

Central bank design

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What is a central bank?

- Long history, but I will not let it restrict me.
- It is the sole institution in a country with the power to borrow from banks in the form of reserves.
 - Reserves can be exchanged on par with banknotes that the central bank can freely issue.
 - Since it is the monopolist issuer of reserves, central bank can choose what interest to pay on them.
 - Central bank can tax banks for holding reserves (reserve requirements).
 - Central bank can make announcements on its knowledge of the economy or on any of the three policy levers above.₂

Mechanism-design approach

1. The objective function
2. The resource constraint
3. The equilibrium (or implementability) constraints

Mechanism-design approach

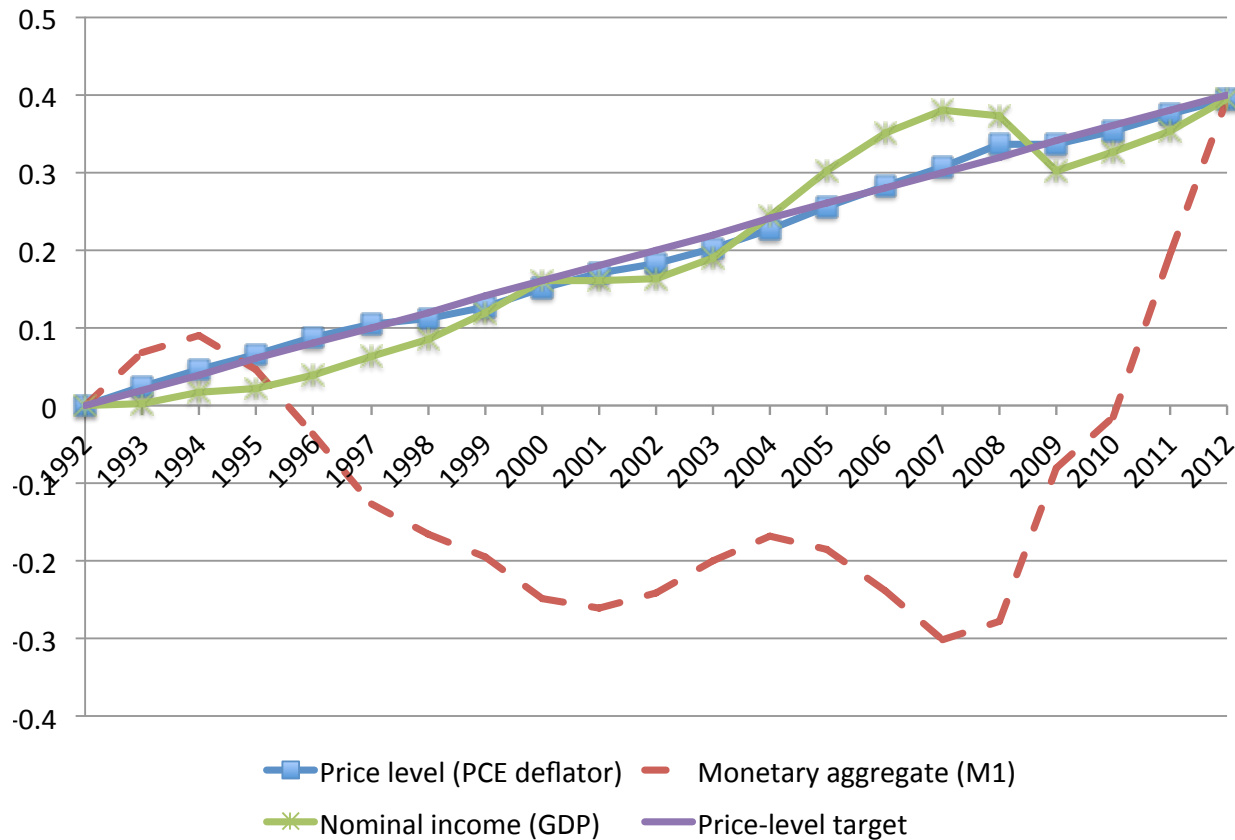
1. The objective function

- Strictness of the mandate
- The choice of central banker(s)

Dimensions	Suggestions	Open questions	Federal Reserve
The strictness of the central bank's mandate	Clear on main goals, otherwise give discretion	Adopt numerical or qualitative targets?	Vague
The choice of central banker(s)	Committee that shares goals but competes on ideas	Should it consider distributional effects of policy?	Peculiar regional structure

(3) The choice of long-run goal(s)

- Stable nominal anchor on:
 1. Prices rather than money or nominal income.



(3) The choice of long-run goal(s)

- Stable nominal anchor on:
 1. Prices rather than money or nominal income.
 2. Price level rather than inflation.
 1. Ease planning as it does not propagate deviations forever
 2. If sticky prices, moderate price increases after shock
 3. Form of commitment to achieve time consistency
 4. Reduce desire to index prices, more flexible economy
 5. Lowers real cost of capital
 6. Way to commit to higher inflation, out of a liquidity trap
 7. Not tested yet.

(3) The choice of long-run goal(s)

- Stable nominal anchor on:
 1. Prices rather than money or nominal income.
 2. Price level rather than inflation.
- Measuring long-run inflation: pure inflation
- Real long-run goals: is the LR Phillips curve vertical?

(4) Potential further short-run goals

Three tests:

1. Can you define the goal in a measurable way?
2. Can monetary policy have an effect on it?
3. Does it introduce a trade-off with other goals?

Real activity goal:

- Passes, dual mandate with flexible inflation targeting

Interest rate or asset price stability (bubbles)

- Fail any of the tests.

New financial mandate:

- Leverage, spreads, funding of intermediaries. Almost.

Dimensions of central bank design

Dimensions	Suggestions	Open questions	Federal Reserve
The strictness of the central bank's mandate	Clear on main goals, otherwise give discretion	Adopt numerical or qualitative targets?	Vague
The choice of long-run goals	Price-level target as nominal anchor	What measure of inflation to use? Include real target?	To provide a nominal anchor
The potential role of additional short-term goals	Dual mandate with clear weights	Tripartite mandate including financial stability?	Dual mandate, price and real stability
The choice of central banker(s)	Committee that shares goals but competes on ideas	Should it consider distributional effects of policy?	Peculiar regional structure

Mechanism-design approach

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The CB resource constraint

$$\underbrace{h_{t+1} + v_{t+1}}_{\text{New liabilities}} = \underbrace{h_t + (1 + i_t)v_t}_{\text{Old liabilities}} + \underbrace{a_{t+1} - \sum_{j=1}^J (1 + i_{t+1}^j)a_t^j}_{\text{Expand balance sheet}} + \underbrace{d_{t+1}}_{\text{Pay dividends}}$$

Demand for currency gives seignorage revenue:

$$s_{t+1} = \frac{h_{t+1} - h_t}{p_{t+1}} = \left(L(i_{t+1}) - \frac{L(i_t)}{1 + g_{t+1}} \right) y_{t+1}$$

Iterating ahead and since can't run a Ponzi scheme on v

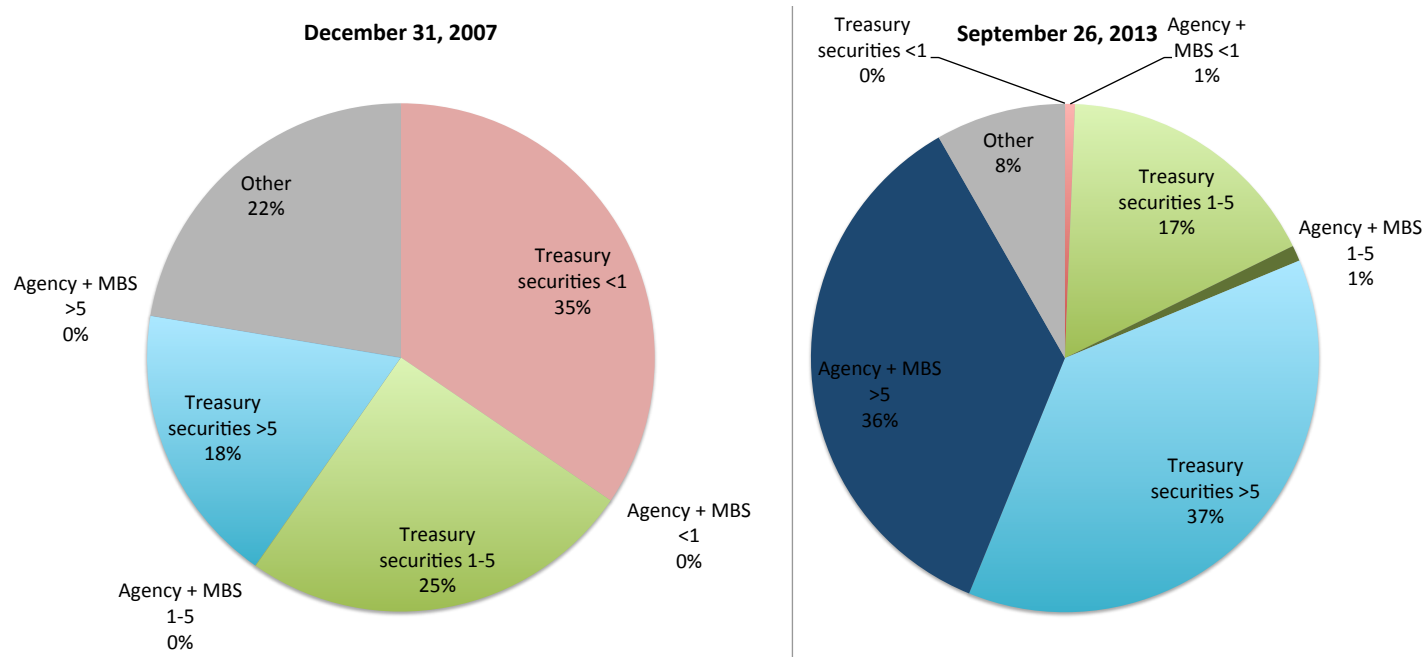
$$D_t \leq S_t + \hat{a}_t - \hat{v}_t$$

(5) Role of CB as source of revenue

- *Thou shalt not monetize the debt?* Not quite.
- Rather: do not give to answer to fiscal authorities demands for more revenue since (i) can do it, d , (ii) via seignorage, s , (iii) resulting a in a lot more inflation, i and π .
- No seignorage (expected inflation) does not mean no debt devaluation (unexpected inflation) nor that fiscal-monetary interactions are not important.

(6) The importance of fiscal backing

Figure 2. The maturity of assets of the Fed: old versus new-style central banking



- Hall-Reis (2013) result. If the CB pays out when net income is positive, it must receive when net income is negative: fiscal backing.

(7) The set of assets held by the CB

- Financial crises justifies holding other assets because
 - Need: transmission mechanism broken.
 - Means: illiquid markets make small interventions effective.
 - Ambition: correct distorted relative prices
- Objections:
 - Risk losses, especially if illiquid markets and over-confident
 - Political pressure, lobbying, ex ante incentives to banks.
- Design limits:
 - Unusual and exigent circumstances versus Treasuries only
 - No ad hoc interventions.
 - Only buy if there is a market price.

(8) Paying interest on reserves

- YES!
- Can separately affect inflation and liquidity.
- No balance-sheet risk.
- Could implement Friedman rule by having interest on reserves always equal to federal funds rate, and become the main policy instrument.

Dimensions of central bank design

Dimensions	Suggestions	Open questions	Federal Reserve
The role of the central bank as a dependable source of revenue	Central bank should not yield to Treasury's demands	How should monetary and fiscal policy interact?	The Fed is independent from the Treasury
The importance of fiscal backing for the central bank	Central bank with a deferred account on the Treasury	Sever the resource link between bank and the Treasury?	Untested until it has negative income
The set of assets held by the central bank	Treasuries at all maturities, other assets in crises but with some limits	Forbid ad hoc interventions that are not arms-length?	Wide in the past, narrower in the future
The payment of interest on reserves	Yes, definitely	Should it always equal the short-term market rate?	Friedman rule at present, future to be seen.

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2. The resource constraint

- Role as a source of revenue
- The importance of fiscal backing
- The set of assets held by the central bank
- Paying interest on reserves

3. The equilibrium (or implementability) constraints

Implementability constraints

1. Announcements and commitments

- Rules versus discretion.
- Non-renewable terms, inflation reports.

2. How far to be transparent?

- Is there any strong argument to *not* reveal everything?
- When it fosters confusion, issue is how to design it better

3. Picking the channels of communication

- Decentralization.

4. The accountability of the central bank

- Transparency, political oversight
- Diffuse power and the role of banks

Dimensions of central bank design

Dimensions	Suggestions	Open questions	Federal Reserve
The importance of announcements and commitments	Policymakers with long-term mandate and publish inflation reports	How to keep a reputation?	Increasing role through forward guidance
Choosing the extent of transparency	Be as transparent as possible	What is the best timing and form of communication?	Rapidly improving, revealing more and sooner
Picking the channel(s) of communication	All committee members should report their views	How to have model-based policy and diversity?	Rapidly improving, frequent and clear speeches
The accountability of the central bank	Be transparent, have overlapping terms of office	Should banks be singled out as stakeholders?	Strong political oversight, peculiar role of banks

Conclusions

1. Central bank independence?
2. Level of decentralization of the central bank.
3. Unconventional policies during financial crises.

Central-bank design is important and can be *scientific*.