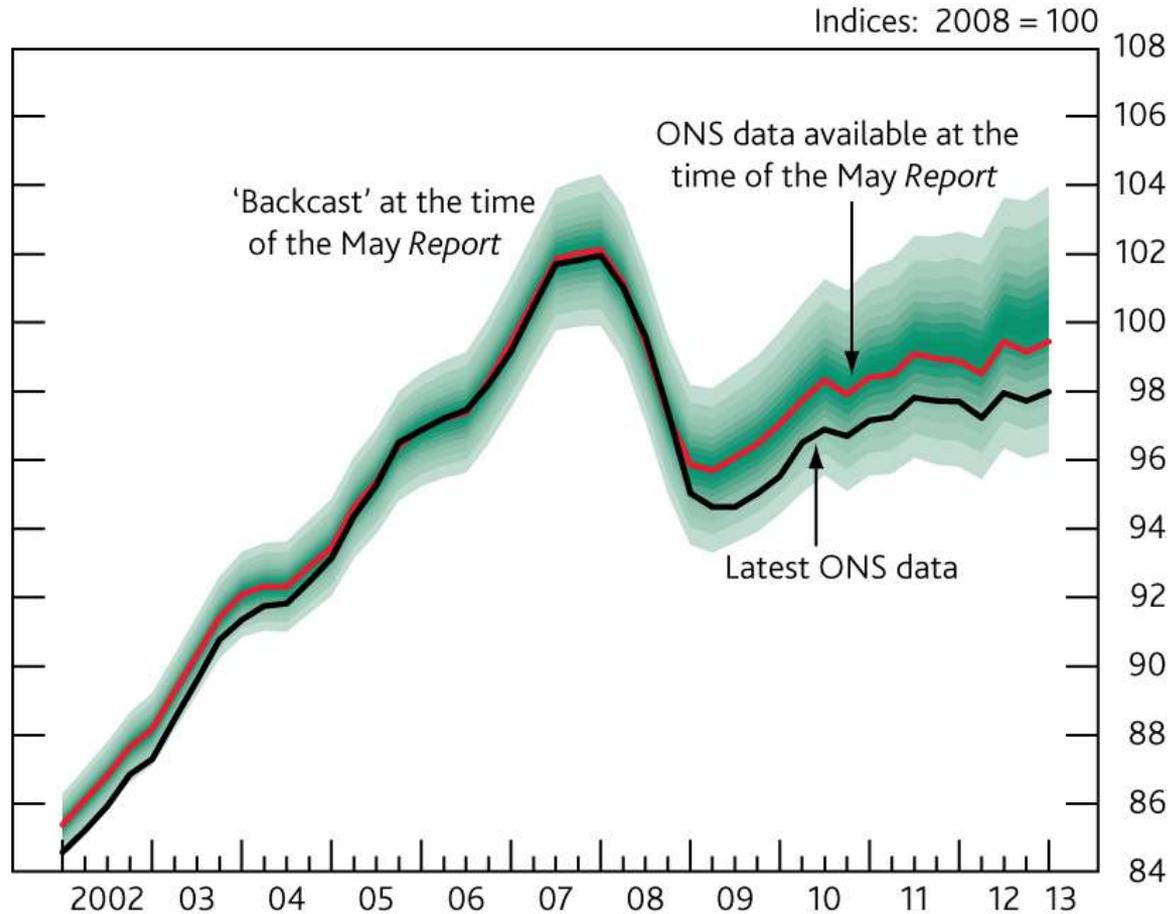


BANK OF ENGLAND

Inflation Report August 2013



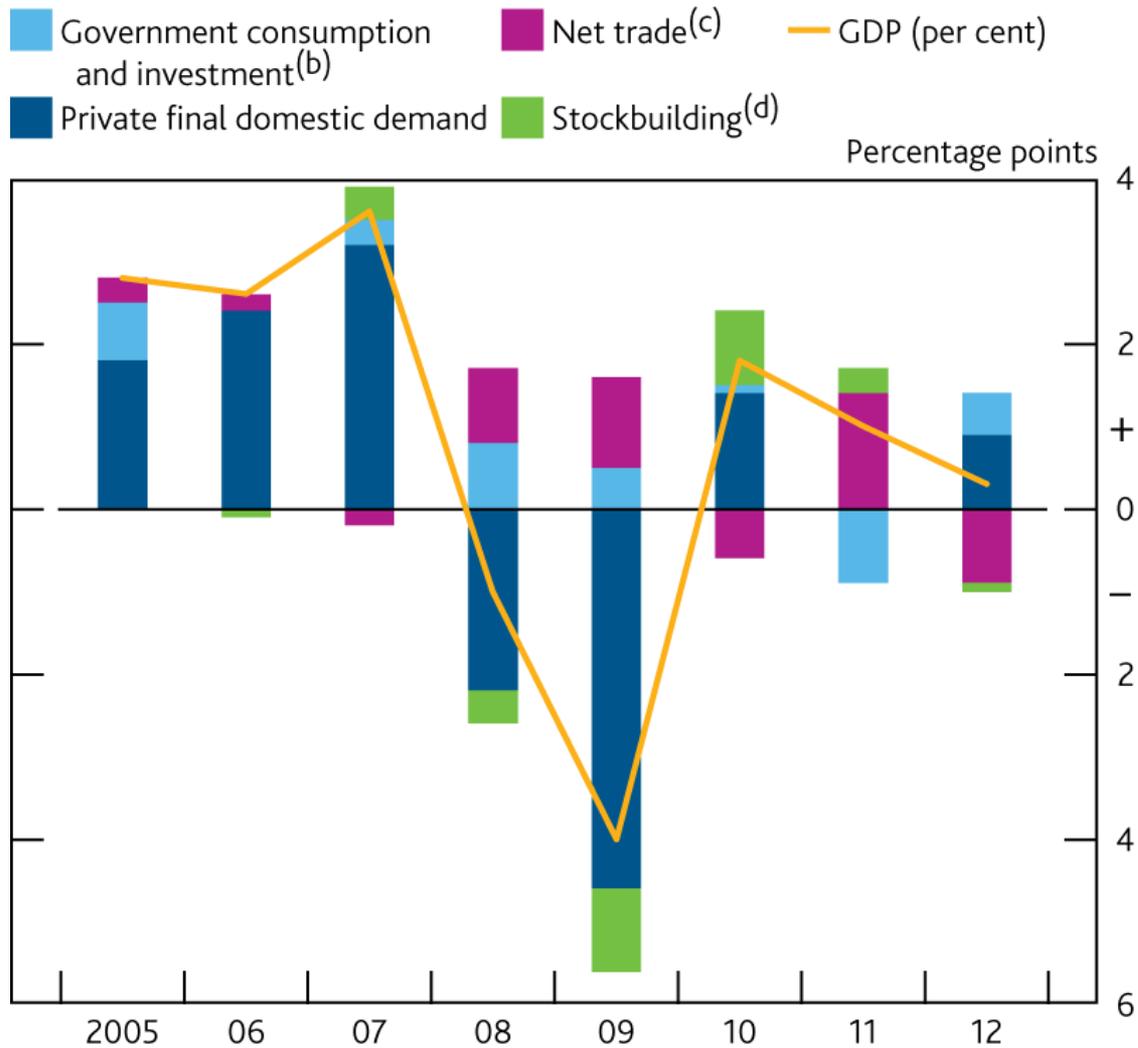
Chart A MPC's evaluation of GDP at the time of the *May Report*, ONS data at that time and latest ONS data^(a)



Sources: ONS and Bank calculations.

(a) Chained-volume measures. The fan chart depicts an estimated probability distribution for GDP over the past. It can be interpreted in the same way as the fan charts in Section 5.

Chart 2.1 Contributions to calendar-year GDP growth^(a)



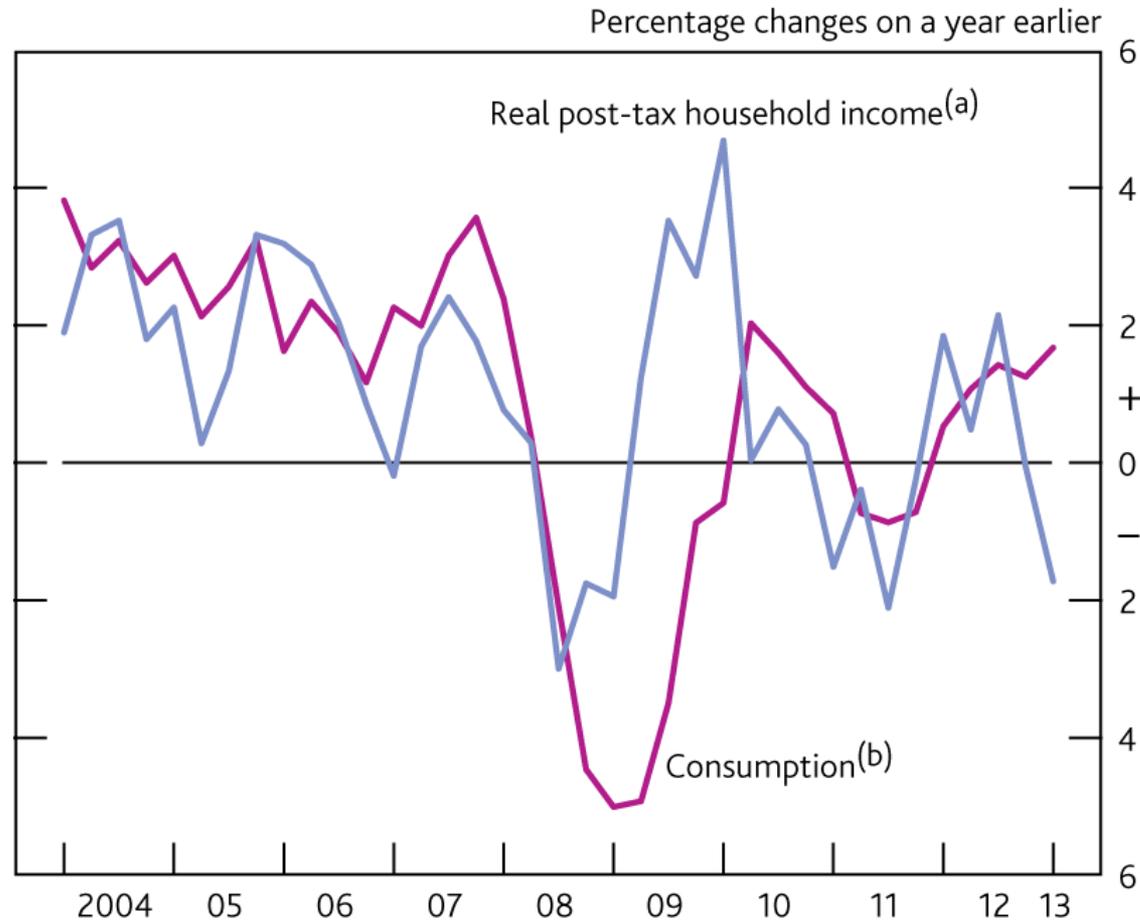
(a) Chained-volume measures. Components may not sum to total due to chain-linking and the statistical discrepancy.

(b) Government investment data have been adjusted by Bank staff to take account of the transfer of nuclear reactors from the public corporation sector to central government in 2005 Q2.

(c) Excluding the impact of missing trader intra-community (MTIC) fraud. Official MTIC-adjusted data are not available for exports, so the headline exports data have been adjusted for MTIC fraud by an amount equal to the ONS import adjustment.

(d) Excludes the alignment adjustment.

Chart 2.2 Household consumption and real income



(a) Total available household resources, deflated by the consumer expenditure deflator. Includes non-profit institutions serving households.

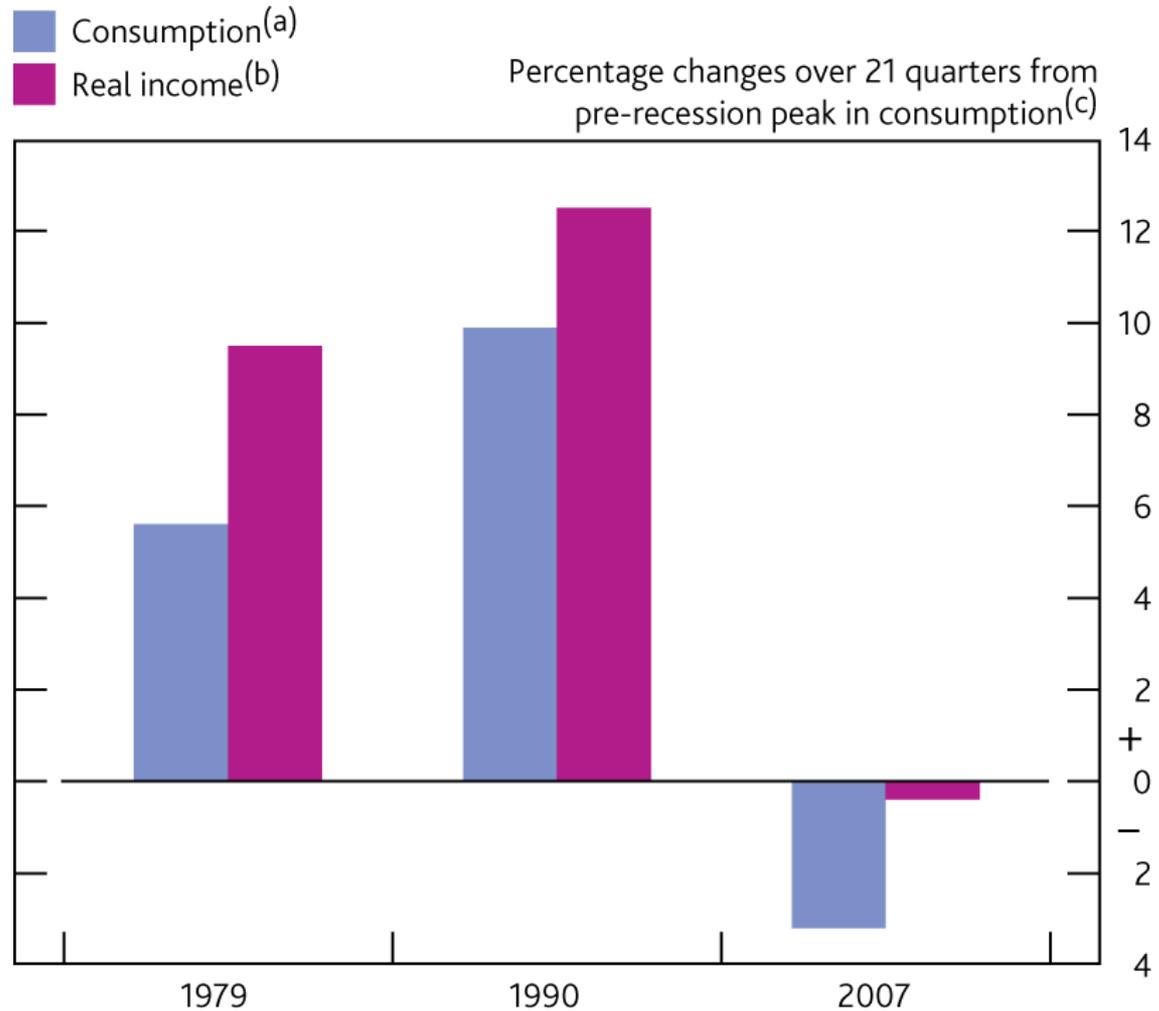
(b) Chained-volume measure. Includes non-profit institutions serving households.

Chart 2.3 Household saving ratio



- (a) Recessions are defined as at least two consecutive quarters of falling output (at constant market prices) estimated using the latest data. Recessions are assumed to end once output began to rise.
- (b) Percentage of household post-tax income.

Chart 2.4 Household consumption and real income compared with previous recessions

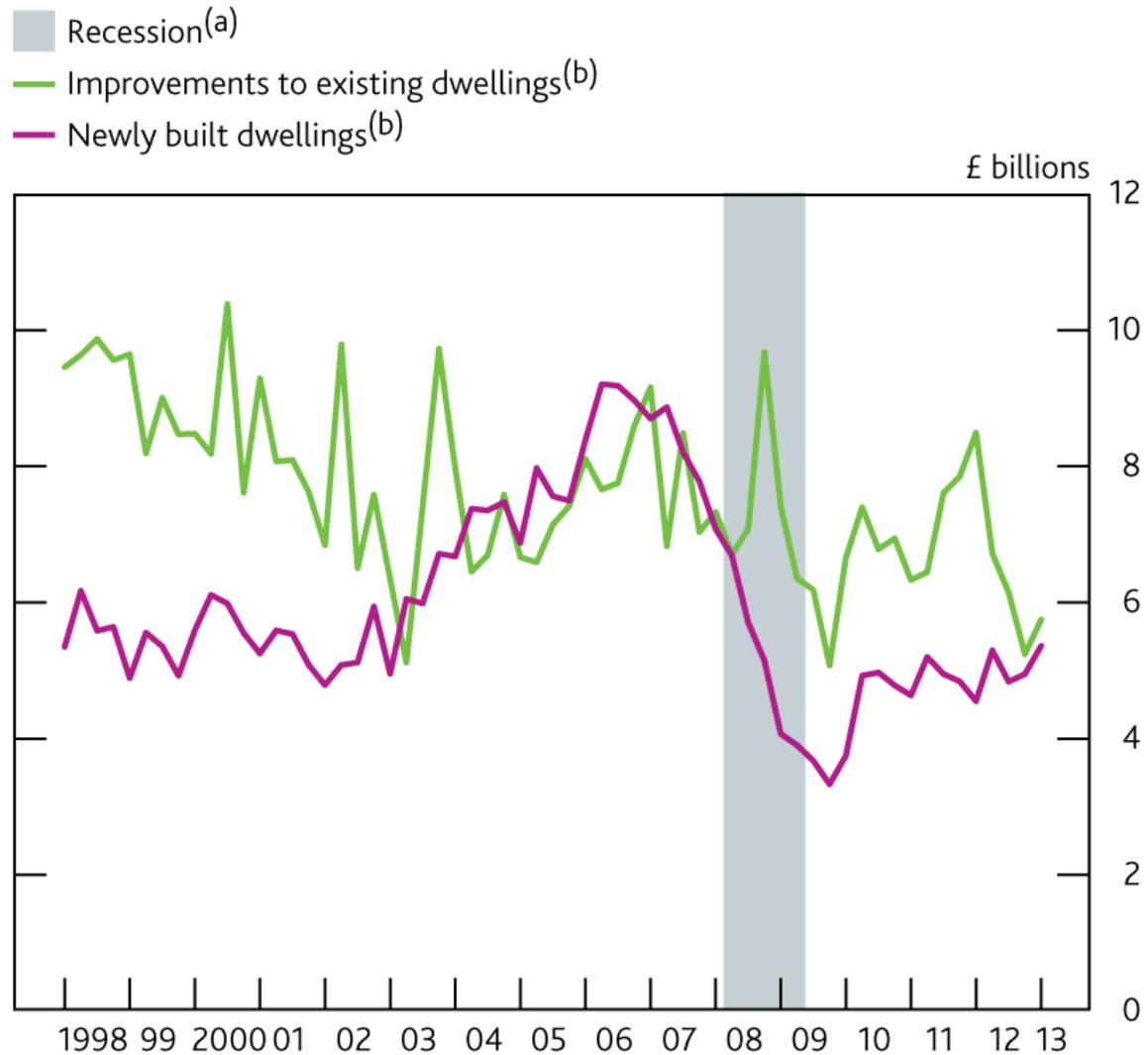


(a) Chained-volume measure. Includes non-profit institutions serving households.

(b) Total available household resources, deflated by the consumer expenditure deflator. Includes non-profit institutions serving households.

(c) Peaks in consumption occurred in 1979 Q2, 1990 Q2 and 2007 Q4.

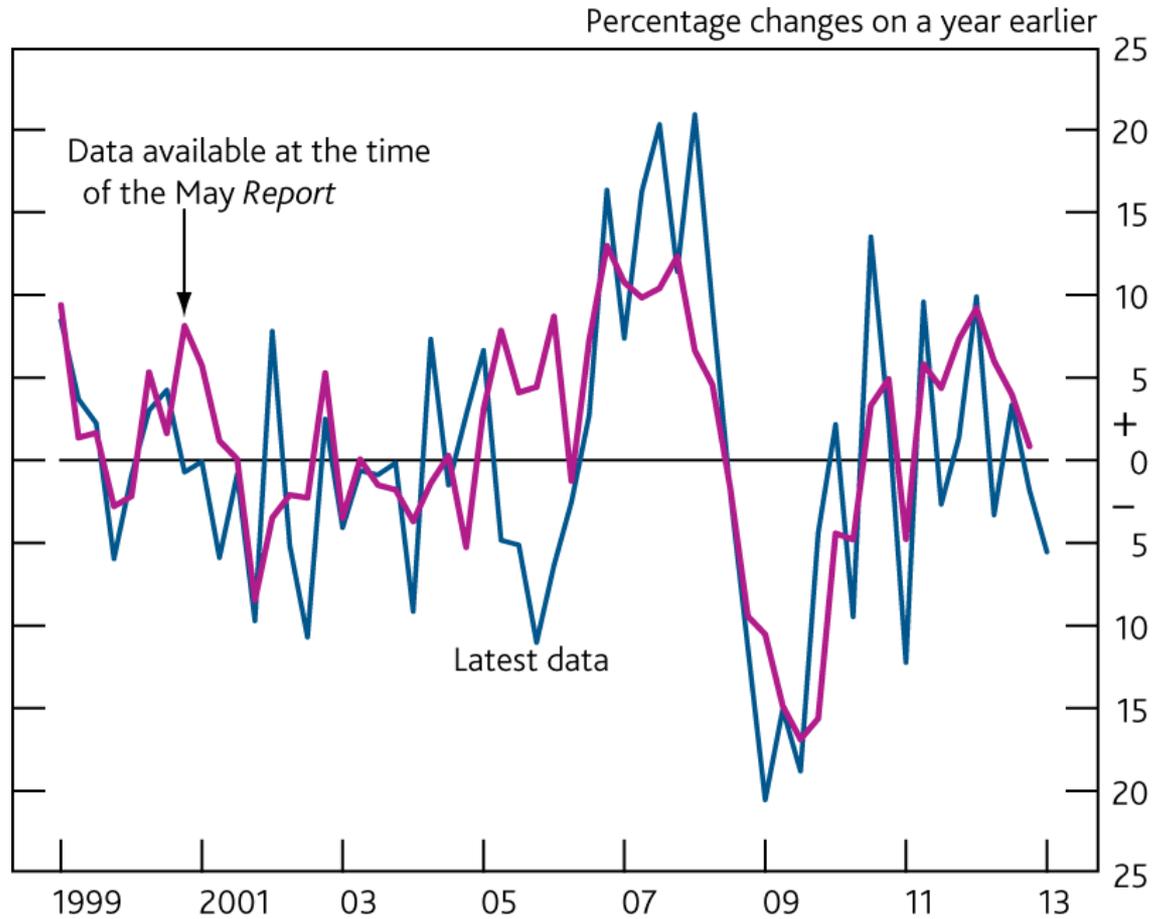
Chart 2.6 Dwellings investment



(a) Recessions are defined as in footnote (a) of **Chart 2.3**.

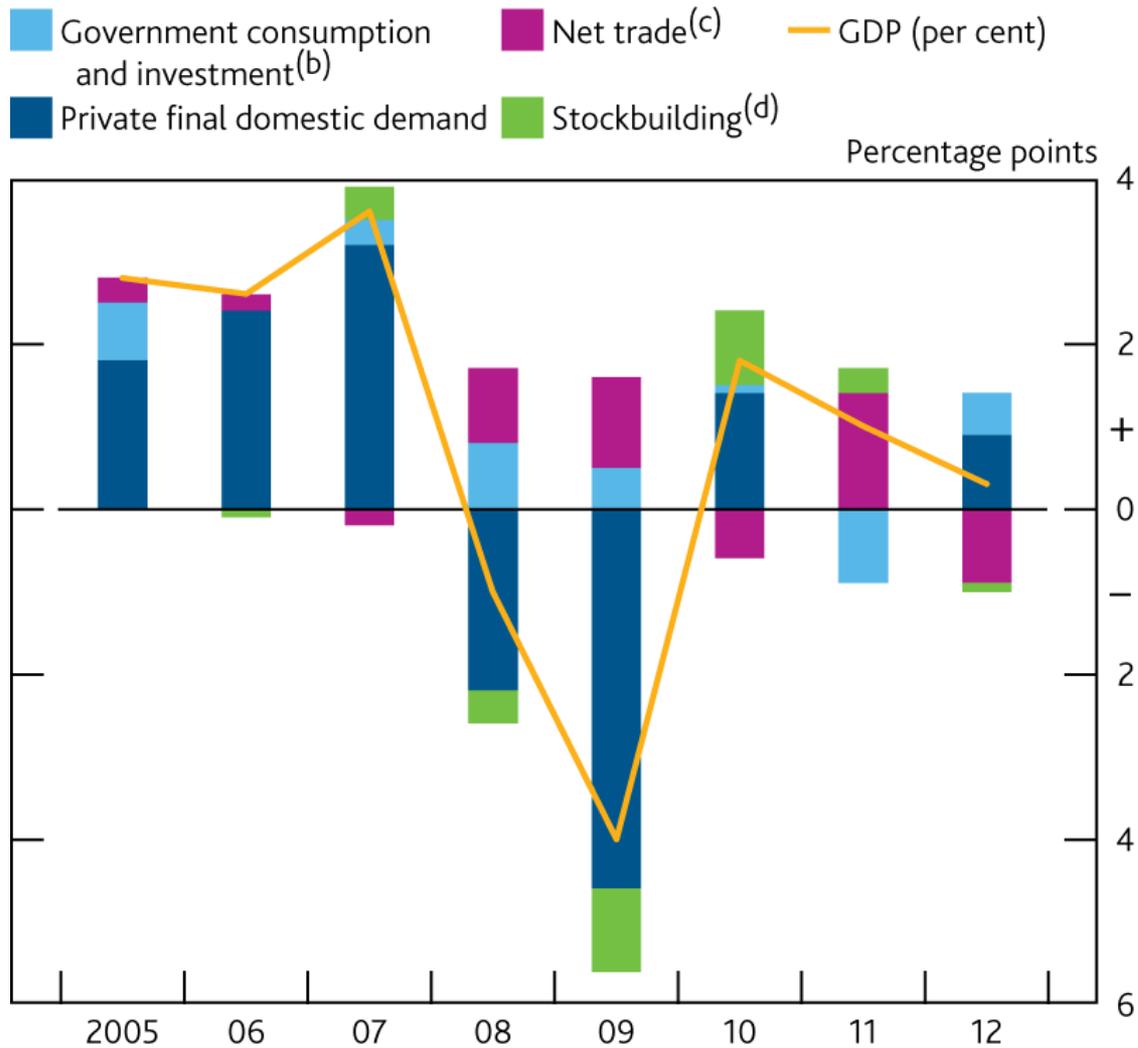
(b) Chained-volume measures.

Chart 2.7 Business investment^(a)



(a) Chained-volume measures. Business investment data have been adjusted by Bank staff to take account of the transfer of nuclear reactors from the public corporation sector to central government in 2005 Q2.

Chart 2.1 Contributions to calendar-year GDP growth^(a)



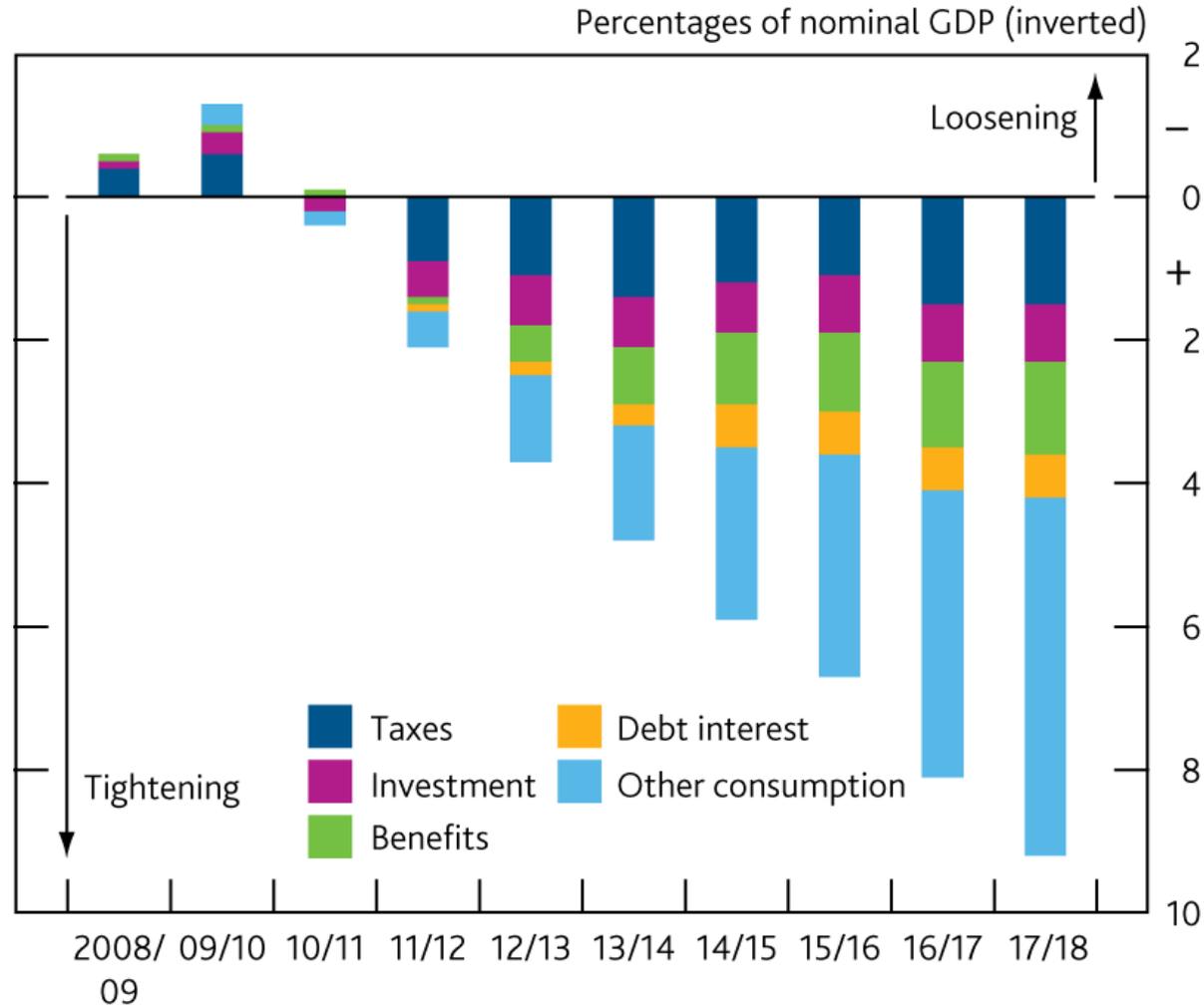
(a) Chained-volume measures. Components may not sum to total due to chain-linking and the statistical discrepancy.

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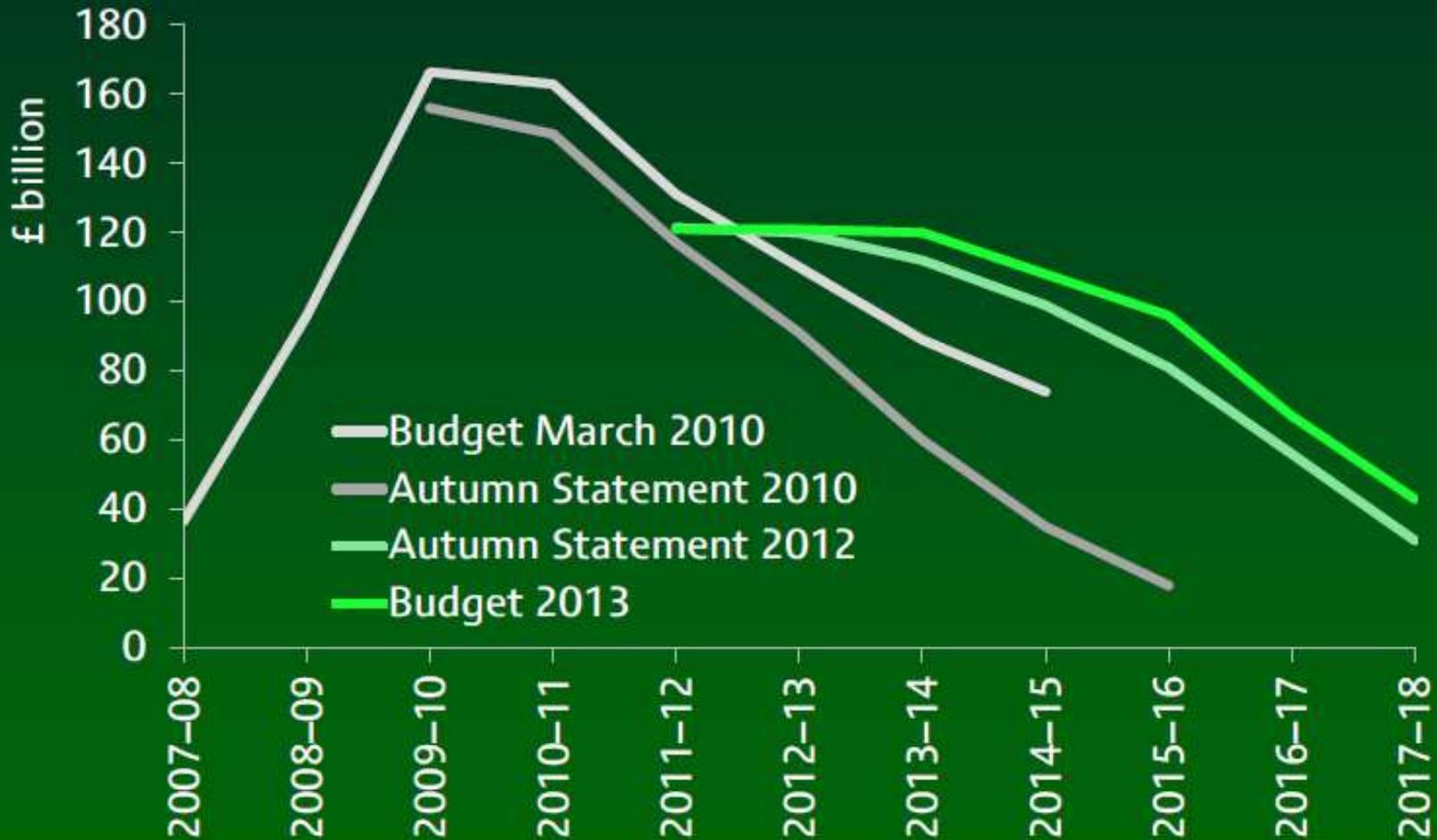
Chart 2.9 Composition of the fiscal consolidation^(a)



Sources: HM Treasury, Institute for Fiscal Studies and Office for Budget Responsibility.

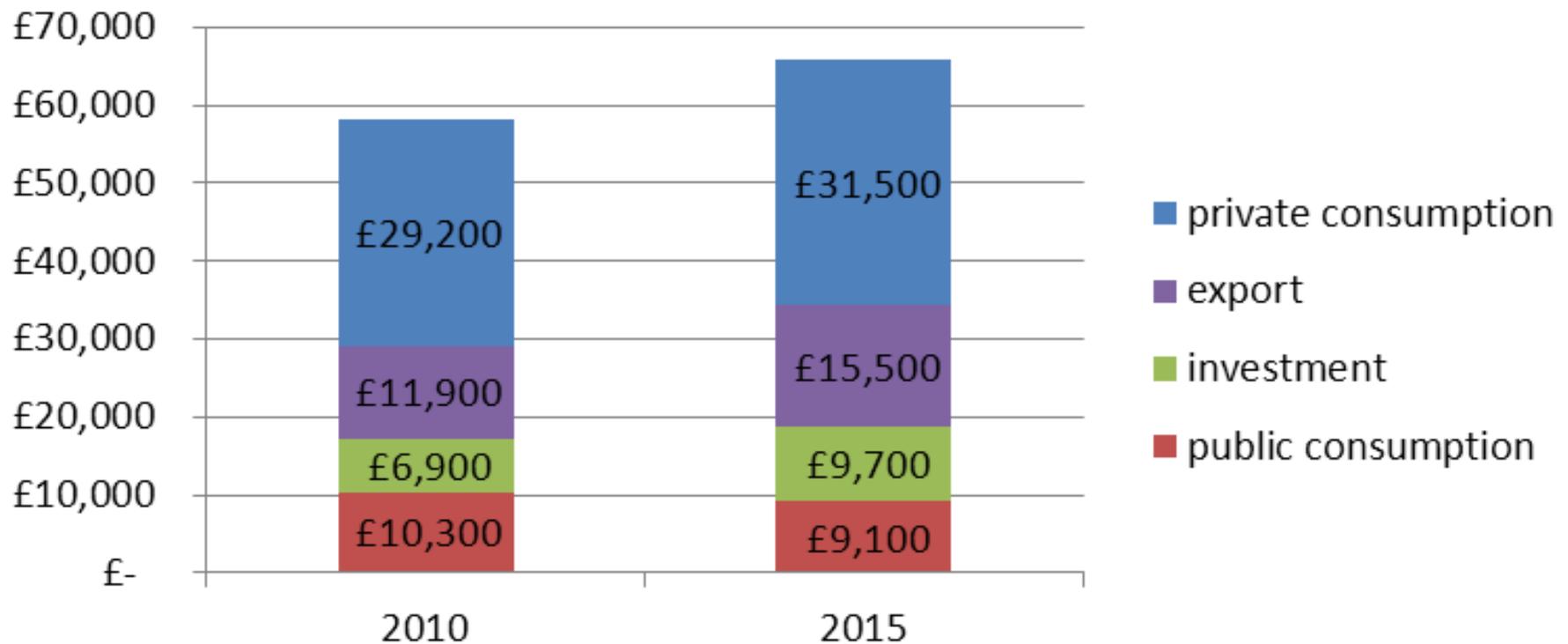
(a) Bars represent the planned fiscal tightening (reduction in government borrowing) relative to the March 2008 *Budget* projections, decomposed into tax increases and spending cuts, with the spending cuts further subdivided into benefit cuts, other current spending cuts and investment spending cuts. The calculations are based on all HM Treasury Budgets, Pre-Budget Reports and Autumn Statements between March 2008 and March 2013. See www.ifs.org.uk/publications/6683 for more detail.

Cutting the deficit?

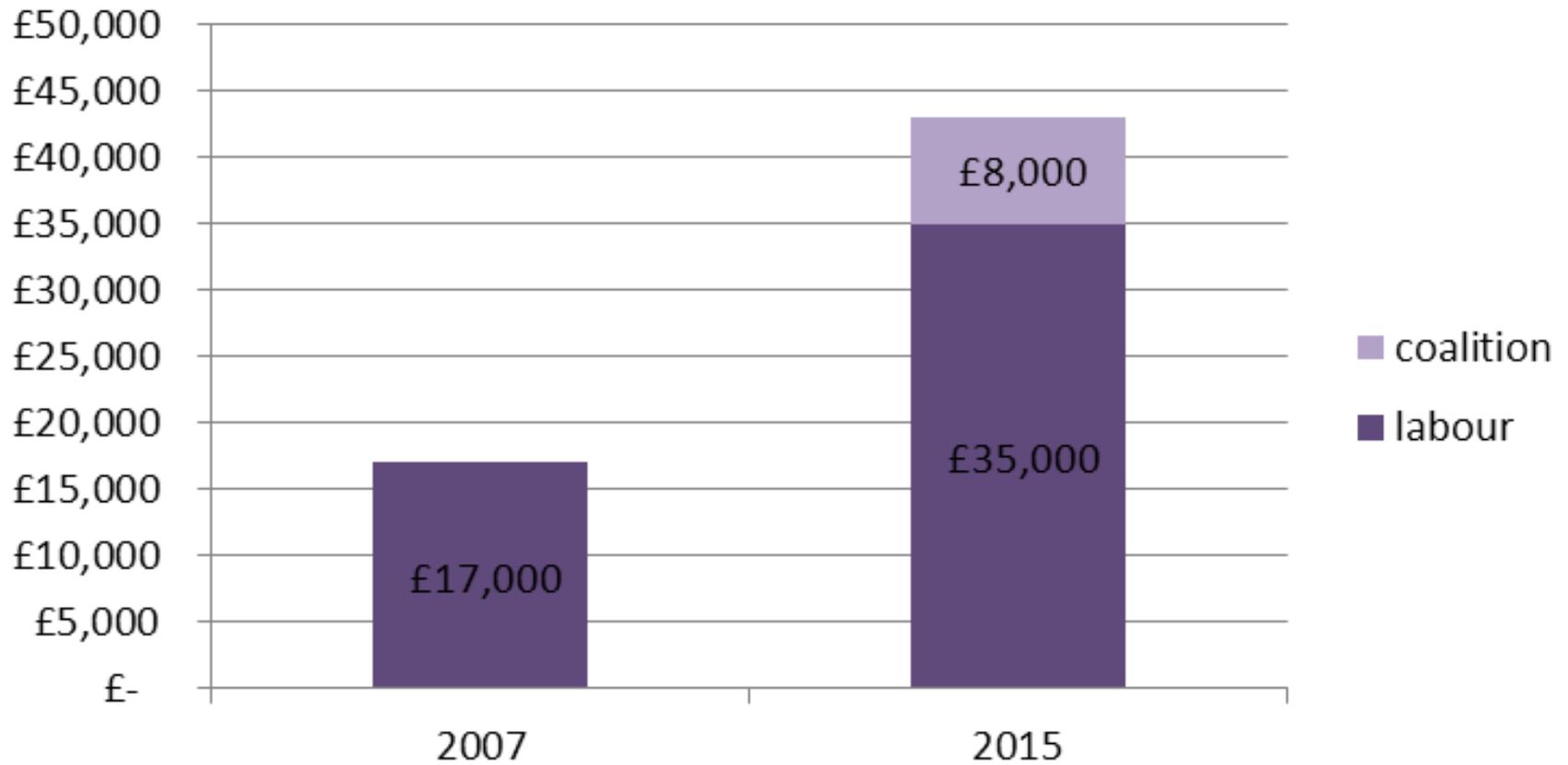


Coalition Austerity Strategy

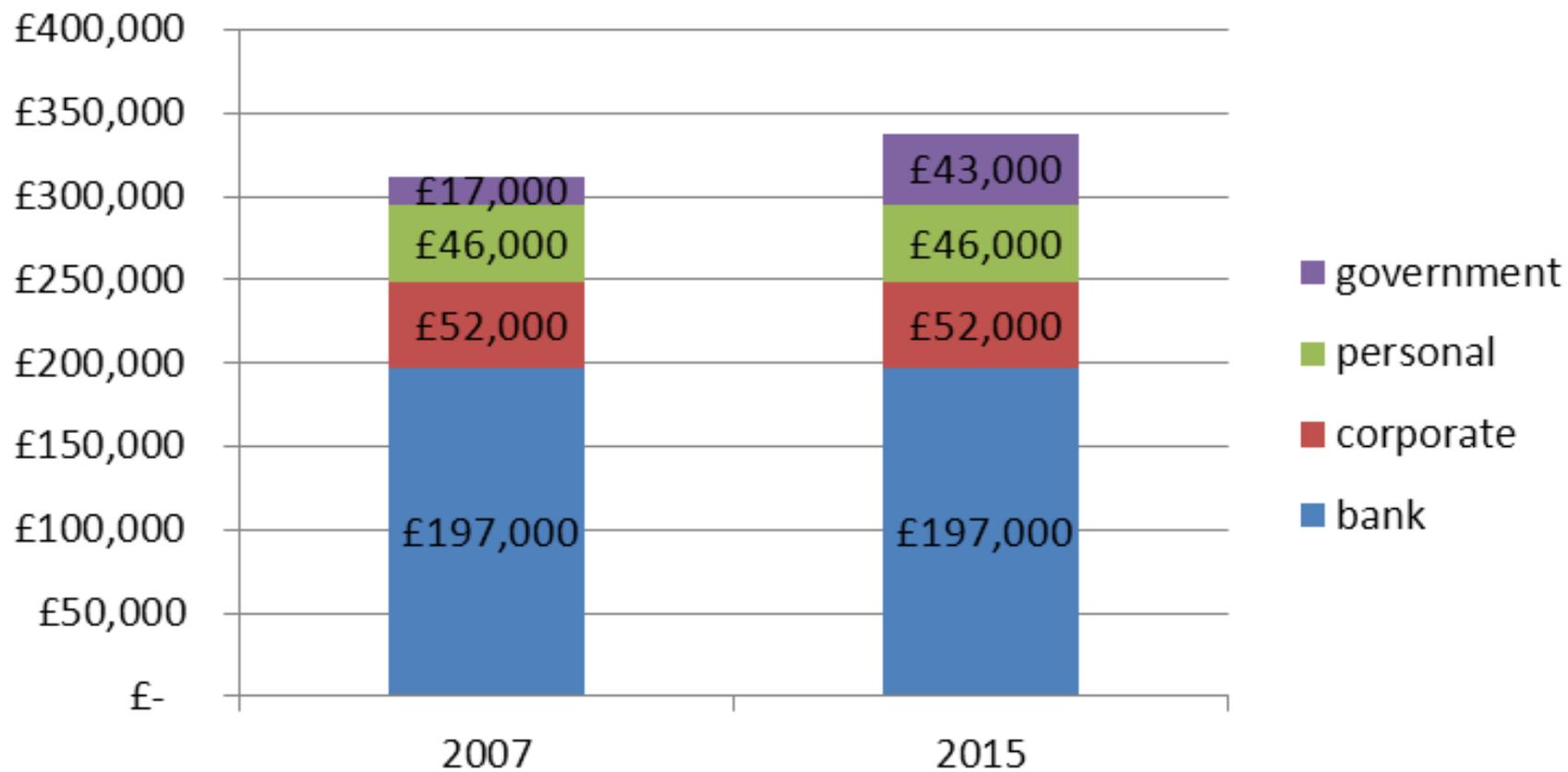
source of national income per worker



government debt per worker



total debt per worker



Government Debt, % GDP, 1858-2002

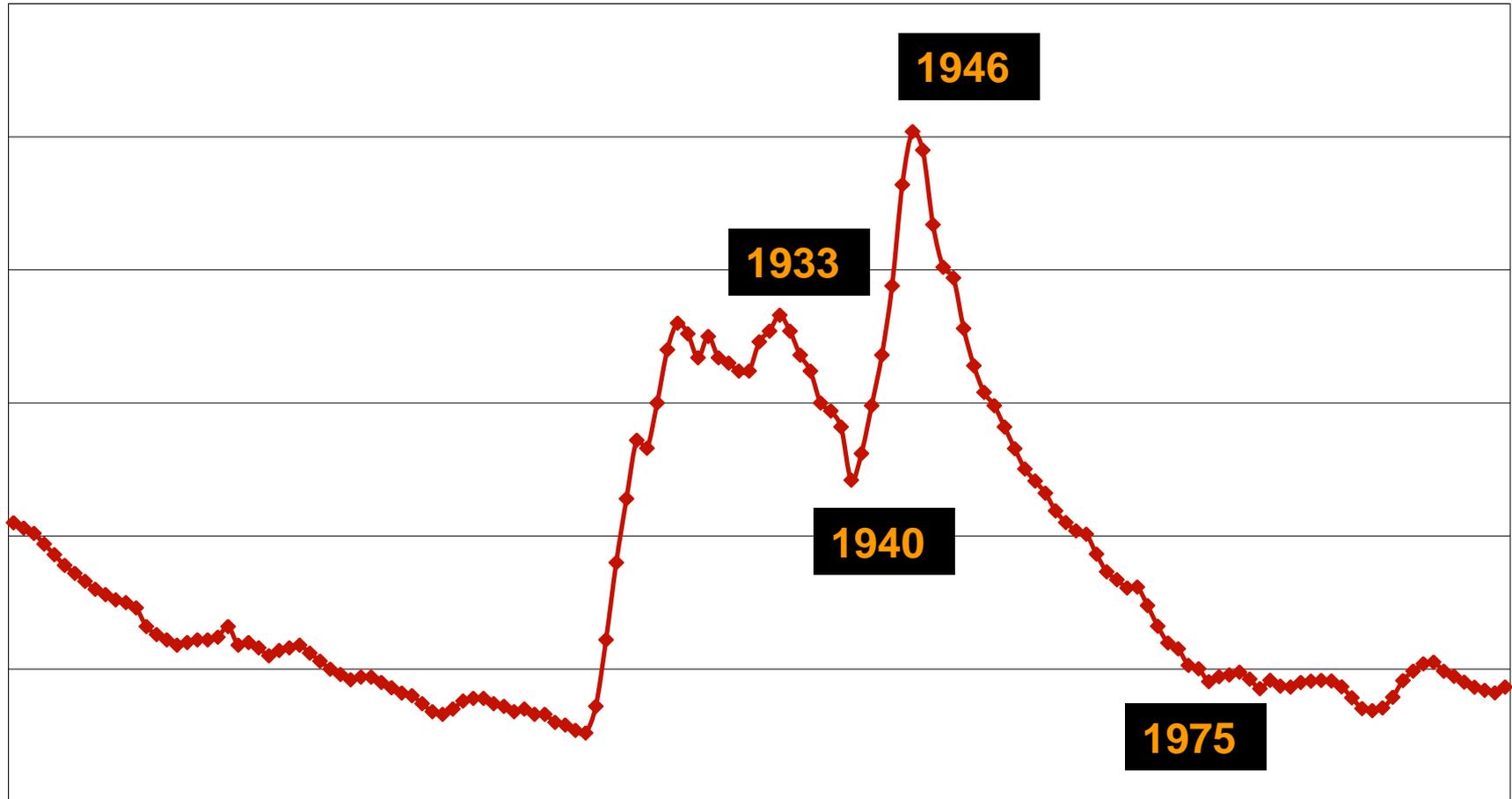
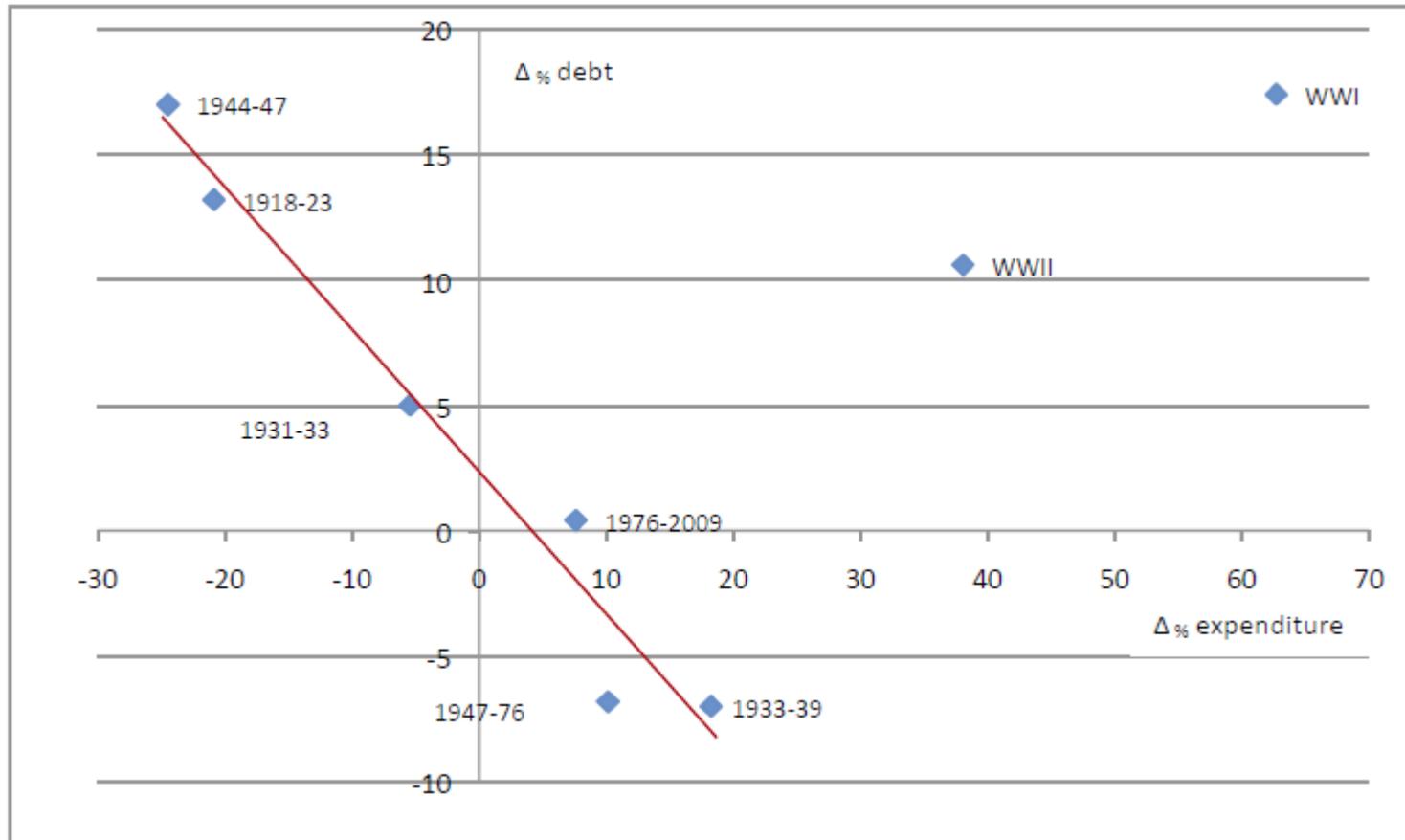
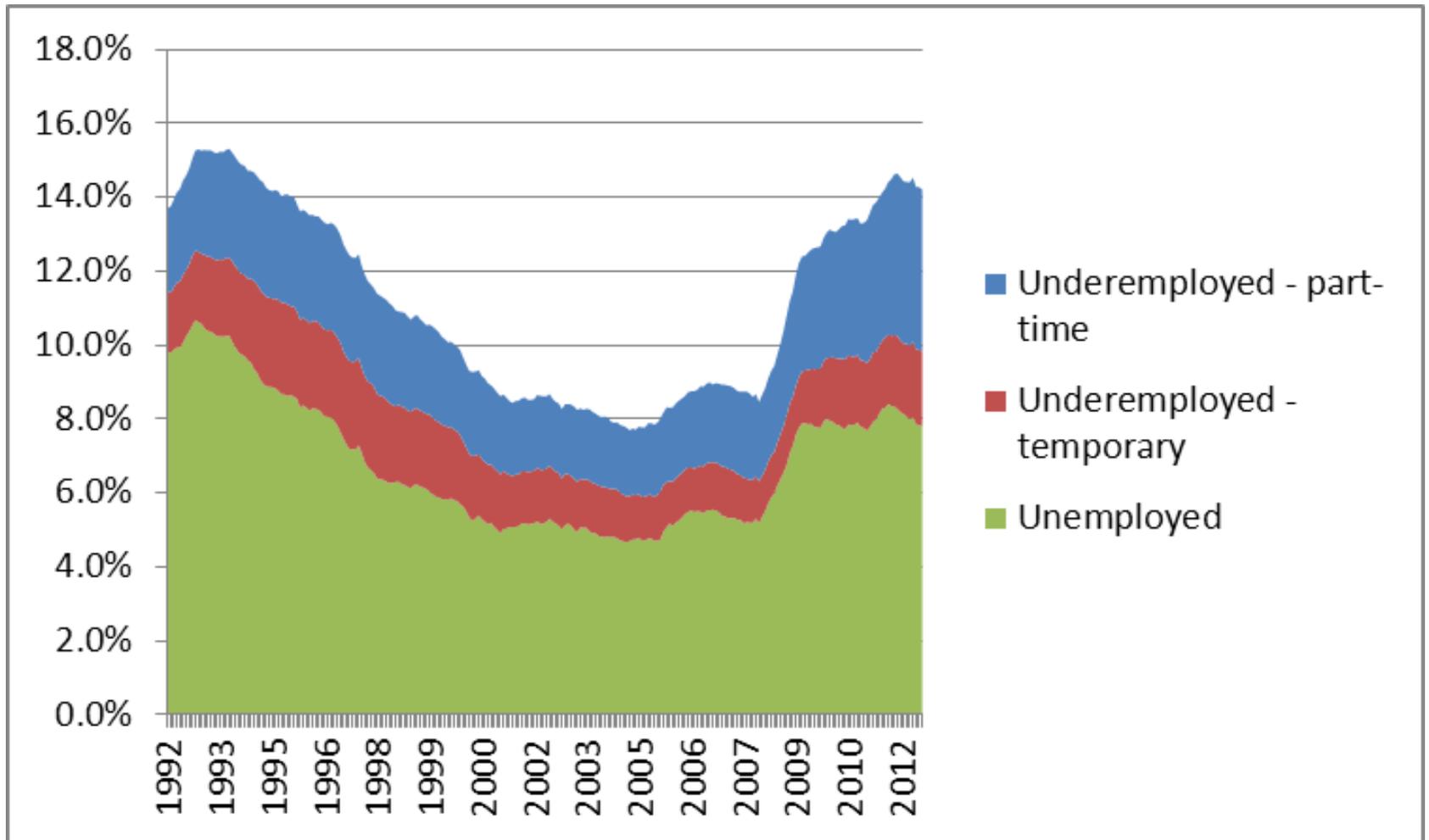


Figure 2.2: Changes in government expenditure and debt

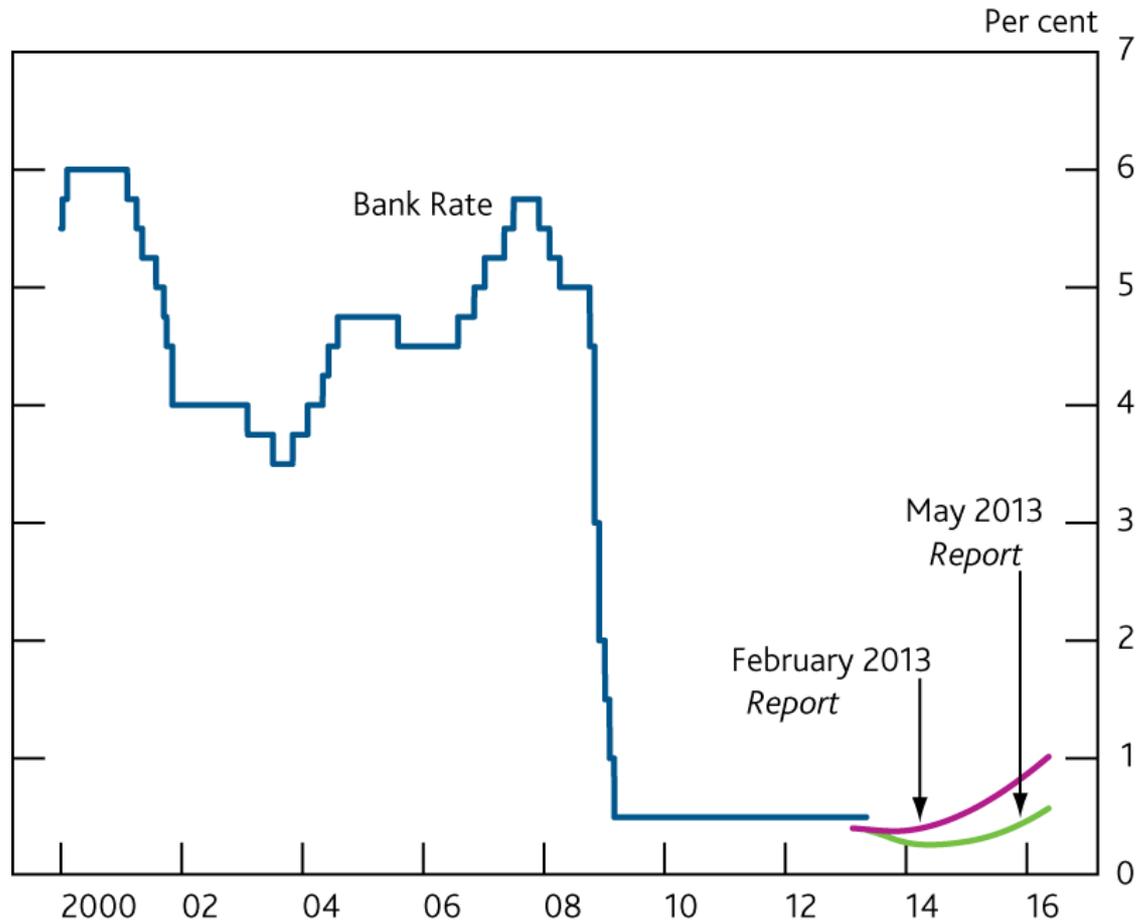


Source: Chick and Pettifor (2010), *The Economic Consequences of Mr Osborne*, Keynes Seminar, www.postkeynesian.net



Source: ONS, Labour Market Statistics, A02 & EMP01, Dec 2012

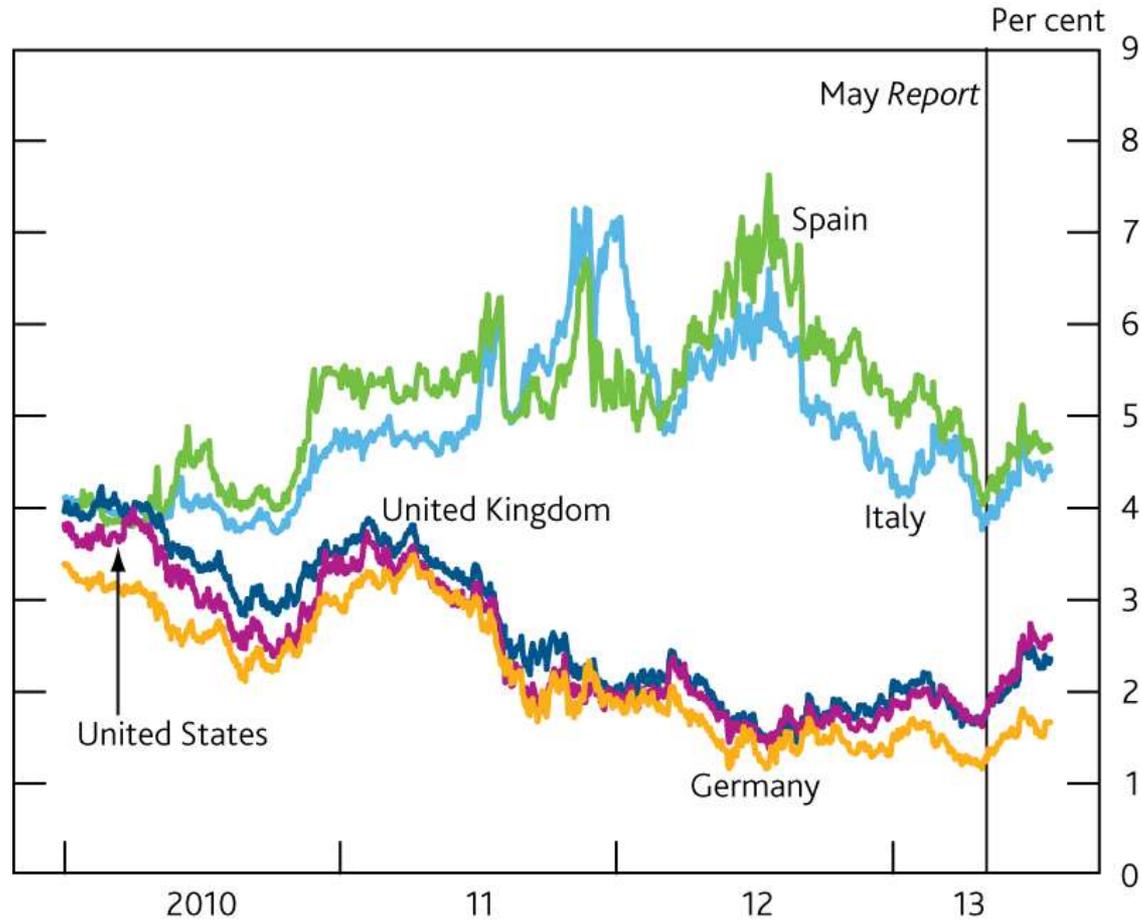
Chart 1.1 Bank Rate and forward market interest rates^(a)



Sources: Bank of England and Bloomberg.

(a) The February 2013 and May 2013 curves are estimated using overnight index swap rates in the fifteen working days to 6 February 2013 and 8 May 2013 respectively.

Chart 1.4 Selected ten-year government bond yields^(a)



Source: Bloomberg.

(a) Yields to maturity on ten-year benchmark government bonds.

Total currency and deposits £bn

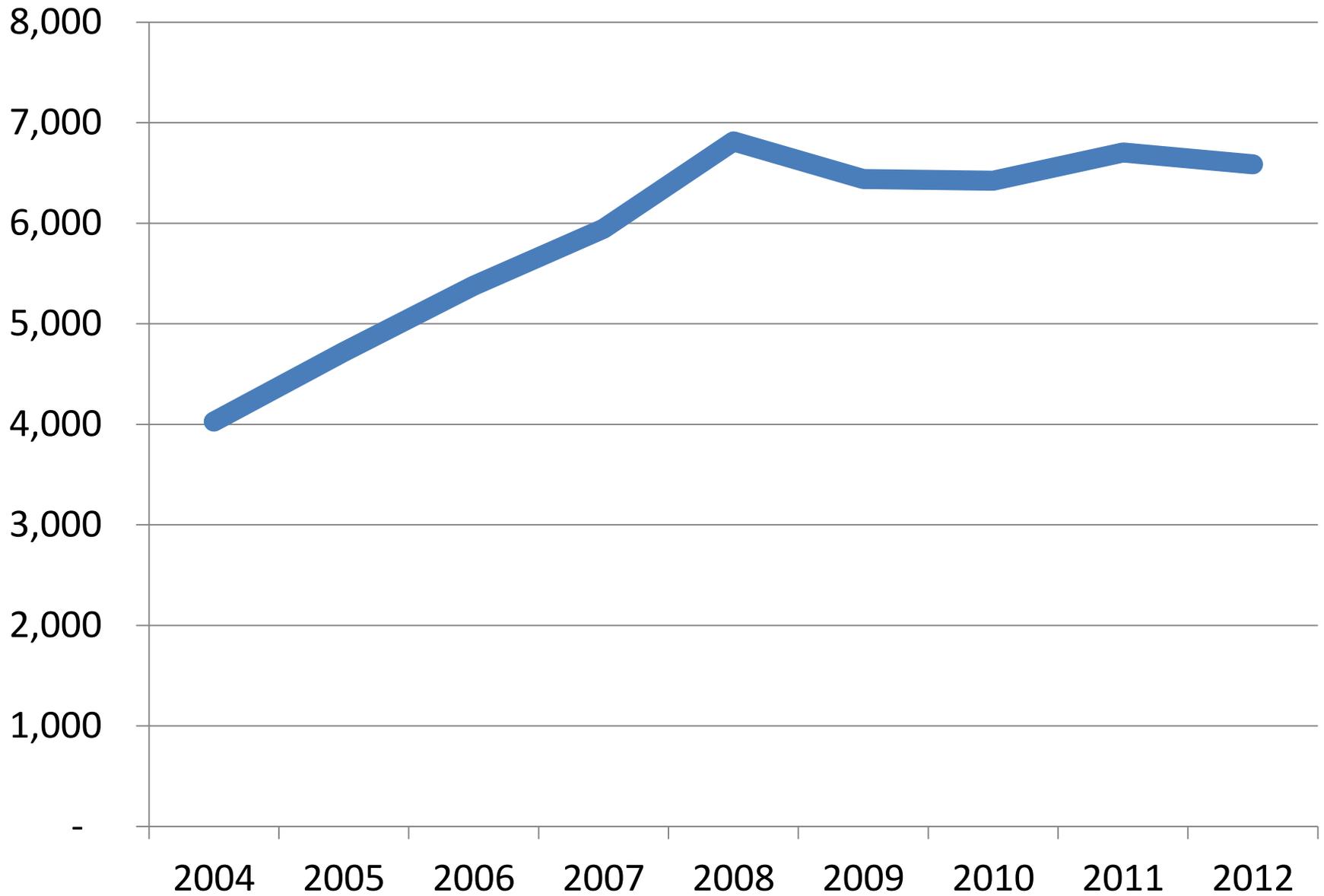
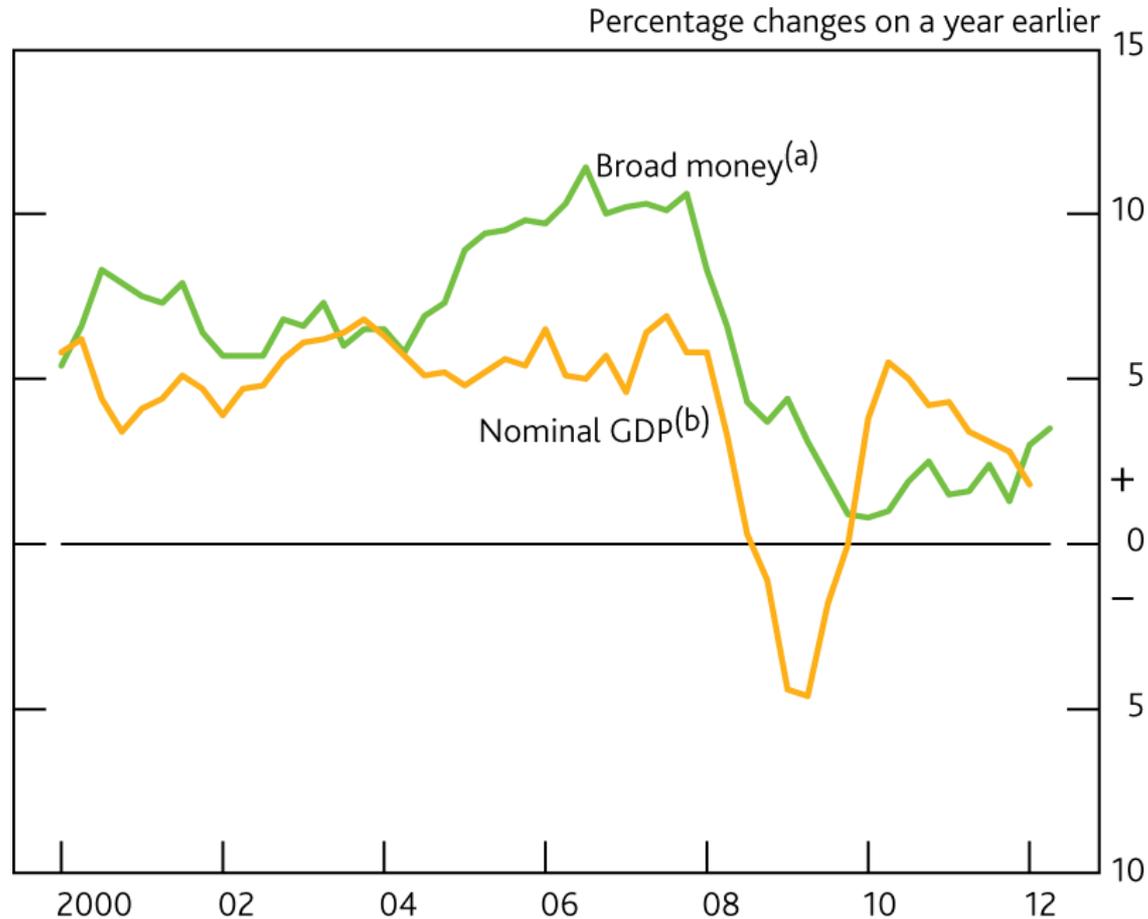


Chart 1.14 Broad money and nominal GDP

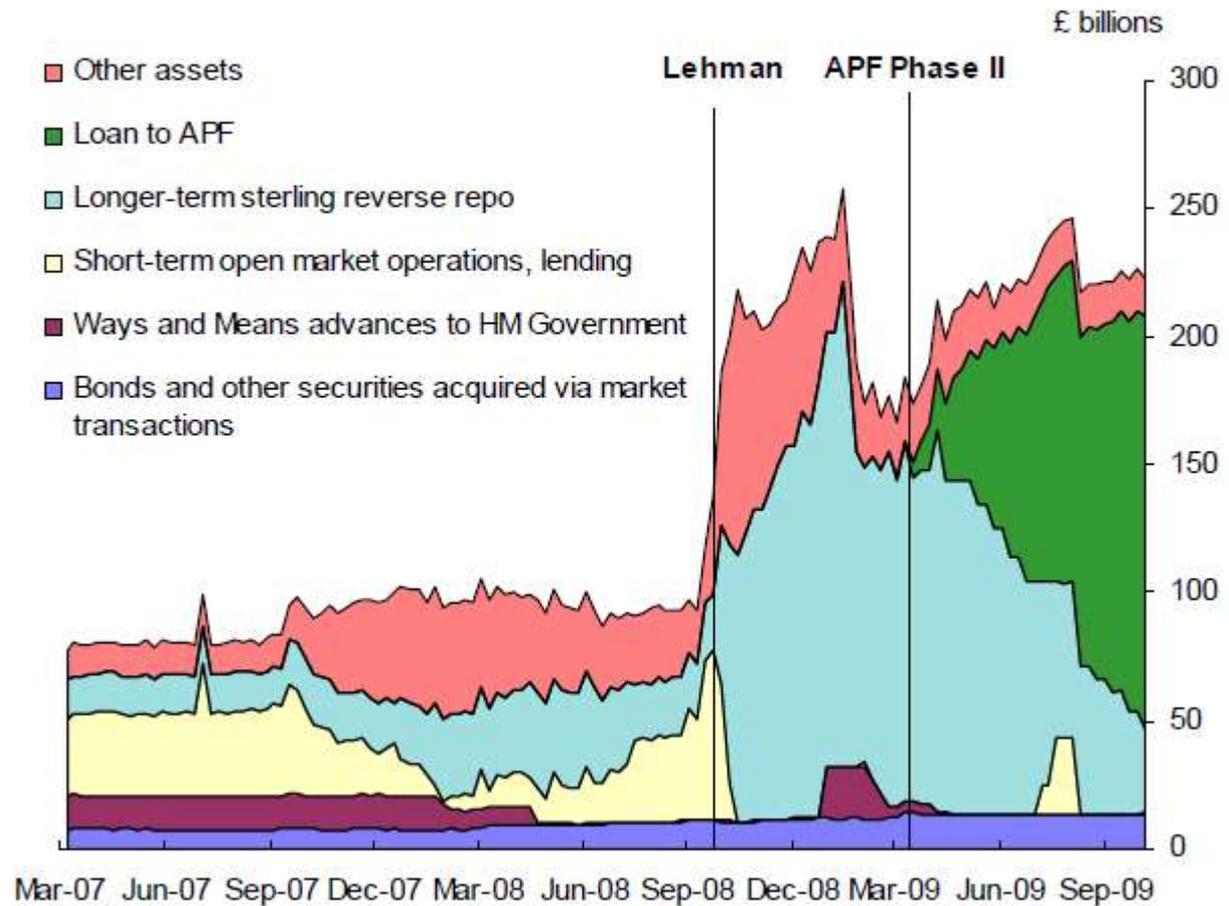


(a) M4 excluding intermediate other financial corporations (OFCs). Intermediate OFCs are: mortgage and housing credit corporations; non-bank credit grantors; bank holding companies; securitisation special purpose vehicles; and other activities auxiliary to financial intermediation. In addition to the deposits of these five types of OFCs, sterling deposits arising from transactions between banks or building societies and 'other financial intermediaries' belonging to the same financial group are excluded from this measure of broad money. The latest observation is 2012 Q2.

(b) At current market prices. The latest observation is 2012 Q1.

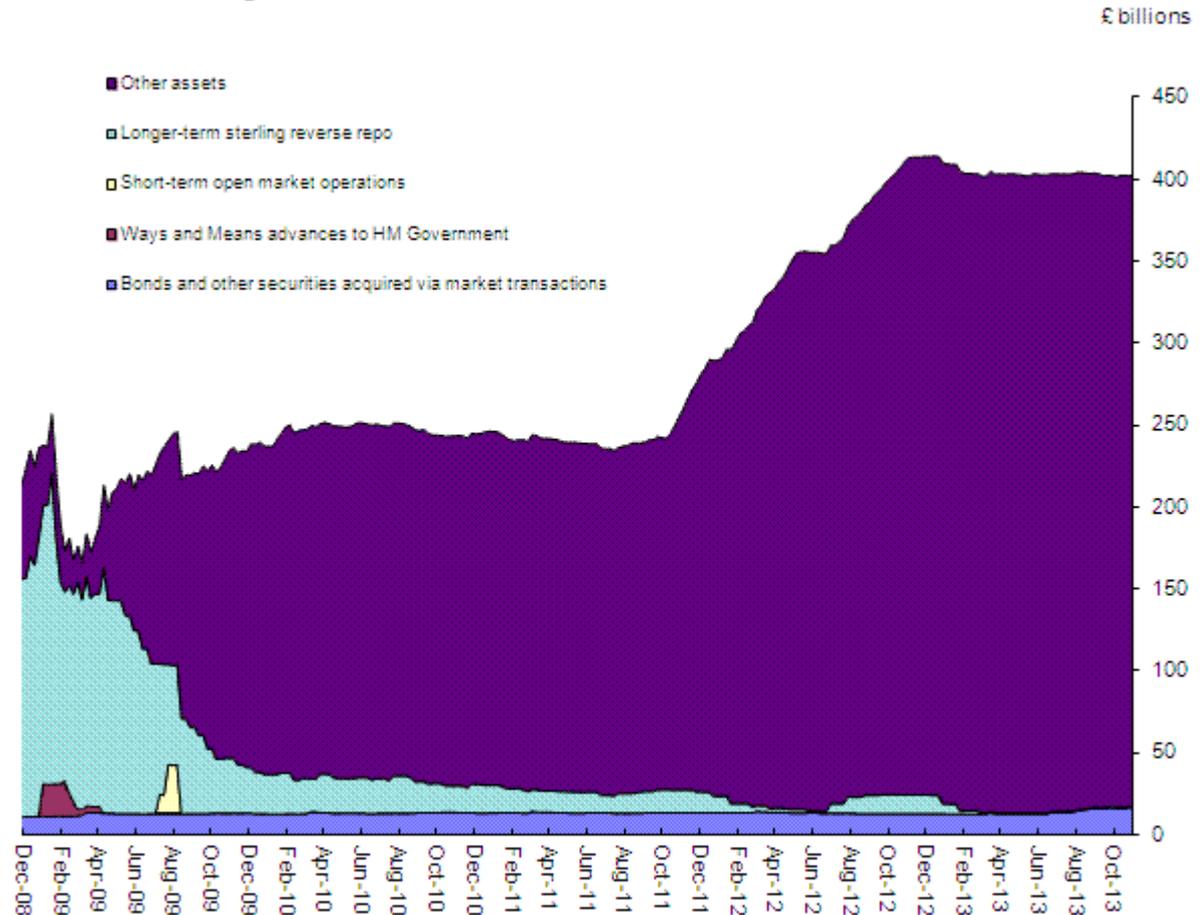
Bank of England Balance Sheet 2007-2009

Assets



Bank of England Balance Sheet 2009-2013

Bank of England consolidated balance sheet: assets (a)



Bank of England consolidated balance sheet: liabilities (a)

£ billions

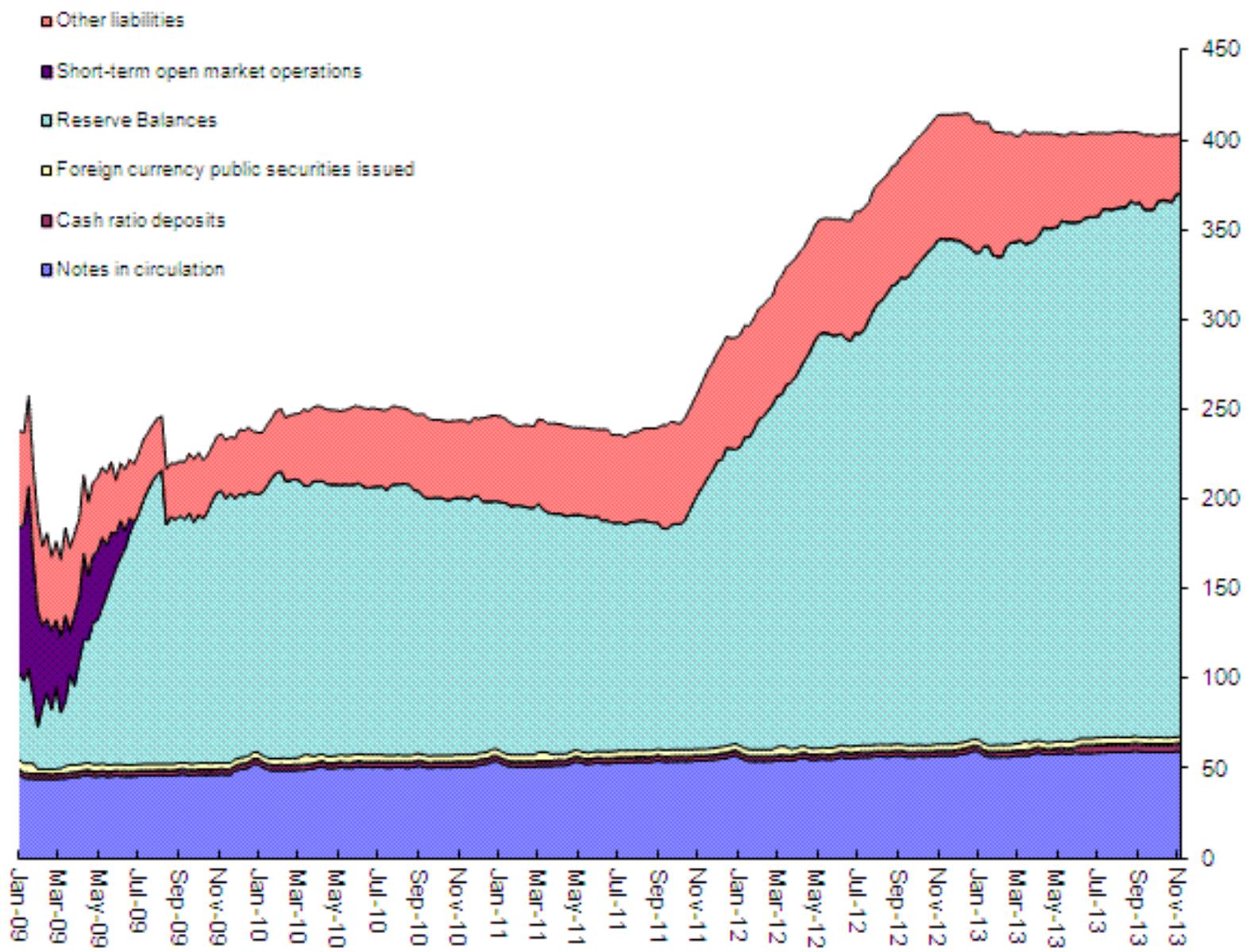
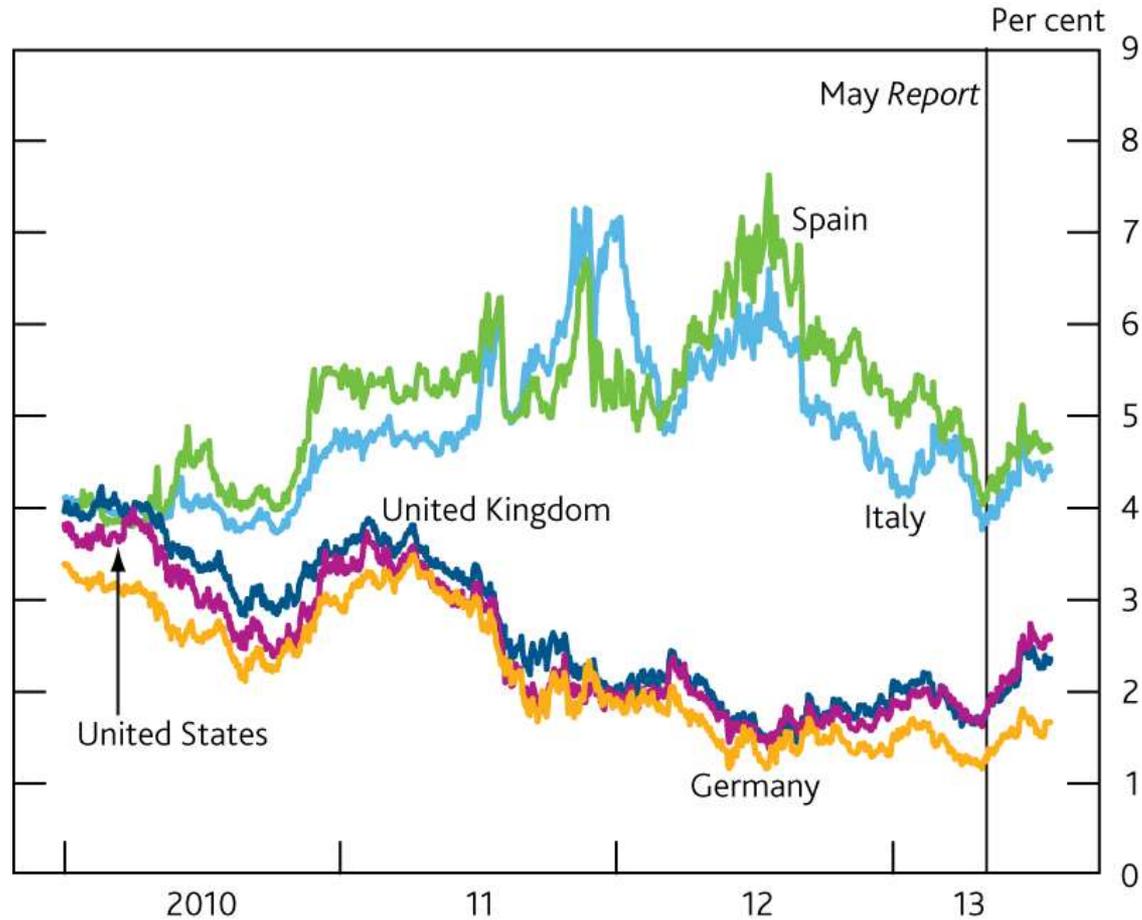


Chart 1.4 Selected ten-year government bond yields^(a)



Source: Bloomberg.

(a) Yields to maturity on ten-year benchmark government bonds.

Other interesting resources

- Institute for Fiscal Studies
 - Excellent analysis and interpretation
- Office for Budget Responsibility
 - Mainly focussed on fiscal position but produces the economic forecasts on which the Budget is based
- HM Treasury Budget Website
- National Statistics

Summary

1. IS-LM shows how fiscal and monetary policy interact, with the possibility of 'crowding out'
2. The monetary policy response to 2008 has been to floor it, including using QE to stop the money supply shrinking and keep long bond rates low. No chance of crowding out.

Summary

3. However, UK discretionary fiscal policy switched from mildly supportive to contractionary in 2010.
4. Output has stagnated until recently, still several percentage points below 2008.

Next time

Extending the aggregate demand model to take account of foreign trade and the exchange rate