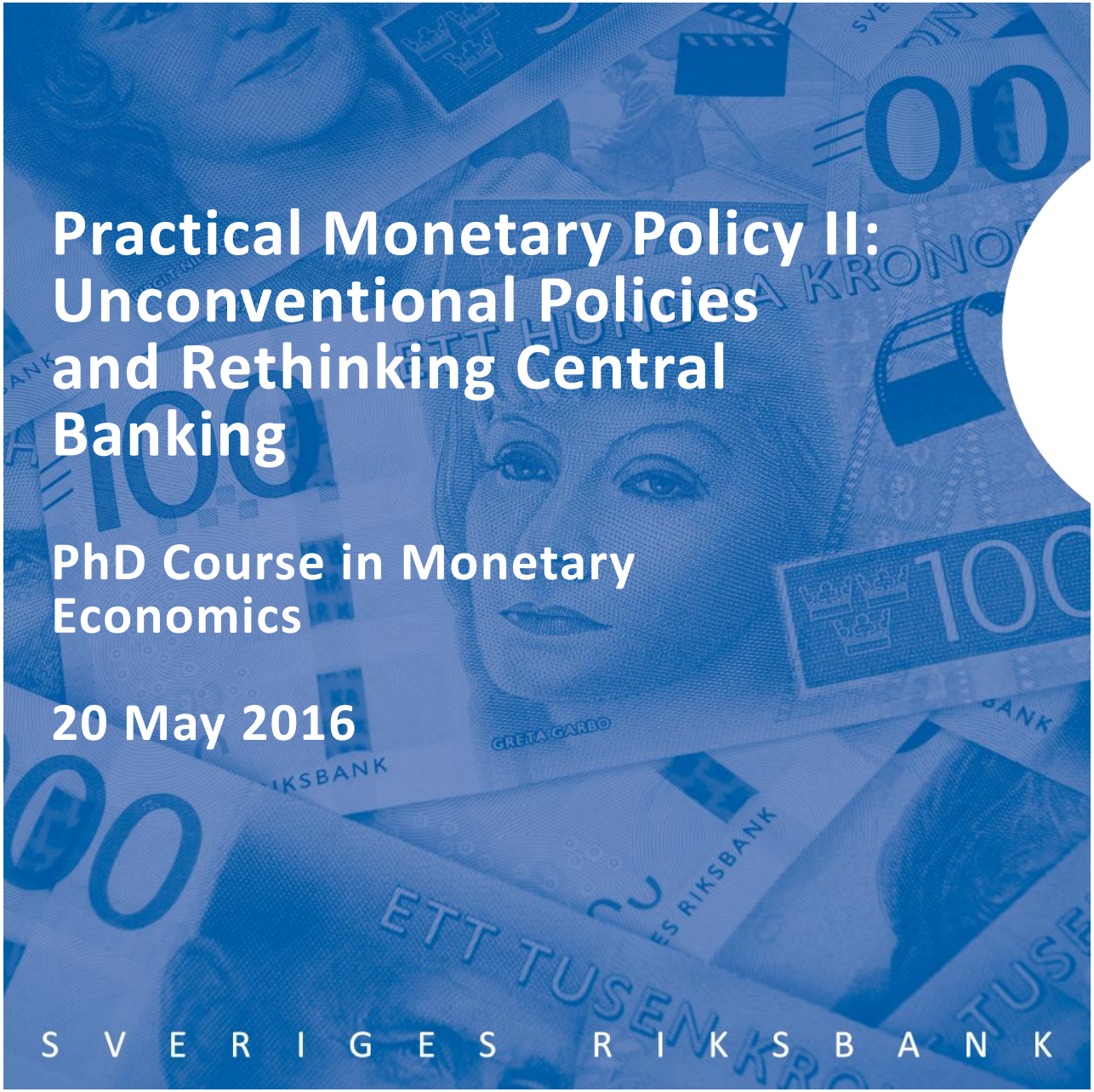

Practical Monetary Policy II: Unconventional Policies and Rethinking Central Banking

PhD Course in Monetary Economics

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Overview

- Helicopter money
- Rethinking central banking
  - Tools and objectives
  - Communication
  - Monetary policy and financial stability

Helicopter money

Helicopter money vs QE

- QE: Central bank purchases assets
  - Domestic assets (QE), foreign assets (QEE)
- Helicopter: Central bank reduces its equity

Effect on central bank balance sheet

QE

Assets	Liabilities
FX reserves	Notes and coins
Gold	Bank reserves ↑
↑ Domestic assets	Equity

Helicopter money

Assets	Liabilities
FX reserves	Notes and coins
Gold	Bank reserves ↑
Domestic assets	Equity ↓

Helicopter money

In practice, there may be a number of constraints:

- Legal (e.g. Maastricht treaty)
  - Institutions are built to prevent too high inflation
- Mandate, tools
  - Who decides on dividends?
- Reputational

Buiter (2014) (my unverified interpretation)

- Distractions in Buiter's paper:
  - Cash (think instead of bank reserves paid market interest), deaths, births, production (ignore capital, fix wage)
- Solve

$$\max \int e^{-\theta(v-t)} \ln C(v)\, \mathrm{d}v$$

subject to household budget constraint

$$\frac{\dot{B}(v)}{P(v)} = i(v)\frac{B(v)}{P(v)} + w(v) - \tau(v) - C(v)$$

and no-Ponzi: $\lim_{v\to\infty} \frac{B(v)}{P(v)} e^{-\int_t^v r(u)\mathrm{d}u} = 0$

Buiter (2014)

- State (= treasury + central bank)

$$\frac{\dot{B}}{P} = i\frac{B}{P} + G - T$$

- No-Ponzi:

$$\lim_{v\to\infty} \frac{B(v) - Q(v)}{P(v)} e^{-\int_t^v r(u)\mathrm{d}u} \leq 0$$

where *Q* is bank reserves deposited at the cb (here equal to the quantity of treasury debt held by the cb)

- The key thing here is that the treasury is subject to the no-Ponzi condition, but not the central bank, hence the $-Q(v)$ term above

Buiter (2014)

- The solution implies

$$C(t) = \theta \left[\int_t^{\infty} [w - G(v)]\, e^{-\int_t^v r(u)\mathrm{d}u} \mathrm{d}v + \frac{1}{P(t)} \lim_{v \to \infty} Q(v) e^{-\int_t^v i(u)\mathrm{d}u} \right] \text{(*)}$$

- If the no-Ponzi condition had applied to the central bank, the last term in (*) would be zero and the solution would just be that private consumption is determined by the NPV of real income net of government spending

Liquidity trap? Buiter (2014)

$$C(t) = \theta \left[\int_t^{\infty} [w - G(v)]\, e^{-\int_t^v r(u)\mathrm{d}u} \mathrm{d}v + \frac{1}{P(t)} \lim_{v \to \infty} Q(v) e^{-\int_t^v i(u)\mathrm{d}u} \right] (*)$$

- Suppose that the nominal interest rate is stuck at zero, and expected to be so forever
- Then a permanent increase in Q (for example a permanent QE) will have to affect something in (*): government spending can increase, interest rates can change, and/or prices can increase
- Aside: Why is this asset purchase (”permanent QE”) classified as helicopter money? It’s because purchasing a perpetual bond that pays no interest means that the purchase amounts to a dividend payment

QE outside liquidity trap Buiter (2014)

- Suppose that the nominal interest rate is expected to be positive at least in the distant future
- Then a permanent one-time increase in Q will not affect (*): the last term is zero
- The monetary/quantiative expansion must then grow with the nominal interest rate to be effective (I think…)

Aside: Allow ”cash” Buiter (2014)

- In the setup considered by Buiter, a one-off permanent increase in money will have effects even outside a liquidity trap
- This is because he assumes that there is a demand for cash (or non-interest bearing reserves)
- To implement a permanently higher money supply in any period with a positive interest rate, that interest rate must fall for markets to clear (or demand must increase by some other effect)
- So permanently raising *M* is basically identical to committing to a more expansionary monetary policy in the future (see Eggertsson and Woodford, 2003)
- But how do you implement something to be permanent? Is it credible? Otherwise effectiveness may vanish.

Alternative approach

- Consider the central bank's dividend policy and strategy for managing its equity
- If the central bank avoids losses, or if it tries to restore its equity whenever it has suffered losses, **it imposes the no-Ponzi condition on itself**
- Then its "helicoper drops" will fail

Example: If CB imposes no-Ponzi condition, then ”Ricardian equivalence”

- Suppose that the central bank pays its profit flow to the treasury as dividends
- Suppose that the central bank initially has assets = A_0 and liabilities equal to $Q_0 + E_0$. Its per-period profits (and dividends) are $i(A_0 - Q_0) = iE_0$, and the NPV of this is E_0.
- Suppose that the CB pays an extra dividend, for example $q = E_0$ so that it has no equity remaining (this is the helicopter drop). Its per-period profits will then become zero for all future. The NPV of the sum of the dividend and future profits is again E_0.
- The NPV of future dividends will thus fall by the same amount as the dividend if the central bank sticks to its dividends policy
- The treasury’s (NPV) budget will therefore not be affected. This is similar to Ricardian equivalence. The helicopter will fail if the treasury understands this mechanism and chooses to not raise spending in response to the dividend payment from the central bank.

Example: CB violates the no-Ponzi condition

- But suppose instead that the cental bank continues paying dividends iE_0 in each period in spite of not making profits. The NPV of all dividends are then $2E_0$.
- Equity develops according to $\dot{E}(t) = iE(t) - iE_0$ and $E(0) = 0$, which is solved by $E(t) = E_0 - E_0 e^{it}$
- This implies that $\lim_{t\to\infty} E(t) = -\infty$ and $\lim_{t\to\infty} E(t)\, e^{-it} = -E_0$
- So the central bank cannot restore its equity. It will remain ”insolvent” forever, also in present-value terms. So it will violate the no-Ponzi condition. But that need not be a problem, at least not in theory…

Example: CB violates the no-Ponzi condition

- Equation (*) is helpful to see that this strategy could be effective
- Recall

$$C(t) = \theta \left[\int_t^{\infty} [w - G(v)]\, e^{-\int_t^v r(u)\mathrm{d}u} \mathrm{d}v + \frac{1}{P(t)} \lim_{v \to \infty} Q(v) e^{-\int_t^v i(u)\mathrm{d}u} \right] (*)$$

- We assume that the central bank holds its assets constant
- The fall in equity will then correspond to an identical increase in reserves. Reserves will therefore grow at rate *i* in the limit.
- Use this in (*) to see that $\lim_{t \to \infty} Q(t)\, e^{-it} = Q(t) > 0$
- Then something (interest rates, prices, …) in (*) must respond to the helicopter drops

Sweden

- The Riksbank's dividends to the "treasury" are decided by parliament after recommendation from the general council (*not* the executive board)
- Dividends normally set according to a predetermined rule (80% of profits)
- If the Riksbank makes losses, e.g. as a consequence of our QE, dividends will be lower in the future

Conclusions and reflections

- Again, much of this boils down to expectations
  - In a strict theoretical sense, helicopter money should only work outside permanent liquidity traps if the central bank is prepared to let its equity explode towards negative infinity
  - But if the central bank is prepared to do that, prices and/or interest rates should respond, and maybe the central bank need not deliver. We need a richer model with endogenous prices and interests rates to analyze this (maybe also endogenous consumption and production).
- In practice, helicopter money would most likely work in spite of these theoretical, Ricardian, objections
- Is there really a fundamental difference between money and public debt?
  - Does the government really have to respect the no-Ponzi restriction?
  - Some would probably argue that it need not. Fiscal theory of the price level…
  - I see a difference: It is more likely that a government defaults on its debt payments than that a central bank "defaults". High public debt may result in high nominal interest rates both because of default risk and inflation risk. Helicopter money is more likely to only affect the inflation outlook.

Rethinking Central Banking

Tools and objectives

- The level of the inflation target
- Other target?
  - Price-level target
  - Nominal GDP
- Forward guidance and QE also in normal times?
- Financial stability as an objective?

Communication: Why?

Never explain, never excuse

(Montagu Norman, chef för Bank of England 1920-1944)

Since becoming a central banker, I have learnt to mumble with great incoherence. If I seem unduly clear, you must have misunderstood what I said.

(Alan Greenspan, Fed-chef 1987-2006)

Communication: Why important?

- Clarify monetary policy framework
  - How policy-makers behave and think
  - The reaction function
- Mitigate time-inconsistency problems
  - Consistency of forecasts, policy plans and policy measures can be scrutinized
- Accountability
  - To maintain operational independence

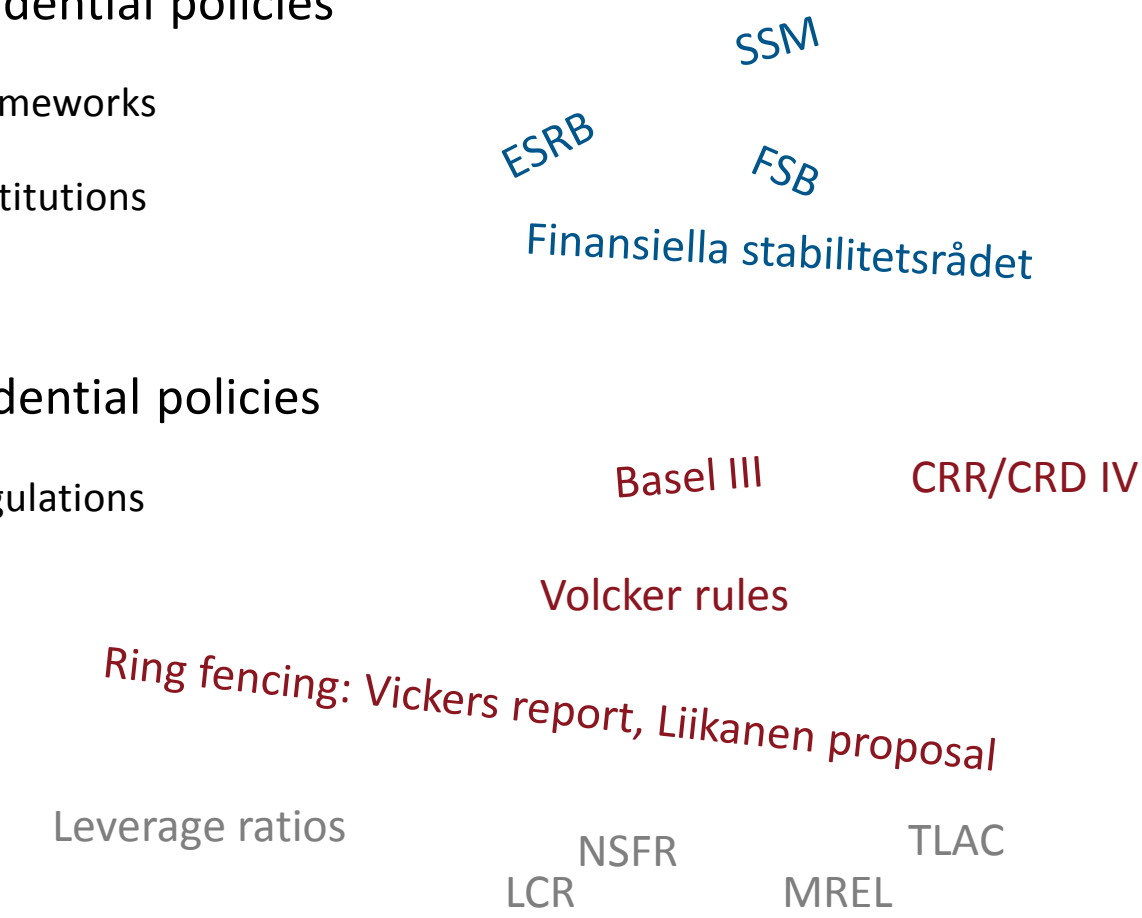
More effective transmission mechanism

Communication

- Minutes and transcripts
  - How much should be published?
  - When?
  - Riksbank: Minutes (very close to transcripts) published after two weeks – this is an unusual approach
- How to communicate outside minutes and transcripts
  - For an individual member of a policy committee

Monetary policy and financial stability

- Macroprudential policies
  - New frameworks
  - New institutions
  - …
- Microprudential policies
  - New regulations



Monetary policy and financial stability: Three views (Smets, 2013)

	MODIFIED JACKSON HOLE CONSENSUS	LEANING AGAINST THE WIND VINDICATED	FINANCIAL STABILITY IS PRICE STABILITY
Monetary policy	Framework largely unchanged Limited effects on credit and risk taking Blunt instrument to deal with imbalances	Financial stability as secondary objective: lengthening of horizon Affects risk-taking "Gets in all of the cracks"	Twin objectives on equal footing Unblocks balance sheet impairments; avoids financial imbalances in upturns
Macro prudential	Granular and effective	Cannot fully address financial cycle; arbitrage	Indistinguishable from monetary policy
Interaction	Limited interaction and easy separation of objectives, instruments, …	Financial fragility affects monetary transmission are price stability	Financial stability and price stability are intimately interlinked
Issues	Coordination? Lender of last resort?	Coordination? Overburden money policy?	Time inconsistency problems?
Models	Svensson; Collard, Dellas, Diba and Loisel (2012)	Borio; Woodford (2012)	Brunnermeier and Sannikov (2012)