The challenge for monetary policy – the zero lower bound

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Disclaimer

The views expressed in this talk are my own and not necessarily those of the Bank of England or members of the Monetary Policy Committee.
GDP projection based on market interest rate expectations and £375 billion asset purchases
CPI inflation projection based on market interest rate expectations and £375 billion asset purchases
Plan

• Monetary policy in a broad context
• Why inflation targeting might be a useful framework
• The zero lower bound and quantitative easing
• The productivity puzzle
• Fix the banks please
• Questions?
Post war inflation record: must try harder

- Annual RPI inflation: 1948 to 1991
What’s the monetary problem?

• Kydland and Prescott: time inconsistency
An example

• Ex post, once a drug developed optimal for society to allow any one to produce it: $P = MC$
• Problem: no one ever develops it
• Solution: patent law – grant a monopoly; cost that $P > MC$
• Problem: ex post, drug exists
• So government always has incentive to renege
• Conclusion: patent laws cannot exist
An example

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- Solution: patent law – grant a monopoly; cost that $P > MC$
- Problem: ex post, drug exists
- So government always has incentive to renege
- So patent laws cannot exist
- Actually, this a repeated game, reputations can be acquired, and patent law is credible
Deep problem

• As time passes, structure of problem changes (as drug now exists, it is not a choice variable)
• In macro, it is inflation expectations
• If policymaker says inflation is low, plausible that they will subsequently renege with a burst of inflation
• Eg before an election
• Need a commitment device to gain credibility
• Aka a monetary anchor
The old-Keynesian problem

- Forward-looking households behave according to their expectations about policy
- If policymakers dislike unemployment, they have an incentive to renege on promises
- Or if governments use macro policy to improve election chances
- Kydland and Prescott – policy time inconsistent
- Once you’ve convinced people inflation will be low – surprise them on the upside
- So everyone expects high inflation
Expectations

- In this framework expectations are crucial
- The solution often described as “well anchored inflation expectations”
- Or perhaps, “well anchored policy expectations”
Expectations

“[N]ot only do expectations about policy matter, but, at least under current conditions, very little else matters”

Monetary anchors

Post-war monetary history is the story of a long search for a monetary anchor

• Bretton Woods $ standard – collapsed in 1971
• Prices and incomes policies in the 1970s
• Monetary targeting in the early 1980s
• Acquiring a tough anti-inflation reputation, also in the early 1980s
• DM shadowing in the mid 1980s
• ERM entry in 1990 – ignominious exit in 1992
Inflation targeting saves the day

• The Bank of England has been inflation targeting since September 1992
• Operationally independent since May 1997
  ❑ Enshrine the target in legislation
  ❑ That makes the target credible
  ❑ Don’t try to get growth above (unemployment below) the “natural” rate
The intellectual framework circa 2007

- Economy characterised by rational forward looking agents (firms and households)
- Prices do not adjust perfectly to bring about equilibrium every period
- Other rigidities exist (e.g., slow to adjust capital).
- But we are “approximately” in equilibrium
- Fiscal policy about setting right taxes and spending, not managing the economy - Households are roughly “Ricardian”
- Monetary policymaker in charge of macro economy
The current remit

- Deliver price stability – low inflation
- Currently defined as 2% on the CPI measure
- Previously, 2.5% RPIX
- Subject to that, to support the Government’s economic objectives including those for growth and employment
- Write letters if inflation breaches target by + or -1pp
The control problem

- Remit: interpretable as minimisation of an intertemporal loss function including variance of growth and deviations of inflation around target
- No time inconsistency (not first order anyway)
- Policy instrument (under normal circumstances) the Bank rate, a short rate
- Behaviour affected by whole yield curve – itself affected by expectations about the future, including Bank policy
RPIX inflation – 1992 to 2003

- No letters were ever written about RPIX
Everything under control

• Had to invent a name for a new era – the Great Moderation (in the UK, the Great Stability)

• Commodity prices annoying – but we appeared in 2007 to be sailing through them
CPI inflation – 2004 - 2012

- Rather more letters (15) have been written for CPI
- Above target continuously since December 2009
Why so?

• Largely due to sharp sterling depreciation, energy and commodity prices, and VAT rises
• Lately, tuition fees helped a little
• Have thought of some of these as one-off level shocks that policy can “see through”
Sterling Brent oil price
Sterling ERI

![Graph showing fluctuations in the Sterling ERI from 2004 to 2012. The value dropped significantly around 2008.]
But on top of that, a financial storm

- World-wide financial crisis began in 2007
- Northern Rock collapsed September 2007, after which a lull
- Lehman Brothers collapse September 2008
How many crises?

- Bursting property bubbles in US, Spain, Ireland, etc
- Subprime events in US
- Banking liquidity dried up
- Financial failures including Northern Rock, Lehman Brothers, Irish bailouts, collapse of Iceland’s banking system
- Sovereign debt problems
- Euro area crisis
Extraordinary consequences for demand

- World trade in goods fell 7.7% in 2008Q4 and 9.8% in 2009Q1
- Largest continuous fall in GDP (2008Q2 – 2009Q2, 6.3%) since figures first published on modern basis in 1955
- Large output loss: possibly -12.3% relative to the 1955-2007 trend
- Bank rate at record lows
GDP and trend (1955 to 2007)
Annual GDP growth since 1956
A very unusual recession
Initial monetary response

• A bit slow off the mark, but Bank rate which had been 5.0 from April 2008
  • Cut to 4.5 October 2008
  • Cut to 3.0 November 2008
  • Cut to 2.0 December 2008
  • Cut to 1.5 January 2009
  • Cut to 1.0 February 2009
  • Cut to 0.5 March 2009
• Stick
Bank rate since 1997
Bank rate since 1975
Bank rate since 1851

• We’re in uncharted waters now
But insufficient

- The credibility of monetary policy relies on being able to return inflation to the target.
- But can’t lower rates below zero (or perhaps a little above) because can’t charge interest on cash.
- ZLB – aka a liquidity trap.
Recent history

• Not just a current issue
• Japan: rates cut to zero in the “lost decade”
• US federal funds rate cut to 1% in June 2003
• Considered long ago in *BoE Quarterly Bulletin* Spring 2003: ‘Monetary policy and the zero bound to nominal interest rates’, by Tony Yates
The zero bound

Monetary policy and the zero bound to nominal interest rates

By Tony Yates of the Bank’s Monetary Assessment and Strategy Division.

Some commentators have recently discussed the possibility that certain countries may experience a period of general price deflation. In such a situation, nominal interest rates may reach their lower bound of zero. This article concludes that the evidence available suggests that such a situation is highly unlikely to occur in the United Kingdom. It reviews what the academic literature has to say about the scope for alternatives to cutting interest rates in the improbable event that nominal interest rates do reach zero.
What to do?

1. Use fiscal policy
2. Engineer a depreciation
3. Announce rates will stay low for a long time – ie, that inflation will overshoot at some point and we won’t act (aka forward guidance)
4. **Quantitative easing**
Fiscal policy

• Classic arguments against – Barro-Ricardian equivalence: people expect future taxes to rise and save more now
• But people probably not fully Ricardian
• Governments around the world pursued this policy
• But have now run into sovereign debt problems
• Debt/GDP not historically high – some peacetime episodes have been higher (1918-1923 rise from 119% to 195%).
• Government debt as a proportion of tax below average of last 100 years.
• Since 1692 UK debt > 2011 value for more than 50% of the time
• Reproduced from slides presented by Andrew Scott (LBS) at RES conference 2010
Depreciation

• The depreciation in the UK undoubtedly loosened monetary conditions
• Had less impact than expected
• Likely that real depreciation less, however
• Needed large depreciation if take the view financial services contributing less to net trade
• Sadly, unwinding
Forward guidance

- Riksbank, Canada and the FRB did variants on this: announced rates will stay low for a long time
- Effectively, say we’ll deliberately overshoot target (if applicable)
- This policy intended to get the yield curve down – lowering long rates
- Some doubt it is credible
- Mark Carney has recently floated the possibility
Quantitative easing

• “Print money”
• Actually, Bank buys assets by creating liabilities. These must end up in the banking system, so money is created
• Very close to traditional open market operations, only on longer dated instruments
• For current stats see 2012 Q4 Asset Purchase Facility Quarterly Report
How it might work

• Lowers yields on gilts: mechanism relies on imperfect capital markets, preferred habitats, etc
• Then spills over into other markets such as corporate bonds
• Raises the prices of assets, that might then raise spending
• Raises expectations of future inflation (a good thing when the risk is deflation)
Asset purchases have been enormous

- March 2009 - target £200bn (~ 14% GDP)
- Achieved by December 2009, almost entirely gilts (government bonds)
- Another £75bn from October 2011 (QE2)
- February 2012, another £50bn
- July 2012, another £50bn - total asset purchases to £375bn
- ~ 30% of total UK net public debt (OBR projection for March 2013)
Cumulative asset purchases by type: amounts outstanding

Is there a risk of inflation spiralling out of control?

- QE can be reversed
- Rates can be raised
- Few doubt the MPC are tough on inflation
- Hyperinflation is really caused by money finance of the government debt, and that is not what we have here
Gilt yields

- Working Paper No. 393 “The financial market impact of quantitative easing” July 2010
- Concludes gilt yields fell by 100bp, based on event studies and econometric analysis
- Harder to determine affect on other prices – bond yields may have fallen
UK ten-year nominal spot gilt yields and selected forward rates(a)

Sources: Bloomberg and Bank calculations.
Effect on macroeconomy

• QB Article 2011 Q3: *The United Kingdom’s quantitative easing policy: design, operation and impact*

• Peak impact on level of real GDP 1½% - 2% and CPI inflation of ¾ - 1½ pp

• Roughly same as cut in Bank Rate of between 150 to 300 basis points

• Unlikely to be permanent however
Coda

- So far, been addressing demand shock
- But what on earth has happened to productivity?
- If there has been a massive supply shock, demand management bets are off
- And perhaps a related issue, what’s wrong with the banks?
Log productivity (GDP/hours)
Log productivity (GDP/hours)
Productivity always tanks in recessions but less so this time – and recovery slow
No recovery – productivity remains flat

Percentage change since pre-recession peak in output

Dashed portions represent recessions

Quarters

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

1990

1979

2008
What’s going on?

• Labour hoarding in expectation of a recovery – after five years?
• Slower capital stock growth – nowhere near enough
Capital services – business sector
What’s going on?

- Labour hoarding in expectation of a recovery – after five years?
- Slower capital stock growth – nowhere near enough
- Might be unobserved scrapping but indicators such as liquidations don’t support that
- Wages have been growing slowly – but that works via capital substitution
- So some kind of TFP shock?
TFP

• Fixed costs – need waiters even if restaurant empty (so productivity responds endogenously to demand)?
• Something to do with finance, especially among SMEs?
• Cautious behaviour?
• Hysteresis – but unemployment actually low given what has happened?
• Frankly, a puzzle
Banks need to recapitalise

- Tier one capital is rock-solid assets
- Guaranteed to be there in case of unexpected losses
- RBS’s leverage (total tangible assets / tier 1 capital) 25 end-2004; peak 42 end-2007
- Banks were over-leveraged - amplifies risk (less of a buffer against losses)
- To lower, can raise capital or lend less
Banks have stopped lending

Funding for non-financial corporations: *Trends in Lending* January 2013
Not getting better

- Year-on-year growth in the stock of lending to UK businesses negative in the three months to November
- Stock of lending to small and medium-sized enterprises and large businesses also contracted
- Mortgage approvals for house purchase and remortgaging higher in the three months to November compared to the previous three months
Any questions?