Term Funding and Implementing Monetary Policy

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What are Central Bank operations for?

- Subsidise the funding costs of commercial and investment bankers?
- Take credit risk?
- Do a weekly pseudo-Financial Stability rescue?

• No.

- Implement monetary policy?

• Yes. CB is a monopoly issuer, so public sector must do this. But CB must be effective, robust, stable, …

Most central banks are monopoly issuers of currency (at least, considering the Federal Reserve System as a single entity, and likewise for the ECB+Buba+BdF+…). What should a CB do is implement its monetary policy.

What is the objective of its implementation?

> Having wholesale credit-risk-free short-term interest rates trade near the policy rate.

No other entity can do this. This does not require intervening in credit markets, which should be a private-sector judgment.

In an emergency, a CB might also have to rescue or help and institution in trouble.

• FS assistance should not be part of a CB's regular repertoire.

• FS assistance should be expensive in some sense, ideally for holders of equity and subordinated debt, but even if only for the management (The Economist, 18 Oct '07: "The chief executive of a large American bank once approached Paul Volcker … to ask him how he would respond if the banker were to seek a bail-out. Mr Volcker replied that he would be glad to discuss the request with his successor.")

• A CB's ordinary interventions in financial markets should not needlessly increase the probability or severity of an FS event, but need not be aimed at repairing damage not yet done.

But that is for an emergency, dealing with an institution that is going to pay a heavy price. Not for everyday dealing.

Individual or collective?

- ‘Solving’ the collective problem has not worked well
  - BoE’s “co-ordination problem”
- ‘Reserves’ = money term-lent to banks to be lent back to CB overnight
  - Attempts to link the collective and individual solutions
  - Effect: the round-trip absorbs collateral

Consider the BoE’s balance sheet as of March 2008. Note issue ≈ £41bn. Gov’t ‘Ways & Means’ overdraft ≈ £7bn†. So central bank needs to supply £34bn, therefore requiring an edge more than £34bn of collateral. That’s the amount of collateral that could be used. But the banks have to hit a reserves target within a certain percentage (variously ±1%, ±37½%, ±60%, ±30%). So more reserves make a wider target window. So the banks have agreed to hold, between them, £23bn of reserves, which the BoE supplies. So lending £34bn to the system takes £57bn of collateral. (The BoE’s PR is made easier because the picture is confused by the £30bn of “Other sterling-denominated assets”, presumably those of Northern Rock.)

BoE’s 2007Q4 bulletin recounted the “Mess held together with chewing gum and string” (description agreed by vote at LSE conference on 30 January 2008) that is the BoE’s implementation of monetary policy.

In general, central banks attempt to solve the collective problem (here is enough money: you distribute it among yourselves), without being willing to solve the individual problem.

† This overdraft was almost entirely repaid in mid April 2008.

What is term funding?

- No:
  - Not lend
  - Lend short-term at stigma rate
  - Lend short-term; bank can play at next auction
- Yes:
  - Lend for three months
  - Lend for a day at non-stigma non-penalty-price standing facility; counterparty having near-guaranteed access to facility tomorrow
- Lending for a day can be effectively-perpetual term funding.

For a non-central bank, “term funding” can mean either having the money for a term, or having effectively guaranteed access to it for term. They are both term funding, even if one is indexed to the policy rate.

Having short-term money, and the right to play in an auction (in which bids might or might not be accepted) is not term funding: it is short-dated money.

When the press, the commerical banks, and others talk of term funding, please remember that guaranteed access (or near-guaranteed access) to money is term money. At a standing facility, the ‘term’ might be effectively infinite: not bad for a one-day loan.

Easy solution

- Standing facilities:
  - Lend at policy: 5.25%
  - Accept deposits a little below: 5.145%
  - A CB should be a “bankers’ bank”
  - Overnight = intra-day spillover, by design
- Commercial and investment banks then:
  - Satisfy their individual needs one day at a time
  - Have no co-ordination problem
  - Use collateral instead of *reserves* (bizarre CB-invented concept)

Sterling banknote issue is about £41bn: BoE has lent £7bn to the government, and so the UK banking system needs to borrow about £34 billion from the BoE.

Quite rightly, CBs do not consider themselves to be in the business of taking credit risk. So they (should) lend only against high-quality collateral.

Simple system: central bank should be willing to lend money to good counterparties against good collateral, overnight and in good size, at the policy rate (of 5.25%). A central bank should be willing to accept overnight deposits from the banking system at a slightly lower rate, say, 5.145%.

For reasons of prudence a CB’s standing facilities should not be infinite in size. Since the banking sector needs to borrow a total of about £34 billion, a sensible upper limit for lending to any one large bank might be something of the order of £20 billion. As the banks are net borrowers, the limit on a bank’s remunerated deposit with the central bank could be smaller: perhaps half, perhaps a quarter this maximum overdraft. Larger borrowings would be prohibited; larger deposits would not be remunerated. Each bank would have its own maximum overdraft size, commensurate with the size of its GBP transactions.

How wide should the gap between the central bank’s deposit and lending rates be? It’s not that important. However, since 1999, the world’s leading central banks have typically moved policy rates by at least ±25 basis points to a new level below 5%, otherwise by an amount of at least about one twentieth of the new level. The bid-offer should be less than half this, suggesting a default lending/deposit gap of something like the greater of ten basis points and 0.02 × the lending rate. So a policy rate of 5.25% would mean a central-bank two-way price of 5.145%/5.250%.

Why not a zero gap? Because the trade size would typically be constrained by the maximum allowed transaction sizes (necessary for credit reasons). In general, more efficient if a price rather than quota constrains volume. Bid/ask spreads of a few bp suffice to keep things finite.

Makes it too easy for banks?

- Charles Goodhart's "free liquidity"?
  - Not necessarily so
  - Banks must still obtain reserves = good collateral
  - A bank that has spent all its money on mortgages has no liquidity
- But can be 'free' if collateral rules too loose
  - If rubbish on balance sheet is good collateral, then very cheap liquidity

Goodhart, Liquidity risk management, BdF FSR Feb 2008, page 40:

> What exactly is the right distribution of responsibility for liquidity management between commercial banks and a Central Bank? There are some who believe that that responsibility should be almost entirely shouldered by the Central Bank, but yet others call for a return to more traditional banking practices. As for maturity transformation, for how long should a bank be in a position to continue to meet its commitments if the wholesale markets on which it has relied before should suddenly dry up, as we now graphically realise can happen; one day, one week, one month, one quarter, longer yet? I do not know of any good way to resolve that question, nor of any persuasive academic research

Assume collateral rules reasonably solid. The banks must still ensure that they have enough quality collateral for their intra-day payments, and same collateral continues to sit with CB overnight. Banks must have good collateral.

Andrew Crockett, *Market liquidity and financial stability*, BdF FSR Feb 2008, page 17:

> Central banks have focused on maintaining liquidity at the short end of the money market. They have generally been willing to step in and provide the liquidity needed to keep overnight interbank rates near their policy target. In the recent market turmoil, there was some debate about how to view such assistance. Some saw it as providing support to a market (and indirectly to institutions) that had become overextended, and therefore that should be provided only at a penalty rate. An alternative view is that liquefying a market that has encountered liquidity difficulties is an extension of monetary policy actions aimed at keeping policy rates close to the target.
>
> An issue facing central banks as they attempt to learn lessons from the recent turbulence is going to be if and how to extend liquidity assistance to markets. Should the range of collateral be broadened? And should the duration of assistance be extended? My view of the answer to these questions is in the affirmative

Overnight loans that are near-guaranteed to be available tomorrow are term funding! Problem solved. (But use of such standing facilities must be stigma-free.)

Commercial bankers' dreams

- Opaque system with plenty of odd behaviour
  - Benefits insiders
- Super-generous collateral policy:
  - Ideally unsecured
  - Failing which, a floating charge on a bank's assets = unsecured super-senior
  - Or specific stuff on the balance sheet (ECB-style)
  - Or stuff on the balance sheet, lightly wrapped (RMBS CDOs: Fed-style, increasingly BoE-style)

When asking insiders what they want, be cautious with the answers. Listen carefully: a minority might speak wisely about public policy. But most bankers talk their books.

1. If the current system is eye-wateringly atrocious (BoE ≤2004), no private-sector banker will get a bigger bonus by saying so. Instead they avoid loss of job: "we will of course work with whatever system the central bank thinks best".
2. Odd behaviour (e.g., at the end of reserve periods, near monetary decisions, or all the time) keeps corporates out of the market and in the hands of their bankers. Not good public policy, but if you ask bankers, you risk getting a bankers' answer.
3. But bankers do want a super-generous collateral policy, as near to *de facto* unsecured as possible. (Risk manager at a hedge fund, who shall remain anonymous, says that "Fed is accepting last week's left-over banana peel".)

Collateral

- Perfect = domestic currency:
  - National gov't (€-zone: AAA nat'nl govt's)
  - AAA sovereigns, AAA supranationals
- Not foreign currency. Deutsche default?
  - Probably associated with volatile weak €
  - CB too polite to sell bonds and € quickly
  - Chunky losses: 10%×£20bn > BoE capital

Imagine Deutsche Bank has borrowed £20bn against short-dated € collateral, therefore subject to a 4.5% haircut. For some reason not discussed here, DB goes under. Central Bank politesse means BoE can't sell bunds nor € for a few months. (Aside: BoE criticised banks for not realising that SIVs would have to be on-balance-sheet for reputational reasons. Hello! Also applies to BoE's taking of non-£ collateral.) In those few months € falls 14% (very plausible following DB default). BoE loses >£2bn. According to 2007 Annual Report†, BoE capital and reserves are £1.86bn (though Tim Congdon rightly observed that this isn't really relevant).

This doesn't quite make the BoE a first-to-default risk on a moving collection of €-zone investment banks, because:

- if a defaulting investment bank happens to be short euros, the euro might rally;
- if not, BoE probably would be saved by HMT support;
- short-term, the BoE can print money.

† bankofengland.co.uk/publications/annualreport/2007/governancefinancialstatements2007.pdf

(The example of Deutsche Bank is used here. This is **not** because the speaker knows anything bad about the creditworthiness of Deutsche Bank: Presumably it is as likely to go bust or not to go bust as any of its peer bulge-bracket banks. Deutsche Bank has been used as the example because it is a huge €-zone bank that is very active in £.)

Hopefully not-too-bad

- Might not be enough perfect collateral
- Must accept not-too-bad stuff
  - Non-local-currency from AAA entities
  - Local-currency from local gov'ts etc
- Examples:
  - Widespread acceptance of US GSEs
  - BoE accepts € collateral (and seems not to notice the imperfection of the protection)

BoE accepts, and has accepted for most of a decade, amongst other stuff,

> "Euro-denominated securities … issued by EEA central governments and central banks and major international institutions where they are eligible for use in ESCB monetary policy operations …. These securities may either be those issued directly into Euroclear and Clearstream … or may be "CCBM securities" where the [relevant] central bank … has agreed to act as … custodian under the Correspondent Central Banking Model"
>
> "The above sovereign and supranational securities are subject to the requirement that they are issued by an issuer rated Aa3"

Interestingly, the BoE's haircut policy suggests that it has been following a VaR model, without thinking about the stress test. Haircuts on sub-1-year euro-zone governments are 4.5%. Haircuts on 1- to 3-year are 5.5%. But Deutsche's default would be followed by a falling ECB policy rate, so 2-year paper would do better than 1-year: so 2-year haircut should be less than 1-year, not greater. (Not clear for long-dated governments: in euro terms might rally, or might price later inflation.) More sensible haircuts might be 10% for ≤1-year, and 9.5% for 2-year. See appendix V of www.bankofengland.co.uk/markets/money/documentation/070803operating.pdf

For the recent longer-term auctions the list of currencies widened to include £, €, $, AUD, CAD, SEK, CHF "and, in the case of Japanese Government Bonds only, yen". Smaller currencies like AUD and CAD would be even more vulnerable to a default by a large bank. www.bankofengland.co.uk/markets/money/documentation/statement071214.pdf

Manufactured collateral

- Commercial bank: lends money to Mr Dodgy; securitises loan; uses security as collateral
- Near useless as credit enhancement
- Mervyn King rightly resisted this
  - Has acquiesced without charge in some of its operations;
  - But charging too much for taking rubbish

The BoE used to accept bank bills as collateral. From *Commercial Bills at the Bank of England*, p242 of 2005Q4 *Quarterly Bulletin*:

> The Bank had long had a list of requirements that a bill had to meet to be eligible for use in the Bank's operations. Some of these related to the maturity of the bill and to the accepting bank. But one was that the bill should identify the underlying transaction being financed, which was to be short-term, self-liquidating and not for capital purposes. By 2000 the Bank had concluded that this 'clausing' did not add to the creditworthiness of the bill and dropped the requirement. One unintended effect of this was to make it easier for banks to draw bills on each other. Such 'bank-on-bank' bills came to form a significant part of the bill market. Because these bills were usable at the Bank they also counted towards banks' supervisory stock liquidity requirement. However, **the Bank prefers to provide liquidity to the banking sector against high-quality collateral in the form of claims outside the banking sector**. Accordingly 'bank-on-bank' bills were made ineligible in 2003, and the decline in the bill market accelerated once more.

My **emphasis**.

Deterring useless collateral

- Since CBs politically obliged to accept rubbish: how deter frequent use?
  - Stigma?
  - Price?
  - Haircut?

Stigma?

- Observed behaviour:
  - banks don't use stigma facilities
  - unless hinting "the Fed asked me to do this but I don't need it"
- Stigma = trouble for a confidence biz.
- Stigma facilities useless

Special Liquidity Facility

- Costs Libor–repo to 1-year repo-swap AAA mortgages for T-Bills
- So a bank pays Libor-repo for a year to borrow intermittently at repo
- Useful only if Libor is good in small size, but unavailable in large size
- Might stigmatise T-Bill collateral

21st April 2008 BoE announced a facility whereby it would repo-swap AAA mortgages for T-Bills, though charging a fee of Libor–repo. www.bankofengland.co.uk/publications/news/2008/029.htm

> Banks will be required to pay a fee to borrow the Treasury Bills. The fee charged will be the spread between the 3-month London Interbank interest rate (Libor) and the 3-month interest rate for borrowing against the security of government bonds, subject to a floor of 20 basis points.

Steep haircuts:

> The Bank of England will decide the margin between the value of the Treasury bills borrowed and the value of the assets banks are required to provide as security. For example, if a bank were to provide £100 of AAA-rated UK residential mortgage-backed securities, it would, depending on the specific characteristics of the assets, receive somewhere between £70 and £90 of Treasury Bills.

So a commercial bank with plentiful access to money at Libor can either:

• Commit to paying BoE Libor–repo for a year, in order to borrow at repo from time to time (thus 'wasting' the Libor-repo fee when not needing to borrow);

• Borrow at Libor when needed.

Latter is cheaper, so not a useful facility for a commercial bank with plentiful access to money at Libor. However, if a bank can borrow at term Libor only in small size (or even not at all), but in large size against T-Bill collateral, and knows that it will need to be borrowing in large size for most of a year, then useful.

¡¿Does this mean that those borrowing against T-Bills are thereby signalling that they are unable to borrow in size (or at all) at Libor? If so, stigmatisation of T-Bills. Ouch!

Advice to good banks: don't use T-Bills as collateral: it might make you look like a bad bank.

Price?

- If price 2bp, won't deter rubbish
- But 50bp = "I'm so rubbish I have to pay extra for money" = stigma
- Confusing: if 'policy' 5¼%, but marginal money 5¾%, what is policy?
  - Increases Libor, not decrease
- Observe Fed: when discount window needed, cheapened

A CB's policy rate should be the marginal cost of short-term money against good collateral. But if some counterparties are borrowing at policy+½%, then marginal cost of money has gone up. So just as financial system hits the brakes the central bank hikes rates, by accident as it were. That doesn't suggest a clean coherent well-thought-through system.

Chairman of the Federal Reserve, 10 January 2008:

> However, as a tool for easing the strains in money markets, the discount window has two drawbacks. First, banks may be reluctant to use the window, fearing that markets will draw adverse inferences about their financial condition and access to private sources of funding--the so-called stigma problem. Second, to maintain the federal funds rate near its target, the Federal Reserve System's open market desk must take into account the fact that loans through the discount window add reserves to the banking system and thus, all else equal, could tend to push the federal funds rate below the target set by the FOMC. The open market desk can offset this effect by draining reserves from the system. But the amounts that banks choose to borrow at the discount window can be difficult to predict, complicating the management of the federal funds rate, especially when borrowings are large.

That doesn't suggest a coherent well-functioning system either.

A newly-fashionable alternative is for a CB to add money at a market-determined price. This can work as a means of adding money, but:

- Suggests that the reserve system is itself causing unnatural demand for money; and
- Can hardly be said to be implementing monetary policy.

Haircut

- Haircut good for collateral with non-manipulable observable price
  - Works for government bonds
  - Untrustworthy for manufactured collateral
    - Commercial banks can support the price of each other's rubbish — friendly 'deals' arranged over beer: it happens
- Haircut not good, but best of bad bunch

Haircuts:

• Ineffective against manufactured collateral. So don't accept rubbish — not something politicians want to hear.

• Against wrong-currency collateral, haircut needs to be large enough to withstand stress-test currency fall and interest rate move. Let's assume that, over the few months it would take to be polite to sell, the euro or dollar would be damaged by 12½% versus £, and any other currency by 15%.

◊ ≤1 year will rally ½% in yield, say (so haircut **reduced** by 0.25%);

◊ 1- to 3-year maybe 1% in yield (haircut reduced by 1.5%);

◊ 3- to 7-year maybe nothing to ½% in yield (haircut = just currency component);

◊ longer could do anything: say is hurt by ½% yield (haircut increased by 4% say).

Add to this some penalty for rating: say ½% for each small-notch below AAA (so AA– would be haircut by an extra 3×½%).

Implies much larger total haircuts on non-£ securities. That's expensive, and would deter use of non-£ collateral when Libor–repo is wide (as the 15% that needs unsecured funding will then be dearer to fund). Great: encourage those with € collateral borrow from the ECB, and do an FX swap to convert that borrowing to £ (hurray for CLSB). So the £ borrowing would be done by the banks with gilts: good.

End

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