
CHAPTER 10

THE NEW CONVENTIONAL MONETARY POLICY

Reserve Satiation and Quantitative Easing

The Bank of Japan's Innovations Since 1998

The Euro Area Yield Curve During A Crisis

**a crash course
on crises:**

macroeconomic

concepts for

run-ups,

collapses, and

recoveries

**markus k. brunnermeier
and ricardo reis**

OLD CONVENTIONAL: A CENTRAL BANK CAN HELP ATTENUATE A CRISIS IN 3 WAYS

Lending to banks to
replace missing
funding from wholesale
interbank markets.

Buying government
bonds to shift beliefs
and fight liquidity
crises.

Reverting capital flows
across regions using
its balance sheet.

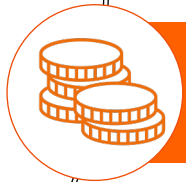
CONVENTIONAL CENTRAL BANKING



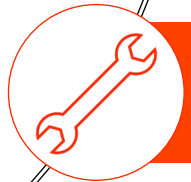
Dual mandate: stabilise inflation and business cycle



If recession: lower interest rates to spur aggregate demand, stabilising output and inflation.



In recession driven by financial crises, answer appears to be the same



But policy tools are very different...

NEW CENTRAL BANKING: RESERVE SATIATION AND QUANTITATIVE EASING

- Following 2010, central banks started acting very differently from what they had done in previous decades.
- Their balance sheets grew to become very large as a result of two fundamental changes in the conduct of monetary policy.

Reserve satiation

Targeting long-term interest rates

RESERVE SATIATION AND QUANTITATIVE EASING

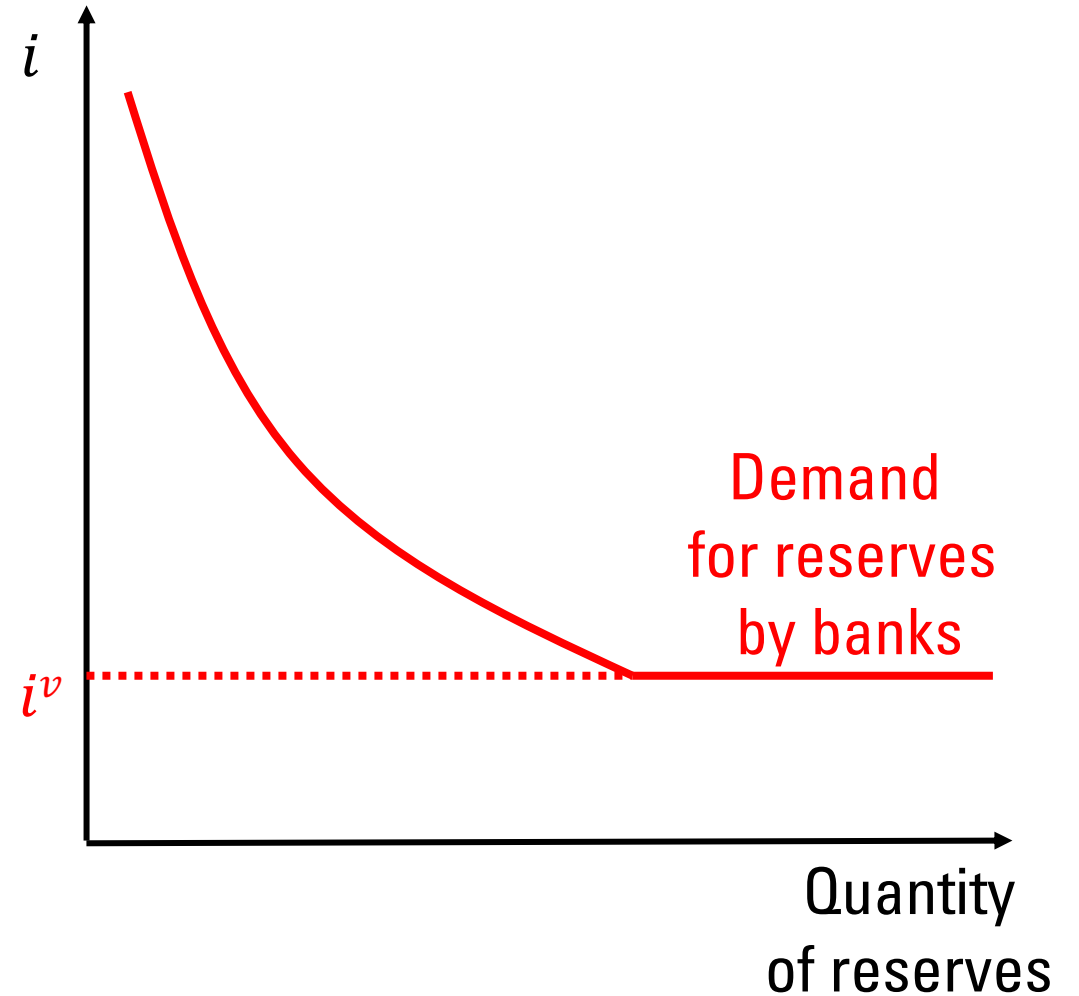
THE MARKET FOR RESERVES

What are reserves?

- Deposits by banks at the central bank
- The unit of account that is used by banks to settle transactions.
- Pay interest rate i^v

Demand for reserves

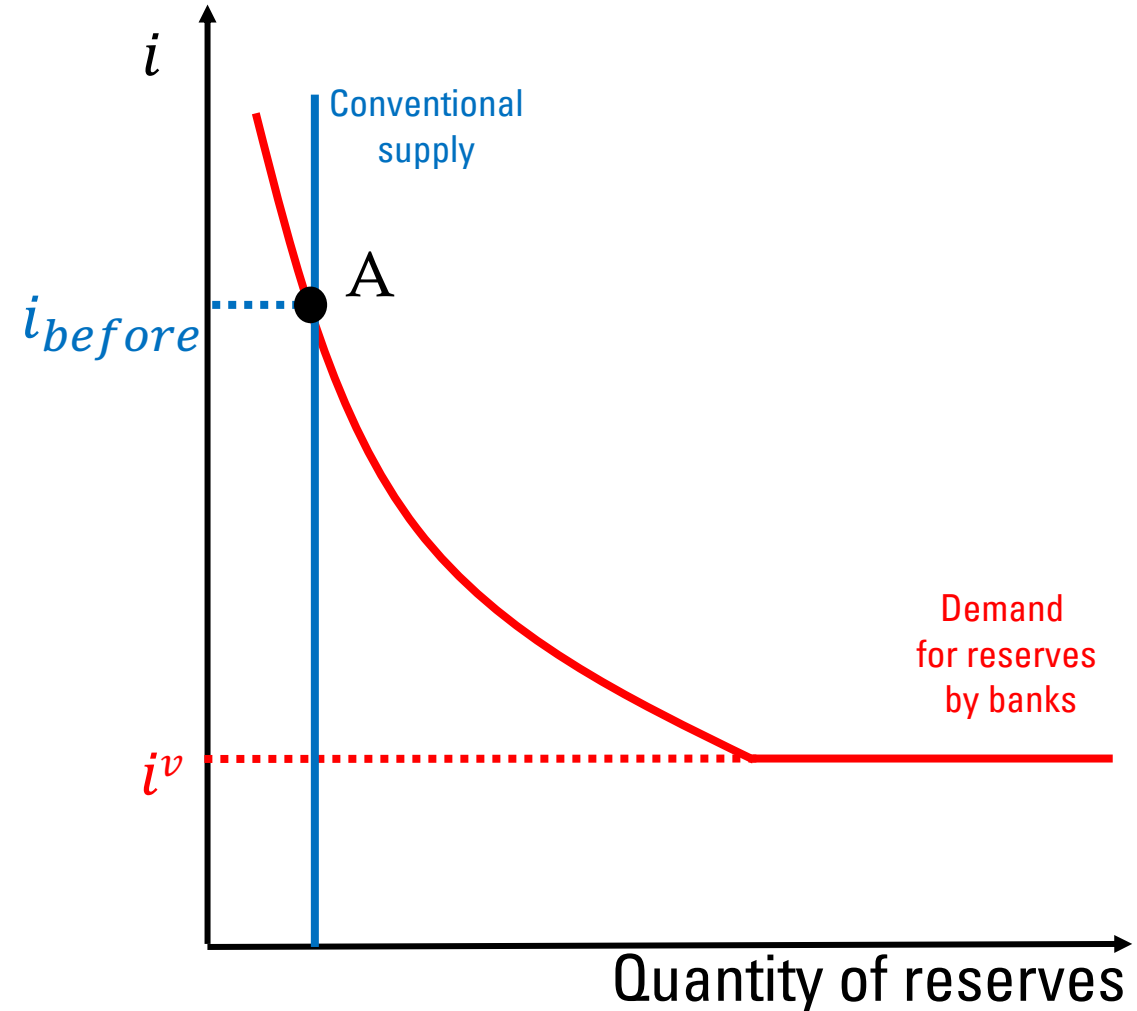
- Banks borrowing in interbank credit as an imperfect substitute for reserves.
- Interbank rate minus rate on reserves is the **opportunity cost** of reserves.
- Demand for reserves rises with $i - i^v$



CONTROLLING INTEREST RATES: CONVENTIONAL

Supply of reserves

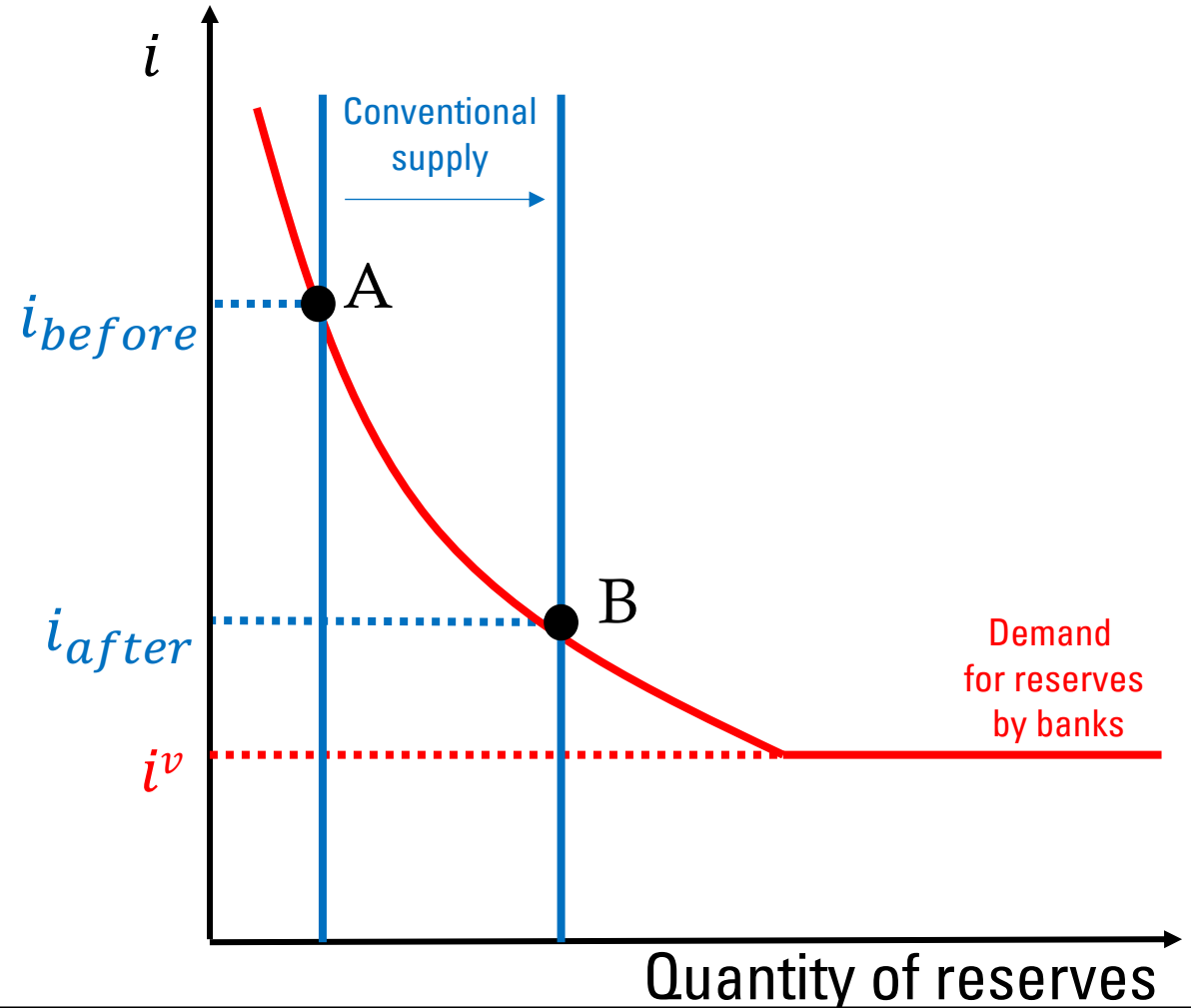
- Controlled by central bank.
- Vertical line
- Can shift to the right by choice of central bank.
- Does so by crediting the balances of reserves of banks (usually after buying some bonds from them, but could even do it for free— helicopter drop of money)



CONTROLLING INTEREST RATES: OLD STYLE

Central bank targets an interbank rate i

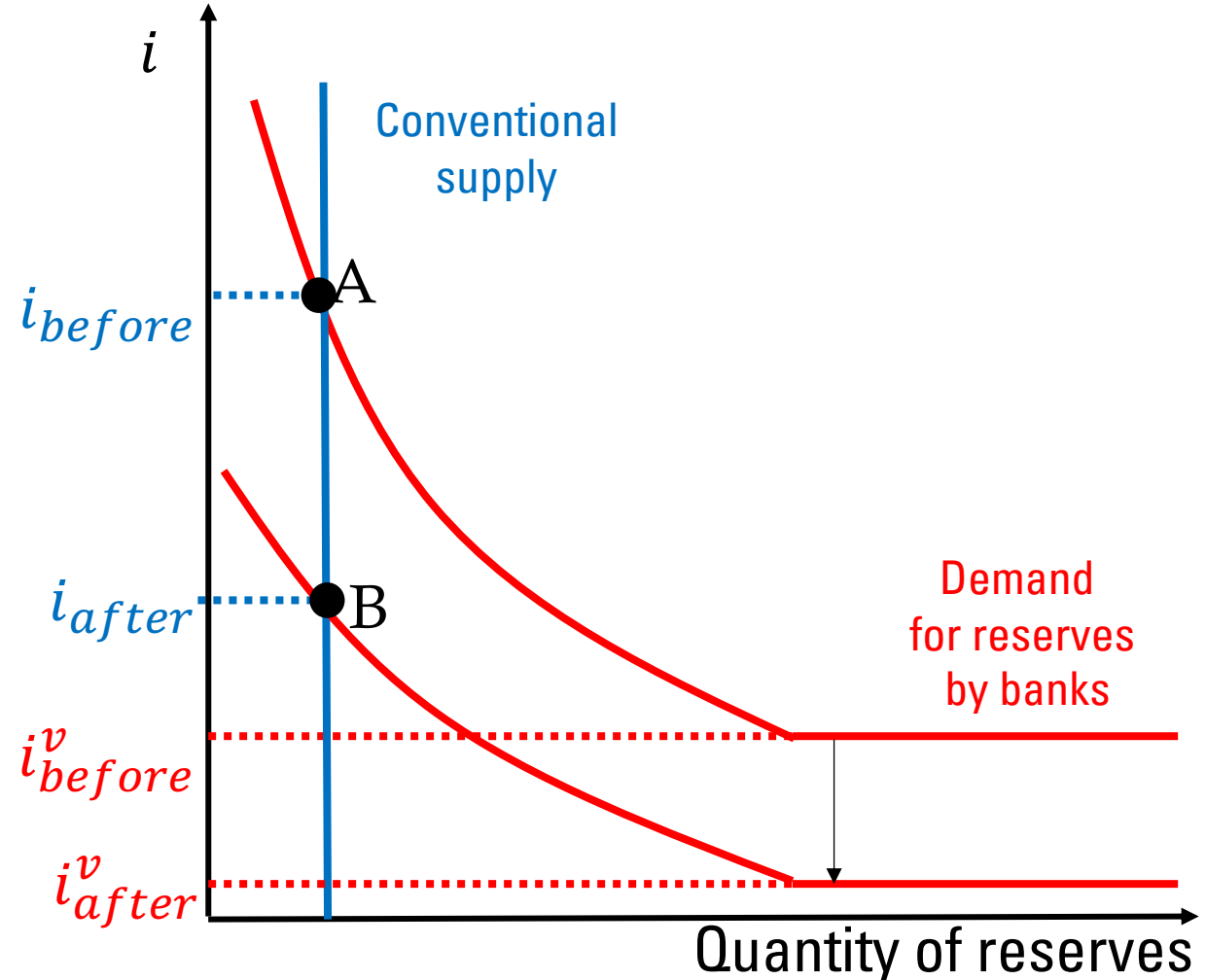
- If central bank wants to lower i :
- Increase supply of reserves.
- Interbank rate falls because banks have less demand for interbank loans now that they have more reserves.
- Fall in $i - i^v$ lowering i



CONTROLLING INTEREST RATES: ALTERNATIVE

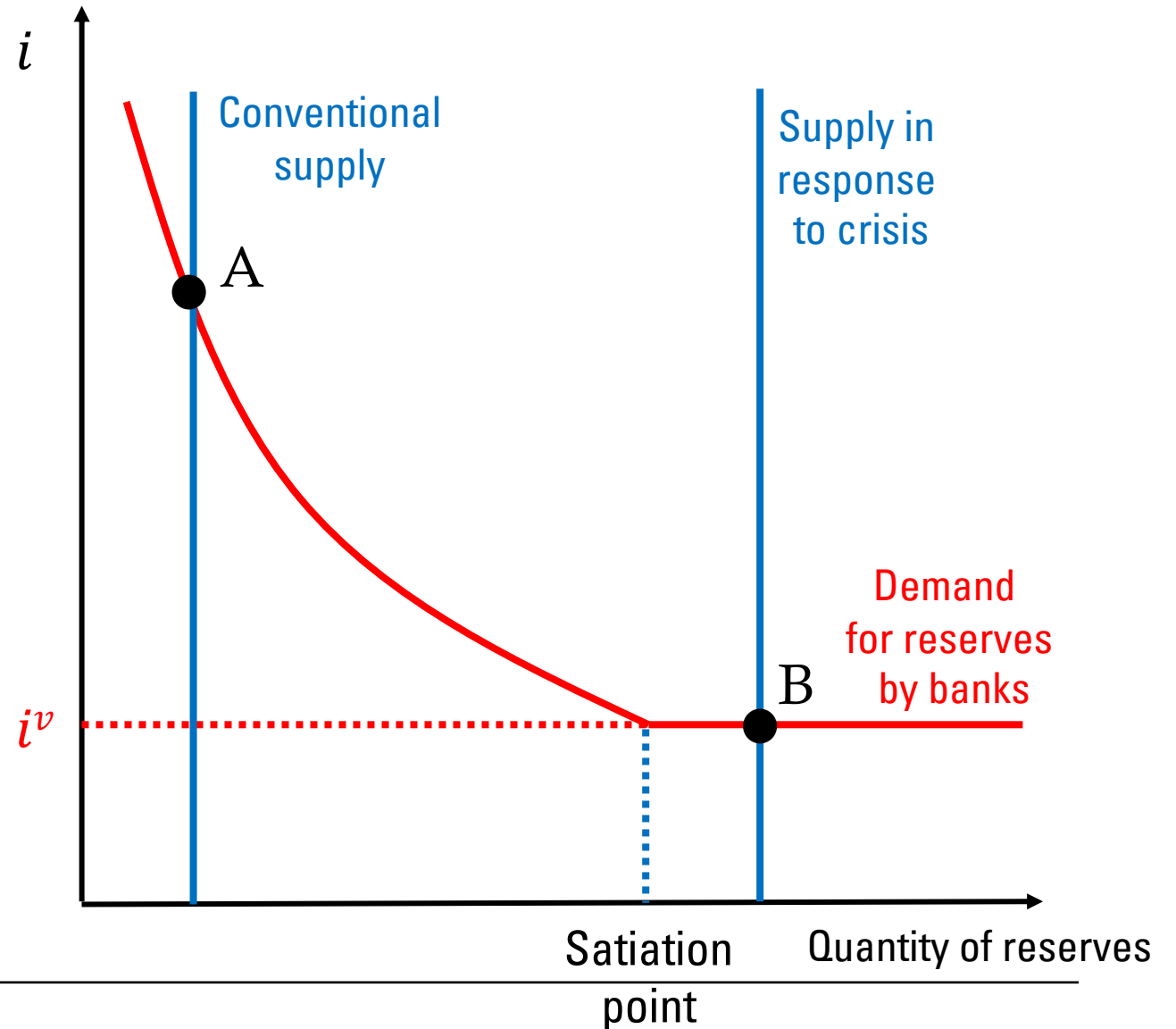
Central bank targets an interbank rate i

- If central bank wants to lower i :
- Instead, can lower i^v
- Interest on reserves as the effective policy tool



RESERVE SATIATION

- In crisis, need to supply many reserves as the financial sector needs them.
- Drive $i - i^v$ to zero
- **No opportunity cost of reserves, banks satiated in their demand for reserves.**
- Creating reserves costs the central bank nothing, so their opportunity cost should be zero. **Setting $i^v = i$ is sometimes known as the *Friedman Rule***
- Now, changing i^v is sole driver of i



TARGETING LONG-TERM INTEREST RATES

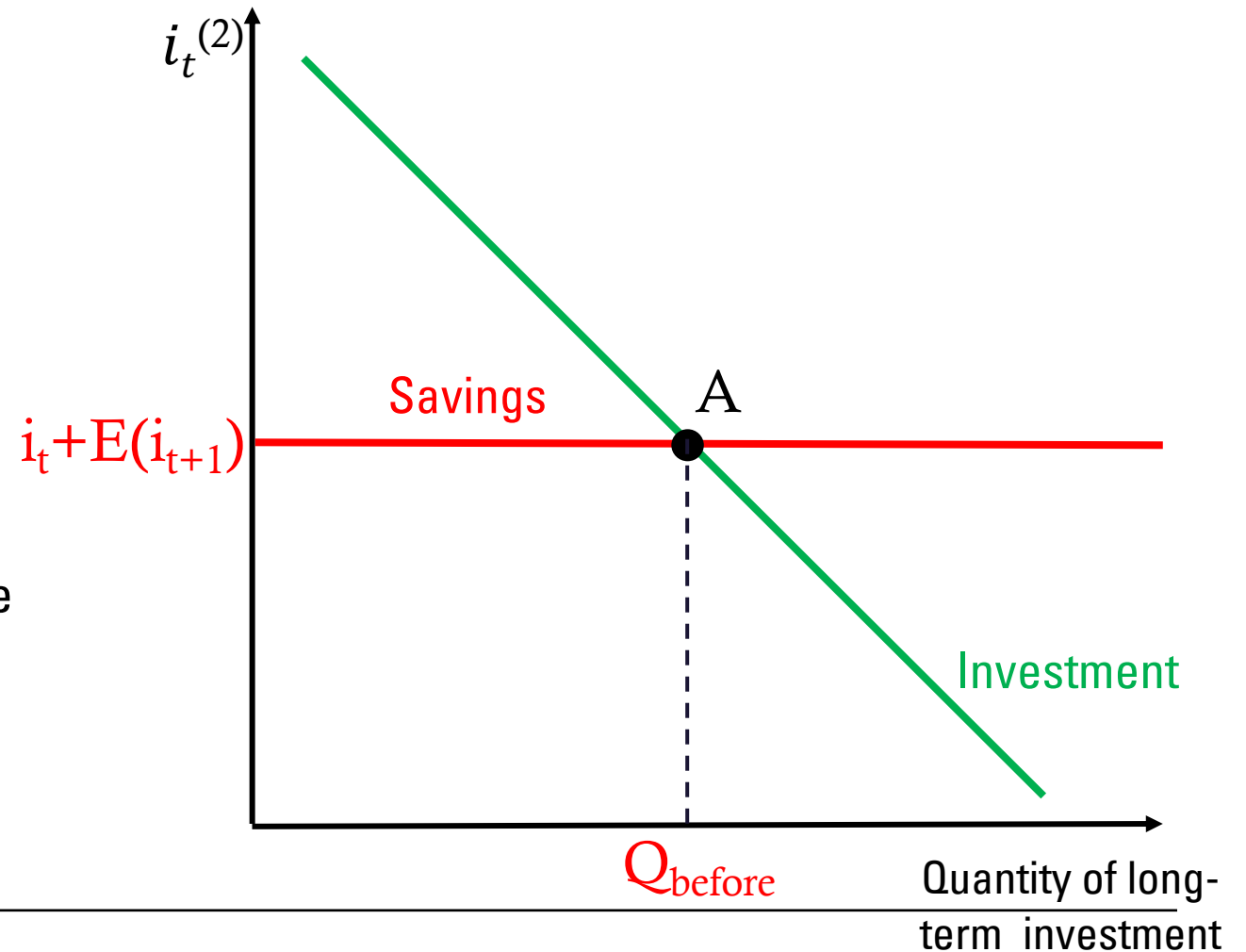
- The interest on reserves is an **overnight rate**.
 - During financial crises, it **may not be enough** to stimulate inflation and real activity by lowering the overnight rate to zero.
 - For many investments and savings decisions, the relevant rates are those in months and years.
 - Hence, central banks want to **lower these long-term maturity interest rates** in order to **maximise stimulus**.
 - Unconventional monetary policy: *going long*.
 - A model to understand this...
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MODEL OF SAVINGS AND INVESTMENT IN LONG-TERM

- A saver can either invest for two periods or roll over two successive one-period investments.
- Next period's interest rate is not known.

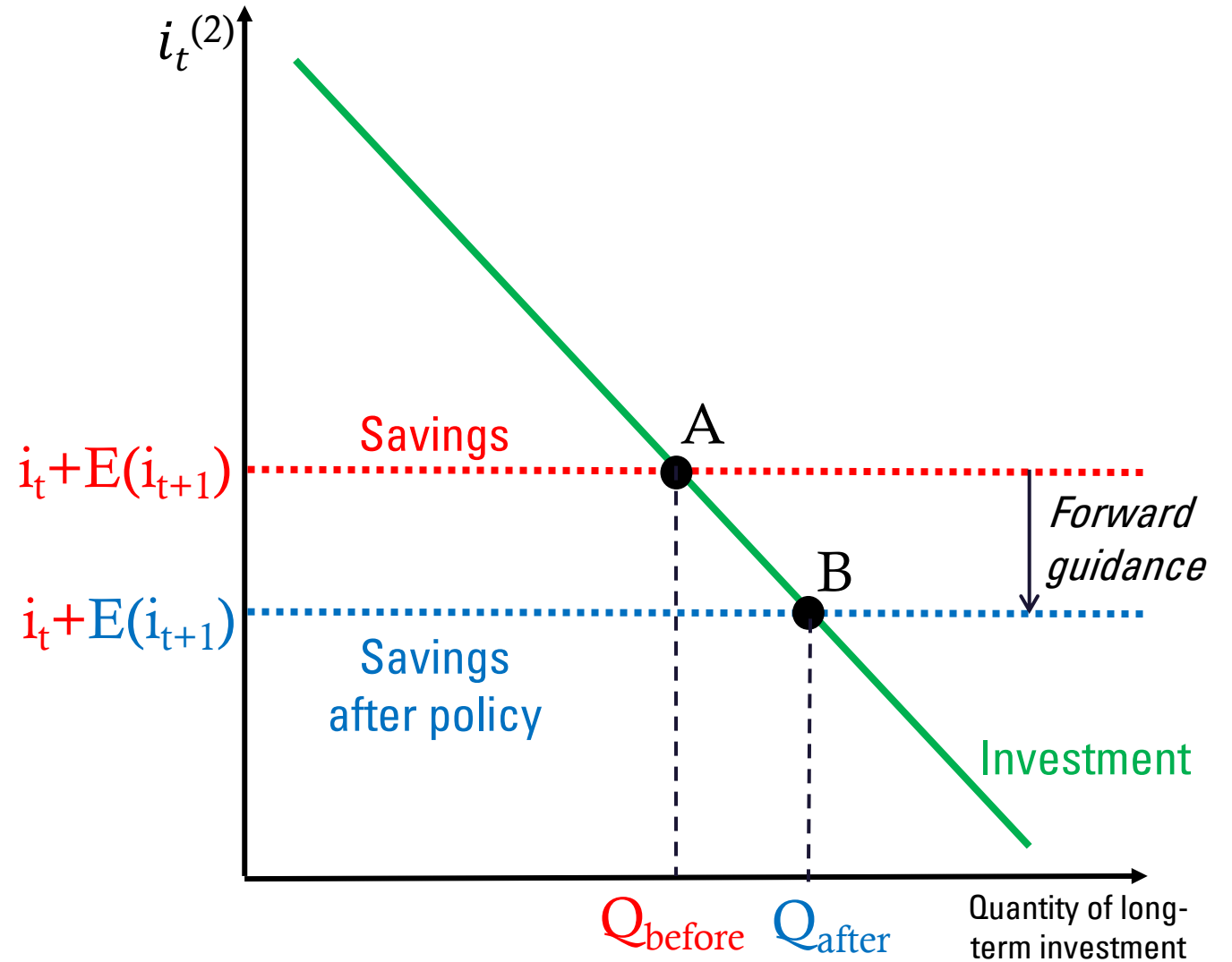
Forms expectation: $E[i_{t+1}]$

- Under **efficient financial markets**, risk from this roll over strategy can be **diversified away**, so supply of two-period savings is the horizontal line at $i_t + E[i_{t+1}]$.
- **Downward sloping demand** for funds for real investment.



FORWARD GUIDANCE

- Making announcements on future policy interest rates and committing to them.
- This lowers the $E[i_{t+1}]$ perceived by investors.
- Shifts the demand curve vertically downwards.
- Increases investment, stimulates economy.

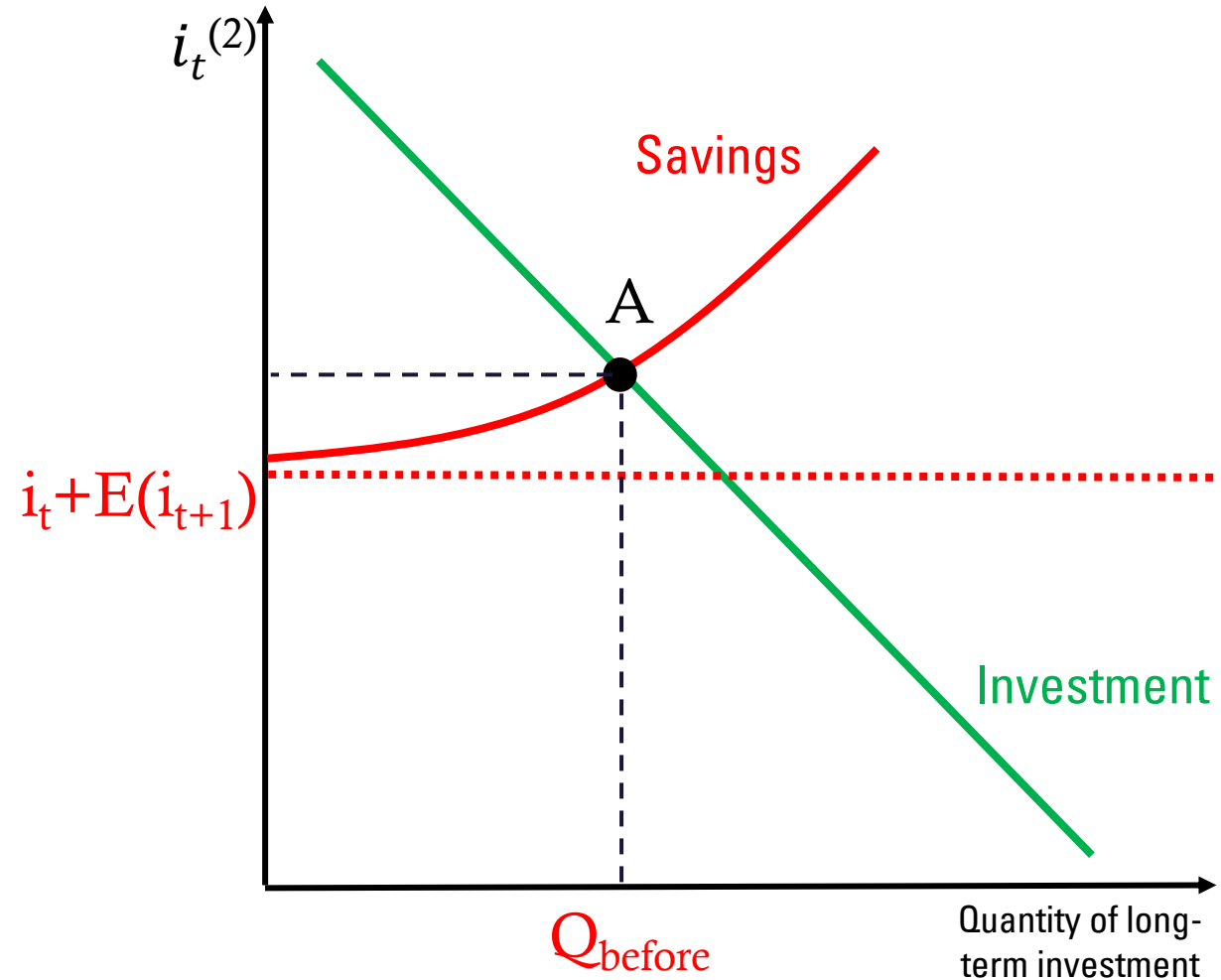


IMPERFECT FINANCIAL MARKETS

- Investors require **term premium** tp_t to **compensate for the risk** of holding two-period bonds.

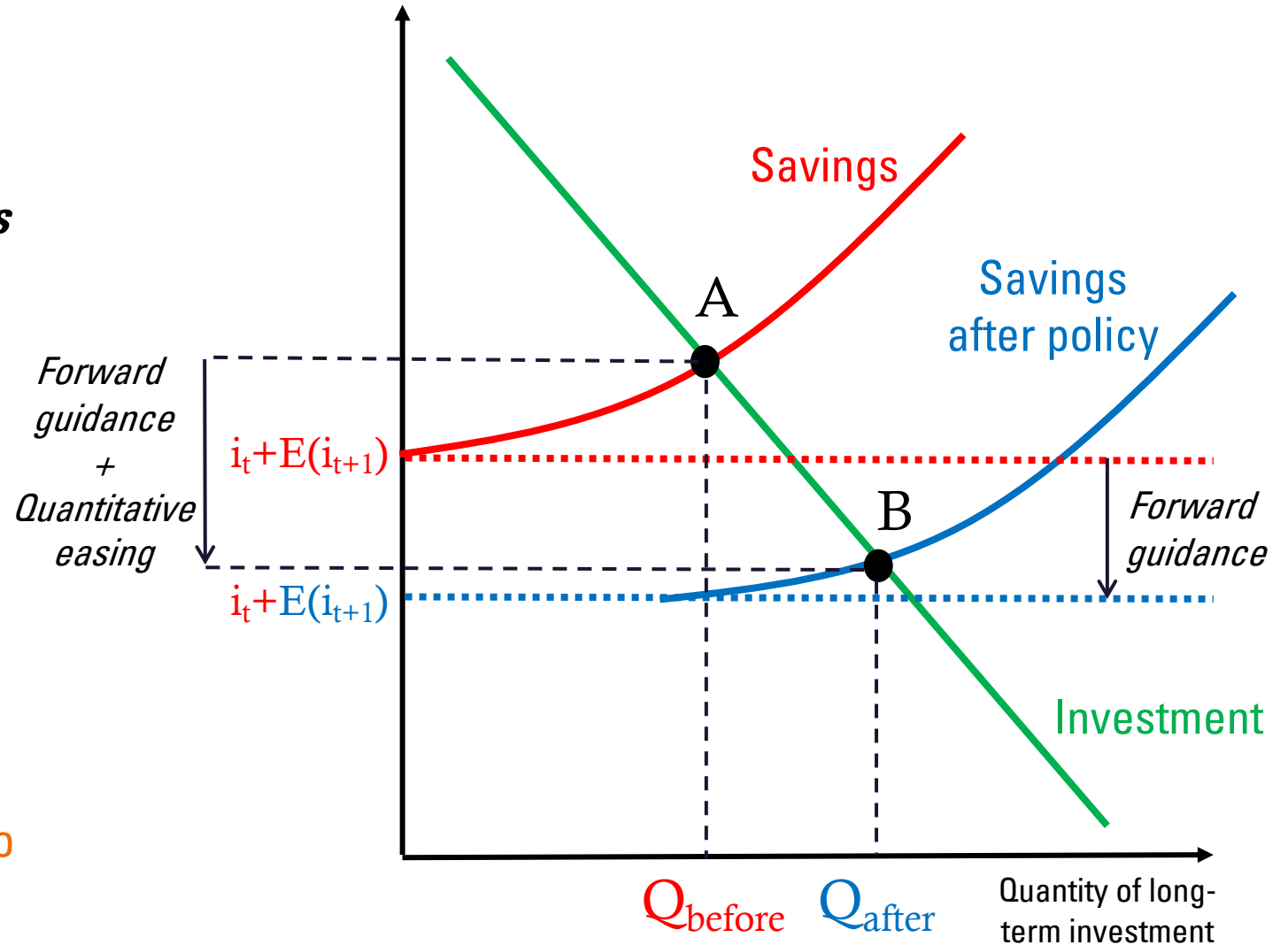
$$i_t^{(2)} = i_t + E[i_{t+1}] + tp_t$$

- This is shown as the red upwards sloping savings curve.
- At point A now, less investment



QUANTITATIVE EASING

- *Use newly issued reserves to buy government bonds of longer maturities*
- Increasing the demand for longer-term maturity bonds.
- Raises their price and **lowers the compensation for liquidity or risk** and thus reduces tp_t
- This shifts the demand curve horizontally to the right.
- **Combined with forward guidance, go to point B.**



CONSEQUENCE OF UNCONVENTIONAL POLICY

Balance sheet of a central bank looks different.

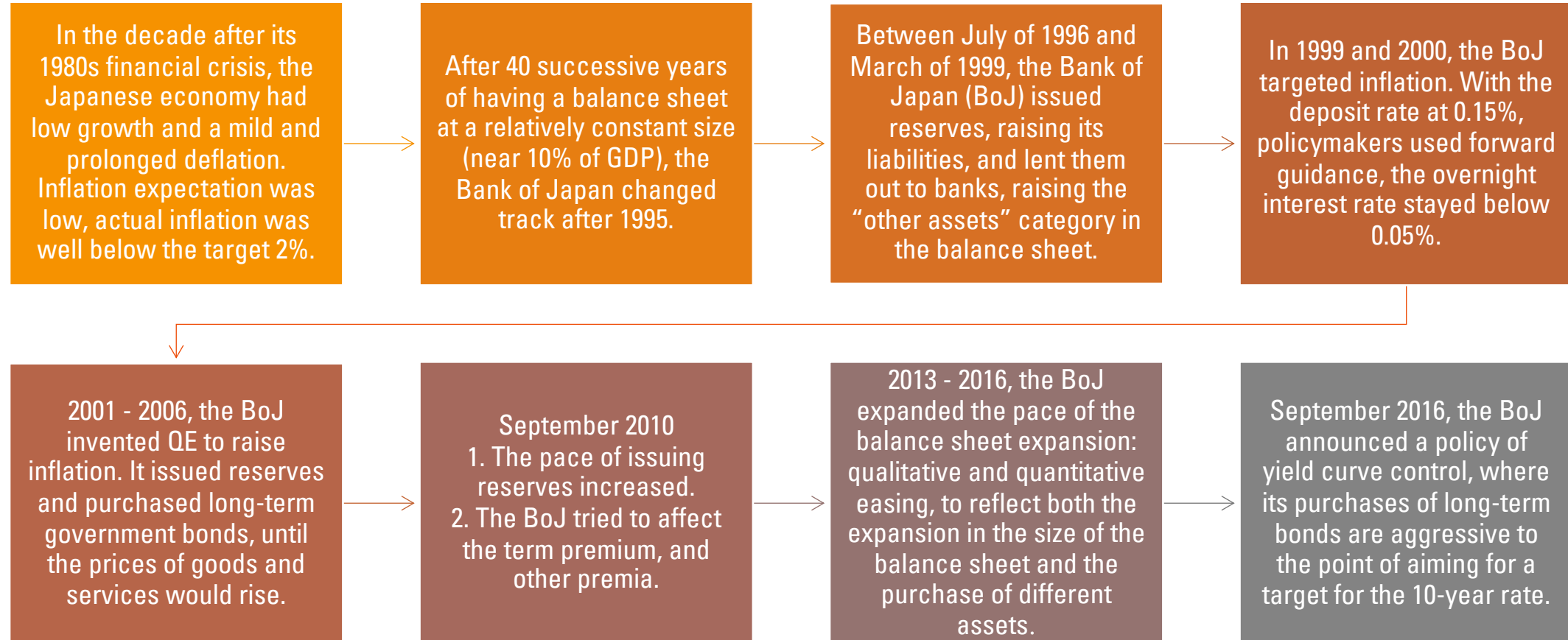
- **Reserve satiation** requires **larger** balance sheet since **reserves are liabilities** of central banks.
- **Quantitative easing** requires a **maturity mismatch** between overnight reserves in the liabilities side and the long-term bonds in the asset side of the balance sheet.

One side effect:

- Changes in $i^{(2)} - i$ now affect the **net income flow** earned by the central bank.
 - Central bank generates or loses significant resources in the conduct of its monetary policy.
 - **Fiscal support** becomes more relevant, putting strains on the **independence of the central bank**.
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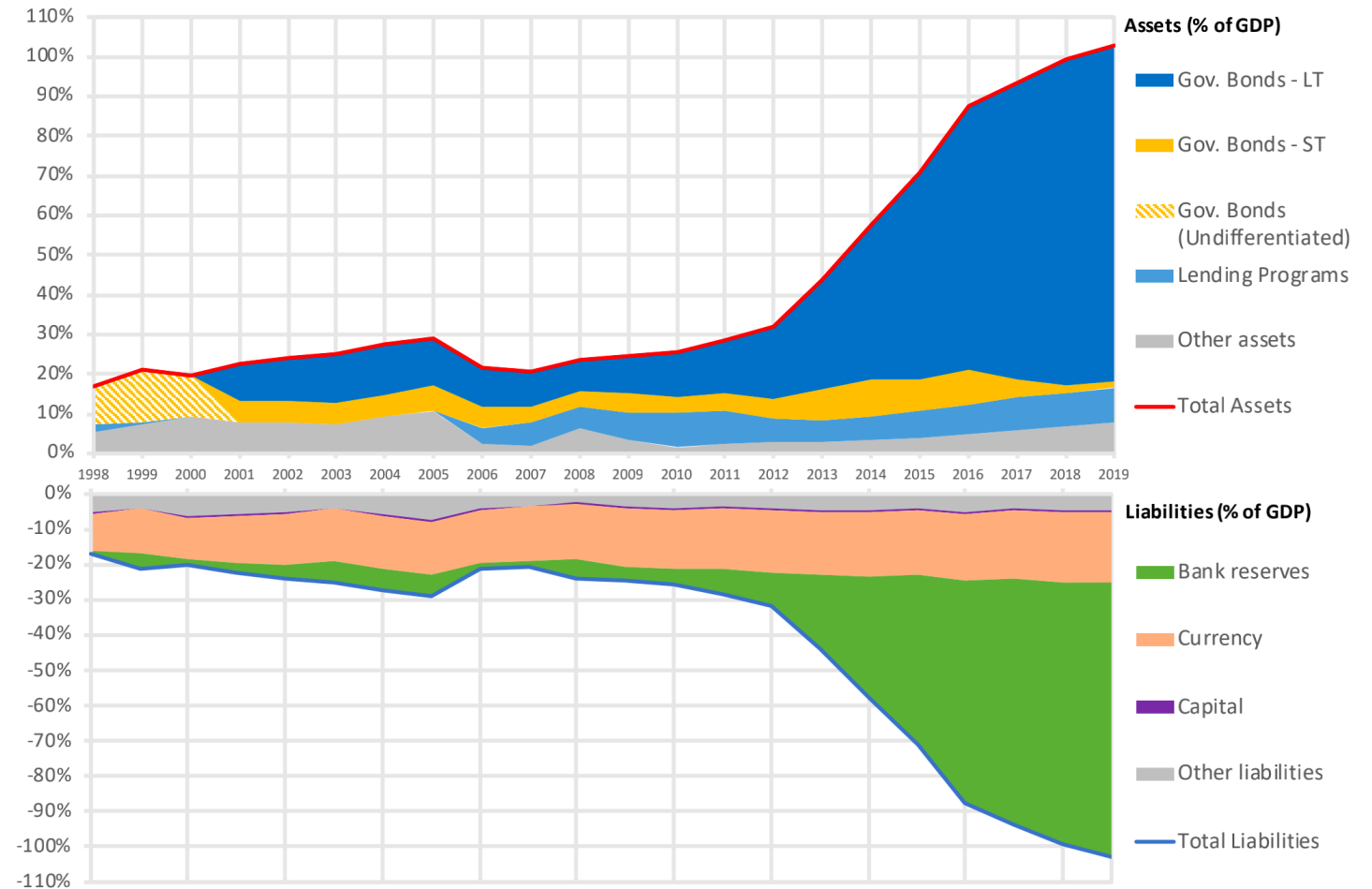
THE BANK OF JAPAN'S INNOVATIONS SINCE 1998

SEQUENCE OF EVENTS



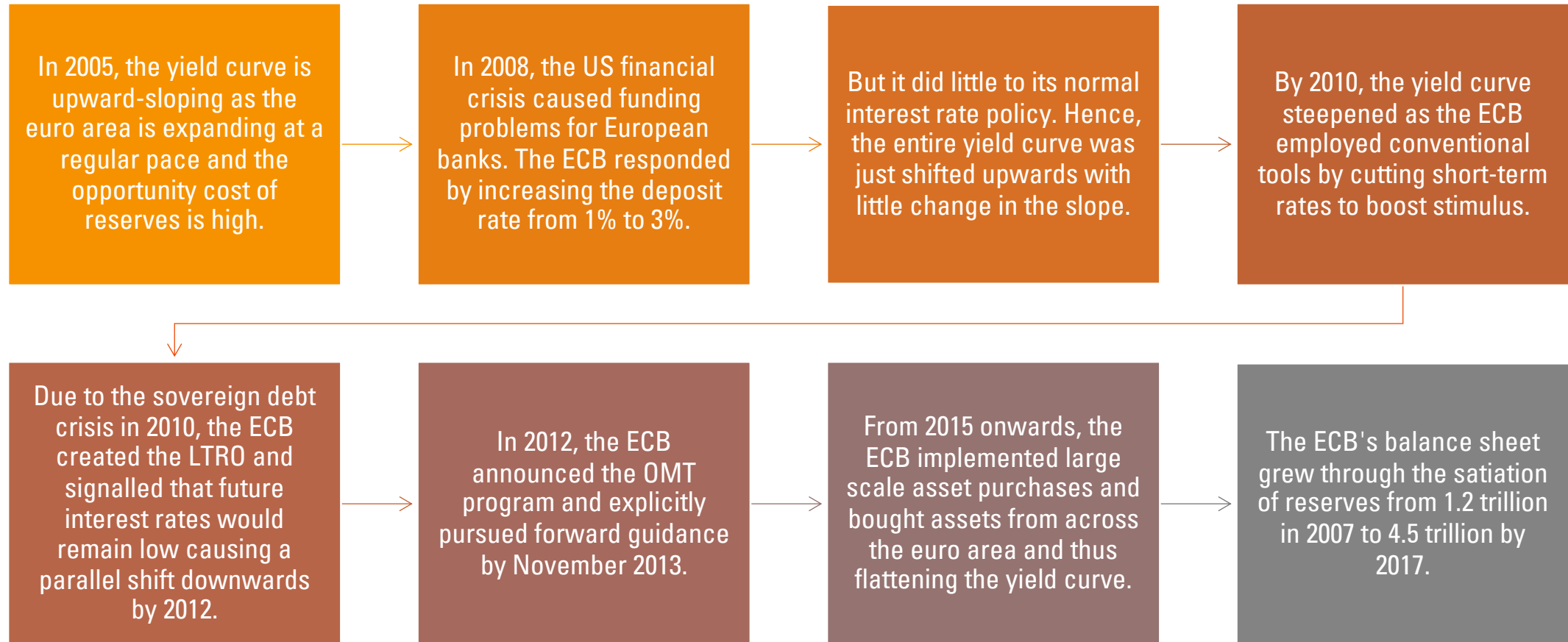
THE BALANCE SHEET OF THE BANK OF JAPAN

- Consequences of actions: growing balance sheet
- On liabilities side: reserves increase, satiation of reserves.
- On asset side: long-term government bonds, as targeting long-term rate.



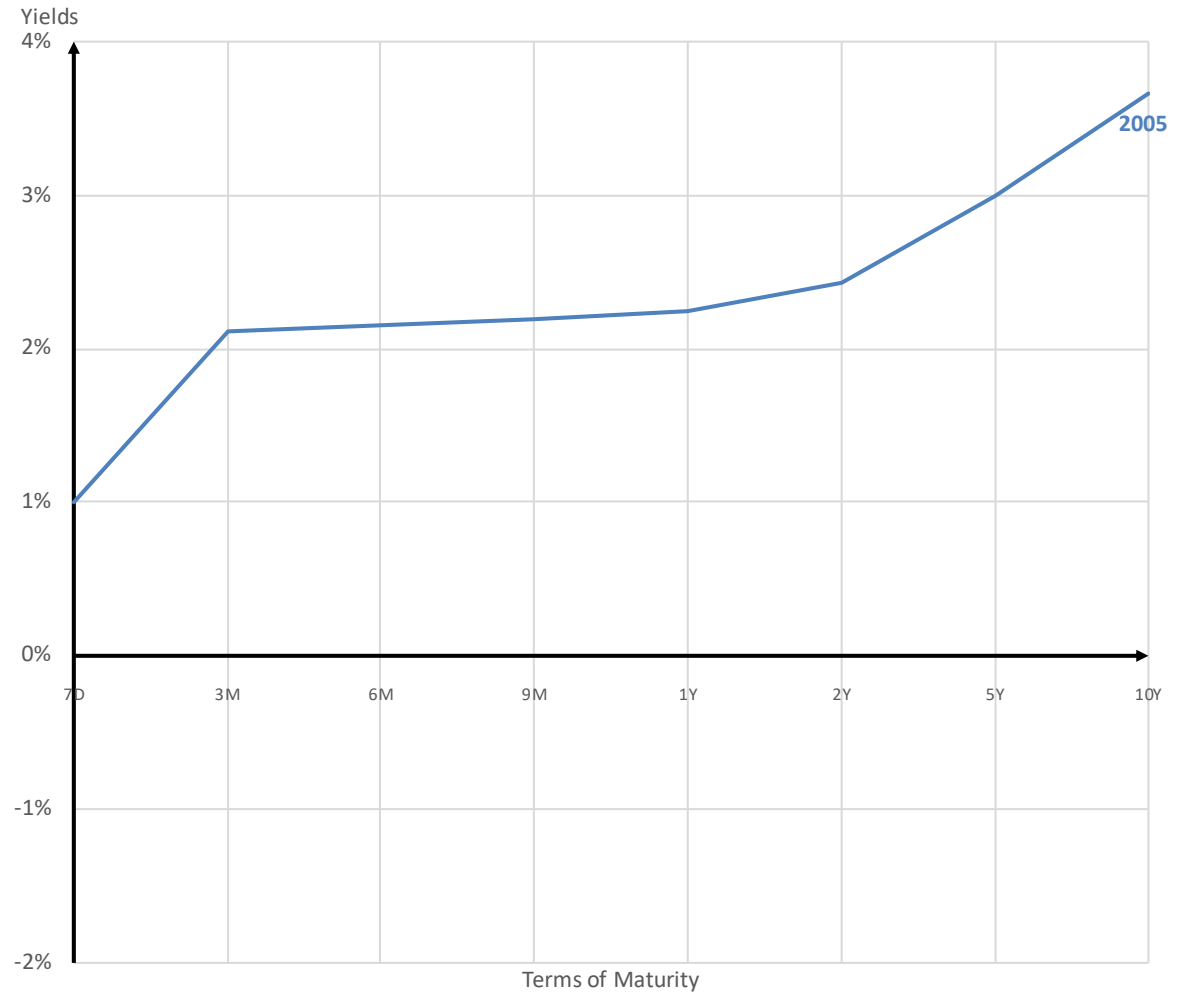
THE EURO AREA YIELD CURVE DURING THE CRISIS

SEQUENCE OF EVENTS



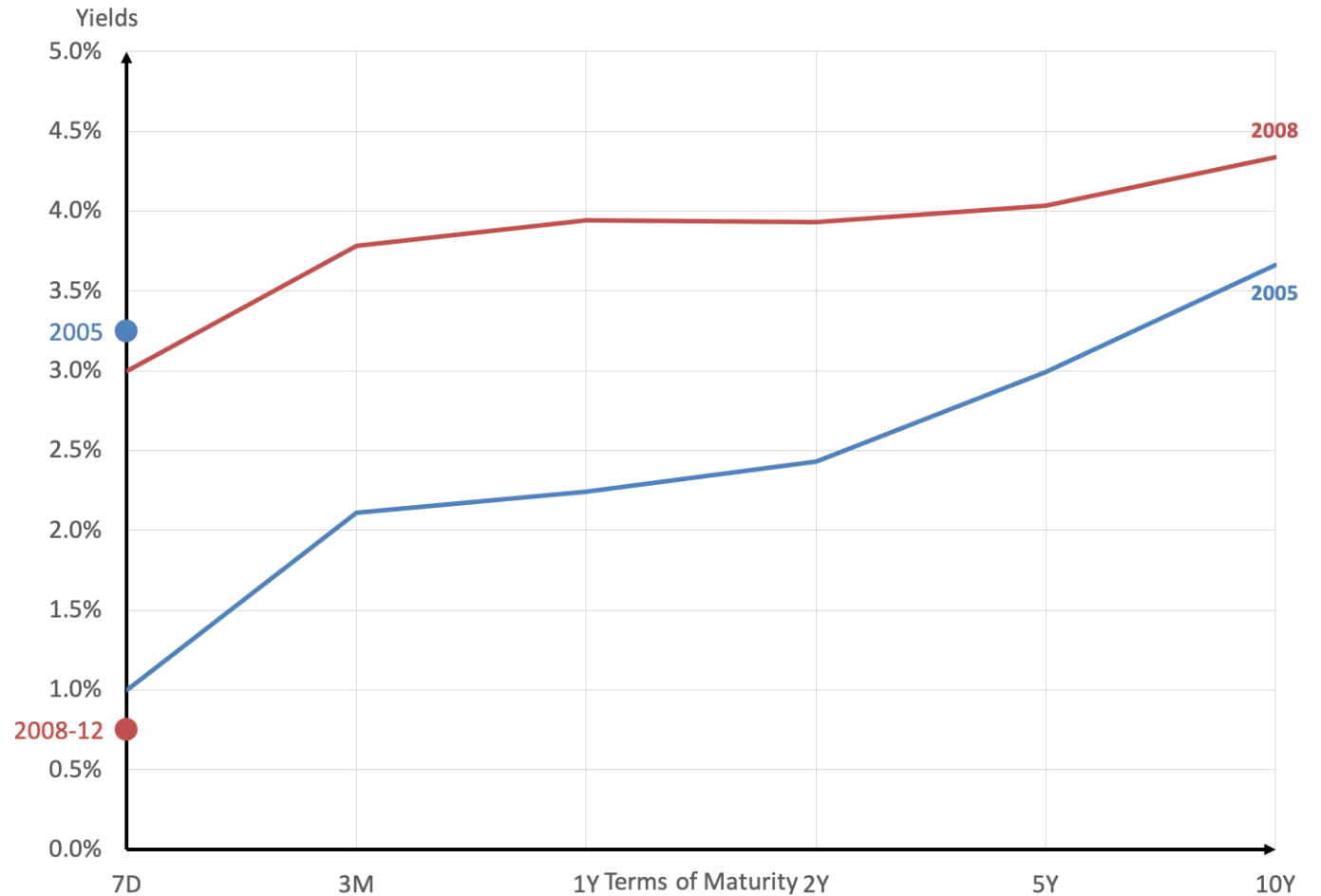
THE EURO AREA YIELD CURVE

- Plots the interest rate (or yield) of government bonds by maturity.
- In figure 7 days, 3 months, 6, month, 9 months, 1 years, 2 years, 5 years and 10 years
- These are i and in $i^{(2)}$ and in between
- Slopes upward as term premium rises with maturity



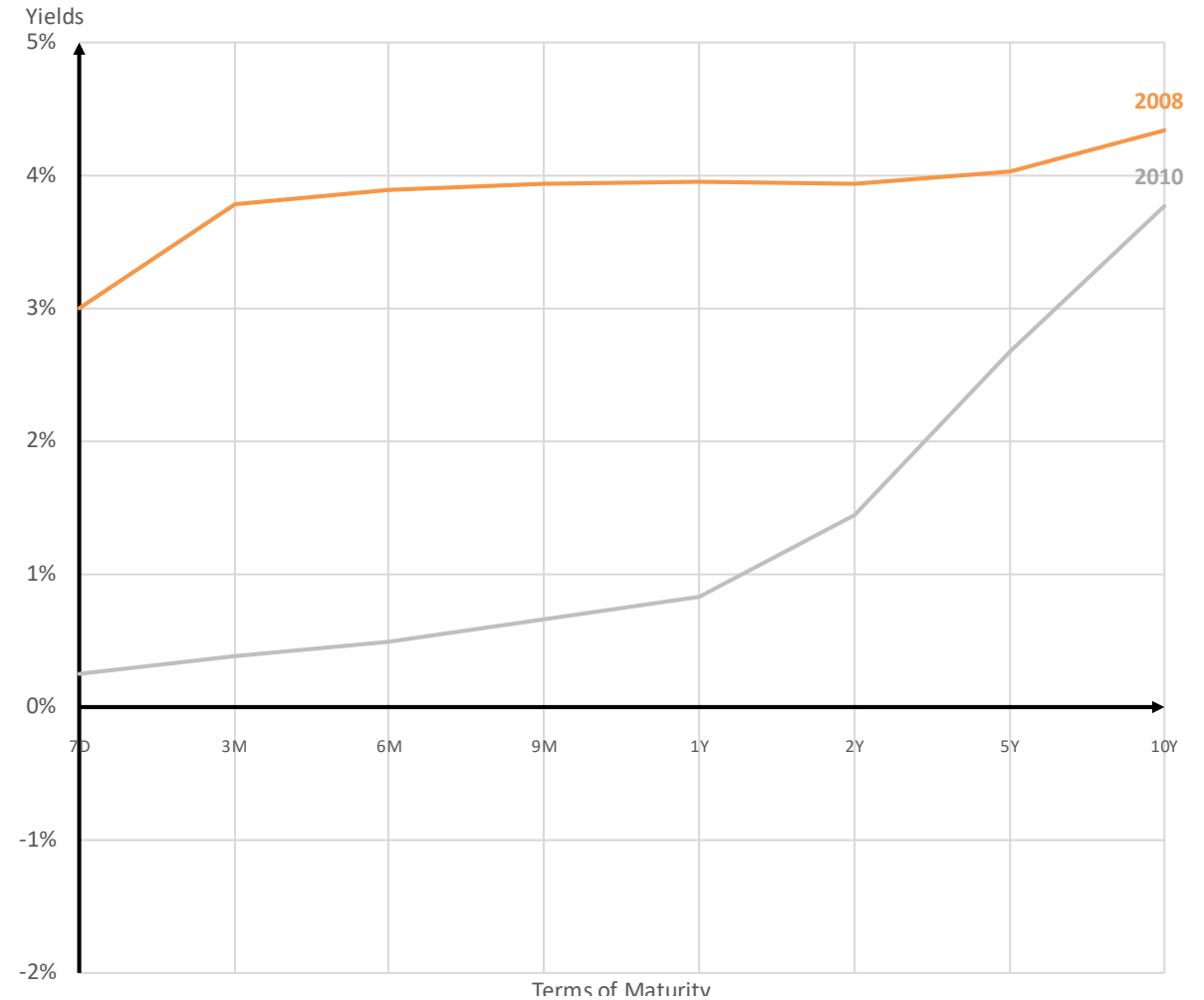
RESPONSE TO US FINANCIAL CRISIS

- ECB raised the deposit rate.
- Vertical intercept shifts upwards from 1% to 3%
- Partly temporary, so smaller increase at longer maturities.
- The yield curve shifted up and became a little flatter



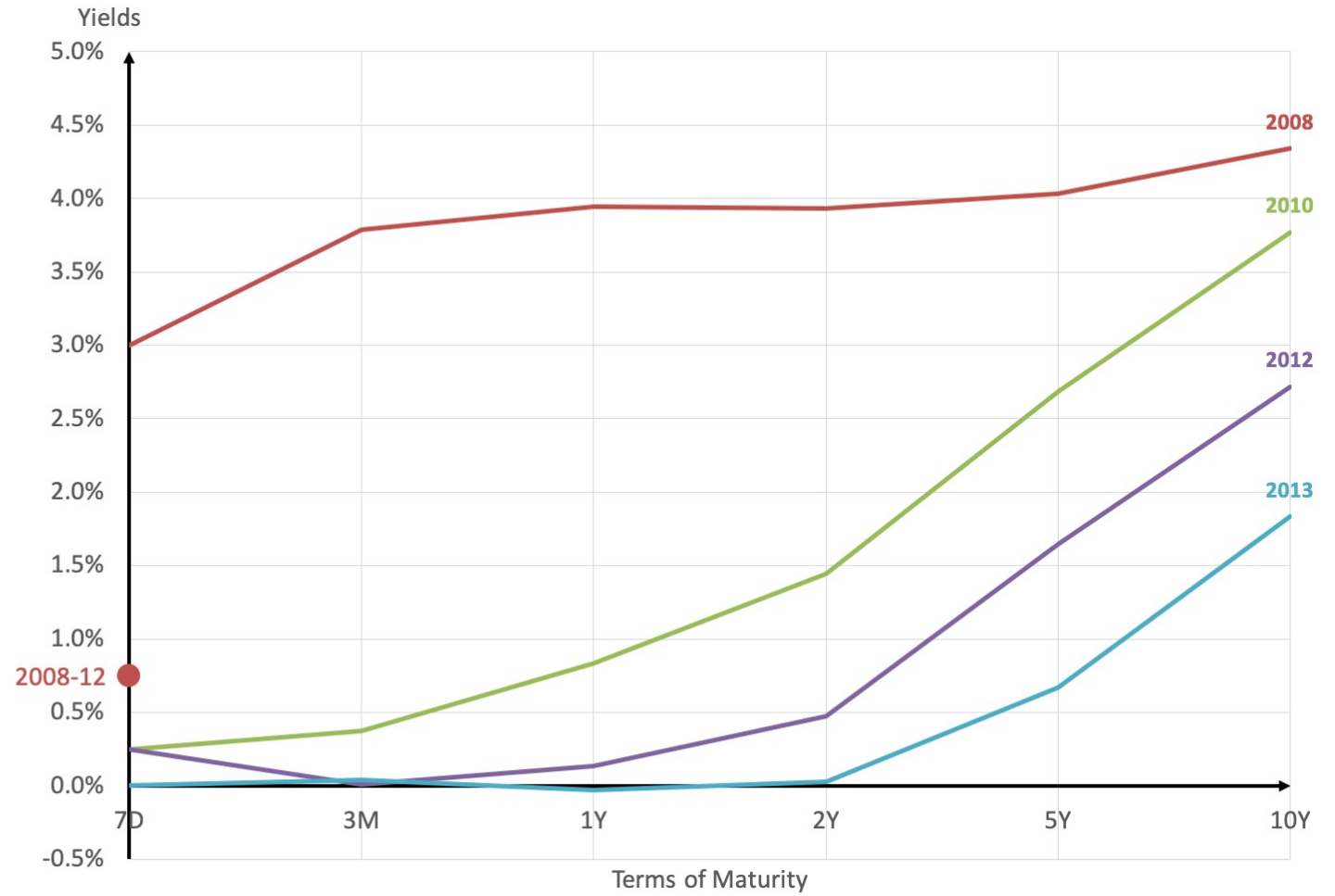
RESPONSE TO EA CRISIS

- Between 2008 and 2010 EA economy is in a recession
- Conventional monetary policy: ECB **cut short-term rates**
- To boost economy
- The yield curve steepened.



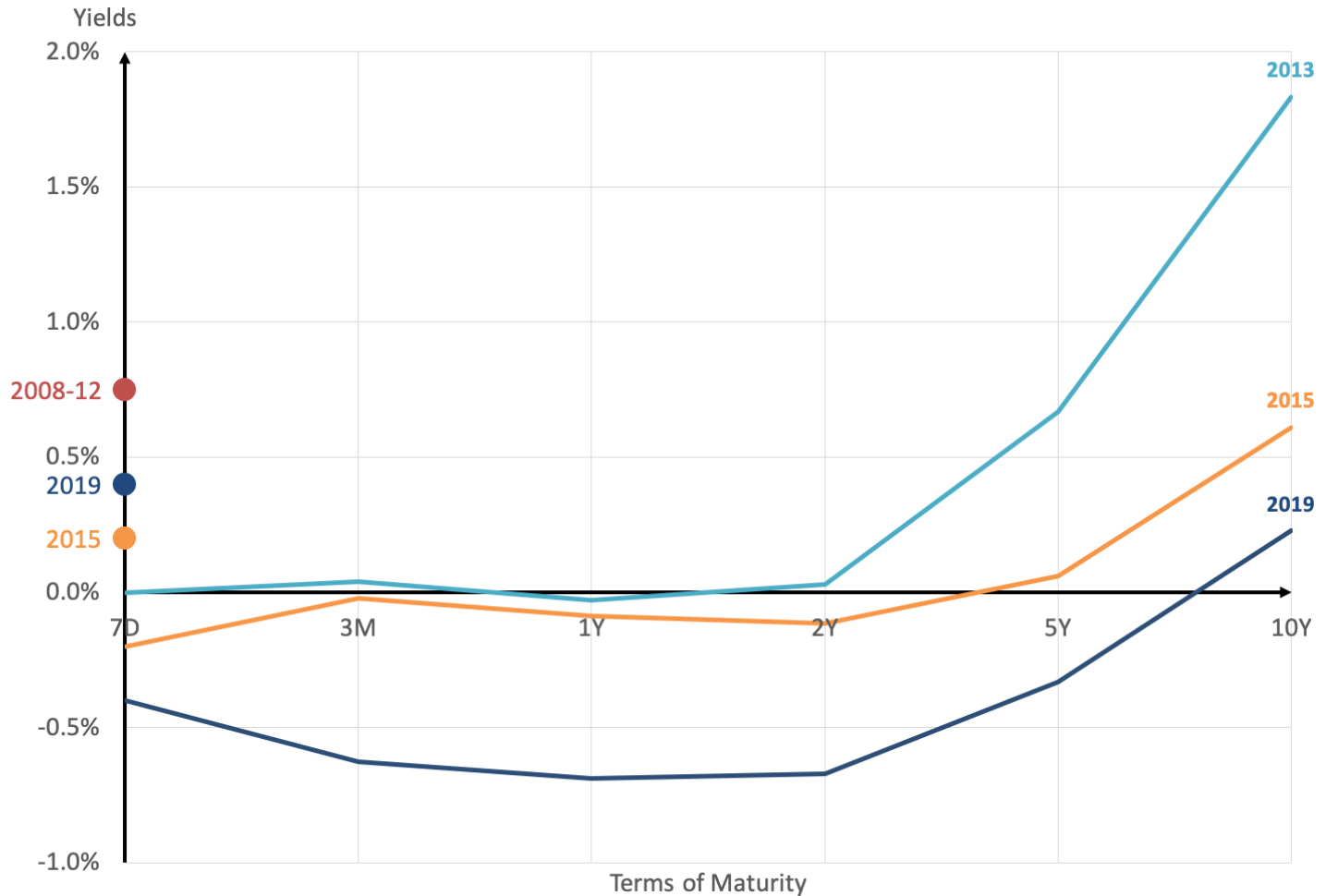
RESPONSE TO EA FINANCIAL CRISIS

- Unconventional policy
- ECB created the **LTRO**, signalled that further interest rates would remain low.
- Causing a shift downwards in 2012.
- In 2012, ECB announced the **OMT**, pursued **forward guidance**.
- Further downward shift in 2013.

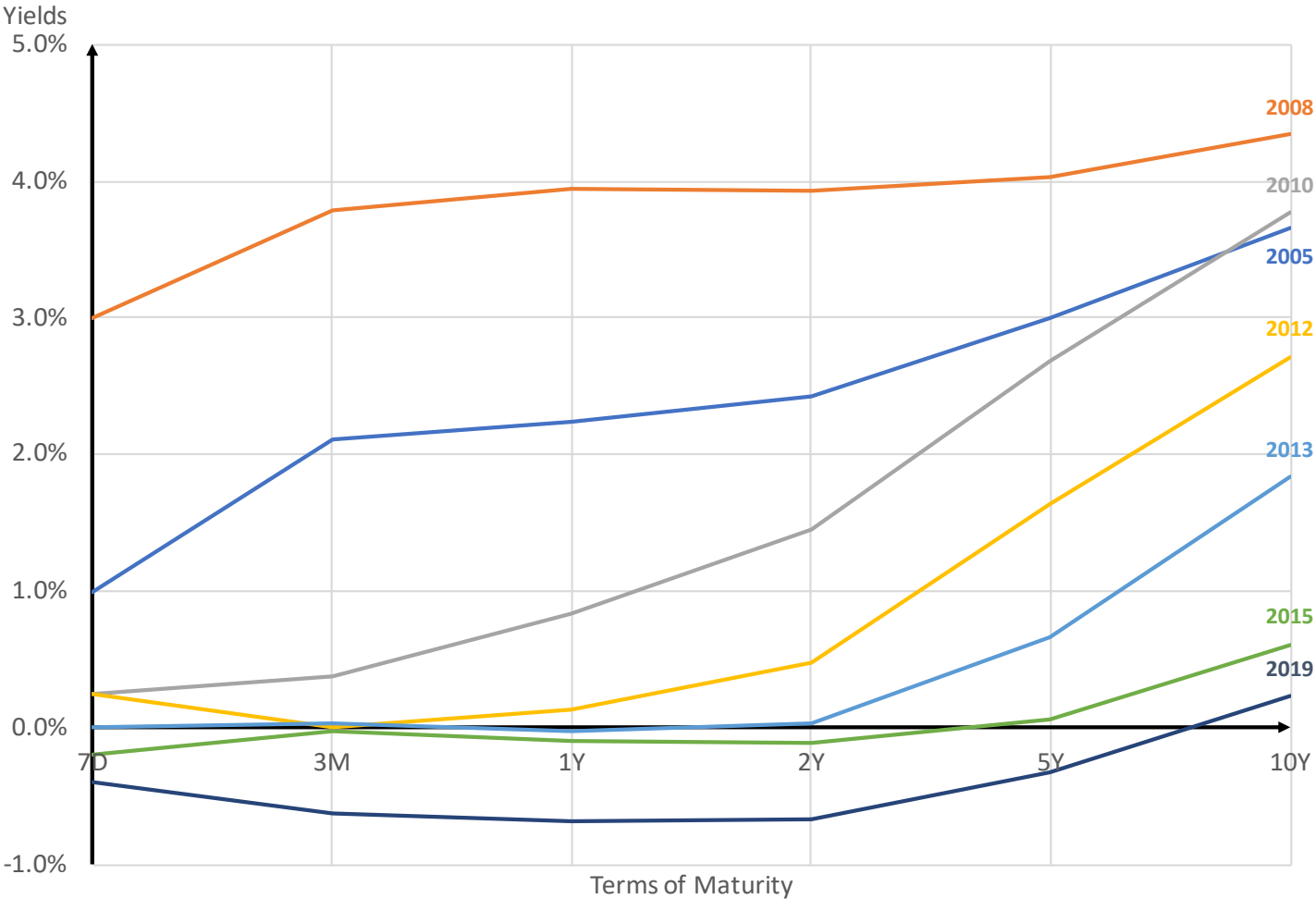
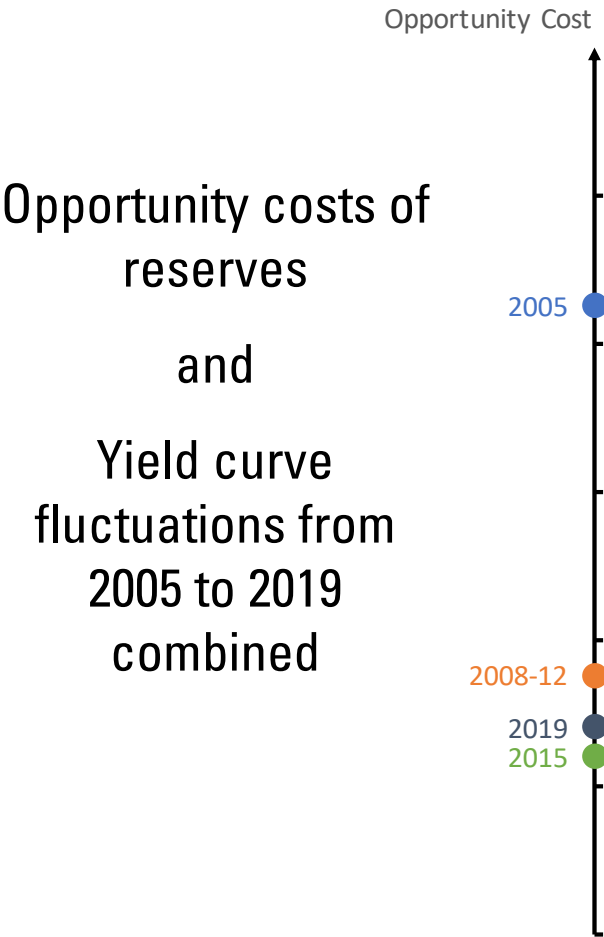


THE EURO AREA YIELD CURVE

- After crisis, still inflation stayed low.
- Wanted further stimulus
- From 2015 onwards, ECB implemented **large-scale asset purchases**
- Flattening the yield curve.




ALL TOGETHER



SUMMARY

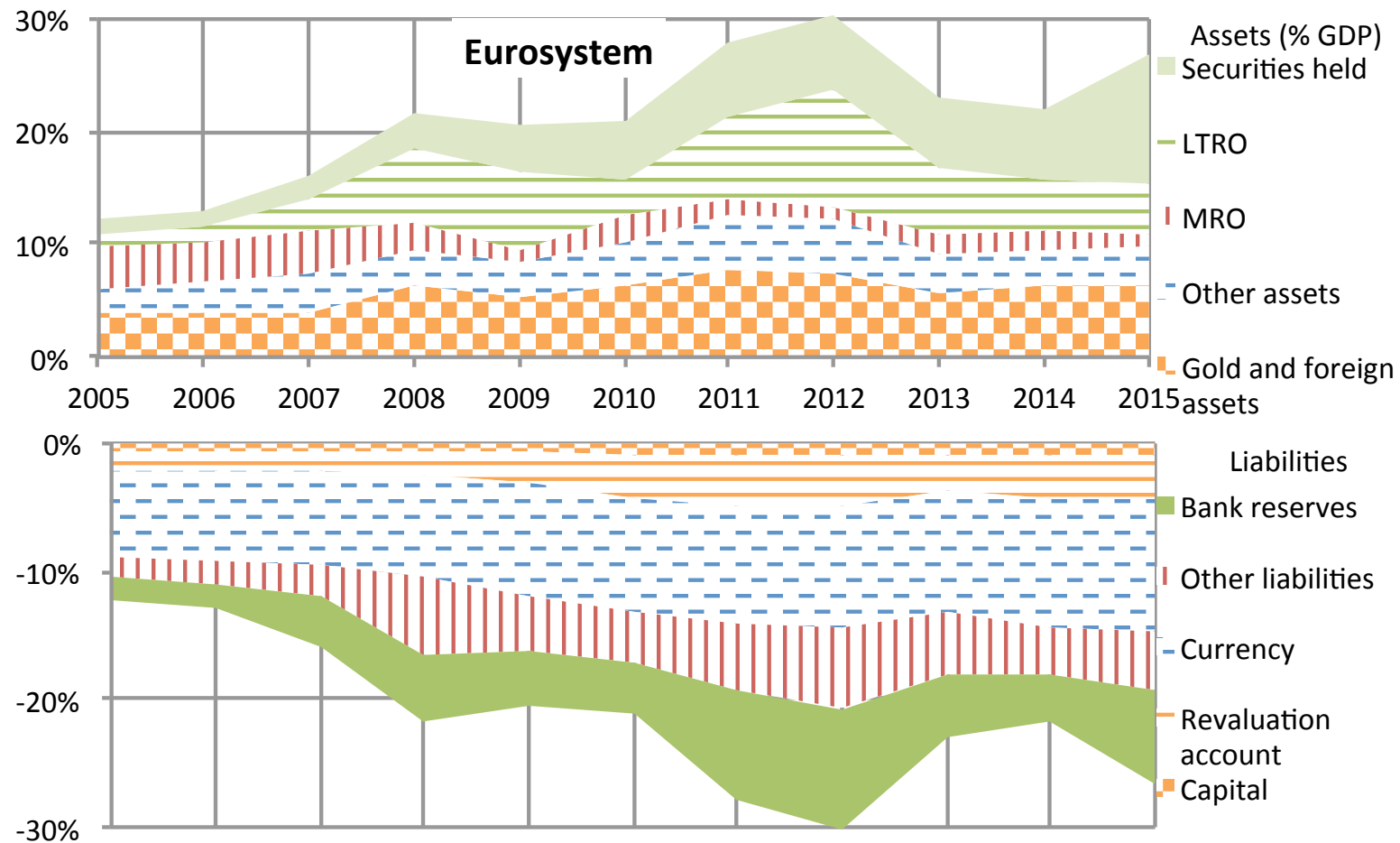
- Central banks can set the interest rate on reserves to reach **reserve satiation** by setting $i^v = i$ to eliminate the opportunity cost of reserves.
- To stimulate the real economy, central banks use unconventional tools such as **forward guidance** and **quantitative easing**.
- This raises the demand for longer-maturity bonds, pushes up their prices and lowers their term premium, thus **flattening the yield curve**. It also means a larger, mismatched balance sheet
- The Bank of Japan's balance sheet reflects those changes
- The euro area yield curve during the US and euro crises shows the gradual move from conventional to unconventional strategies.



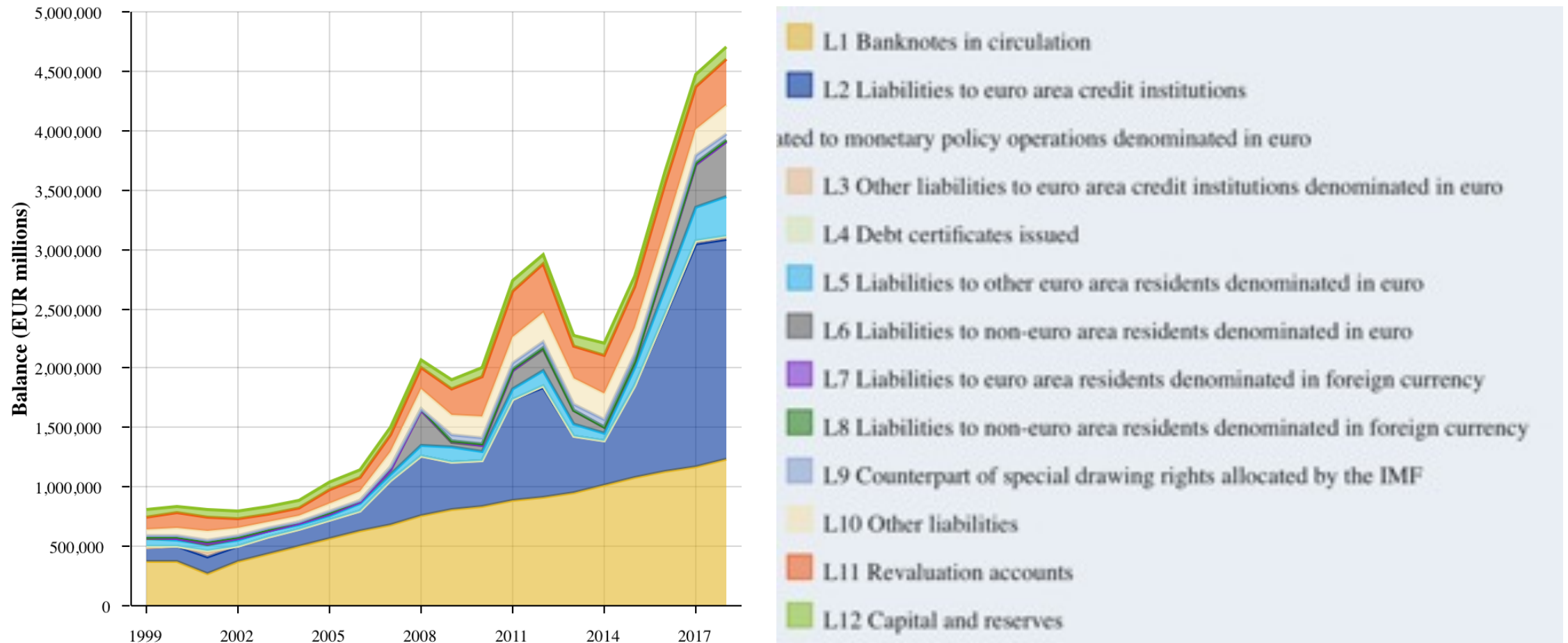
**a crash course
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MORE EURO AREA DATA

EUROSYSTEM'S BALANCE SHEET



GROWTH IN RESERVES AT THE ECB



SATIATION OF RESERVES IN EURO AREA

