U.S. Digital Cash:
Principles & Practical Steps

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Note: The views expressed here should not be interpreted as conveying the views of any other person or institution.
The central bank plays a crucial role in issuing money that serves as a stable unit of account.

The first Cato conference (in 1982) was focused on how systematic & transparent frameworks could prevent high inflation.

More recently, the U.S. and other advanced economies have faced sluggish demand and persistent shortfalls in inflation.

Thus, a key challenge now is to ensure that monetary policy is systematic, transparent & effective in mitigating severe adverse shocks.
Our Analysis

- Document the **limitations of unconventional tools** (QE and forward guidance) in mitigating the effective lower bound (ELB).

- Formulate **design principles for digital cash** that would strengthen the monetary system, eliminate the ELB, and facilitate systematic, transparent & effective monetary policy.

- Highlight **near-term practical steps that the Federal Reserve can take** in the process of establishing U.S. digital cash.
Unconventional Monetary Policy Tools

- The Fed and other major central banks took emergency actions in 2008-2009 to provide liquidity, i.e., serving as lender of last resort.

- By contrast, the Fed’s subsequent actions (especially QE3 and explicit forward guidance) were intended to provide monetary stimulus when rates were constrained by the ELB.

- QE3 was specifically aimed at reducing the term premium on longer-term yields, thereby promoting faster recovery and raising inflation to the Fed’s 2% target.
The Complexity & Opacity of QE3

- The New York Fed’s survey indicates that the launch of QE3 in Sept. 2012 came as a surprise to most primary dealers.

- Moreover, primary dealers and other market participants remained highly uncertain about key aspects of the QE3 program, including:
  - Overall Size
  - Extent & Pace of Tapering
  - Timing of Reinvestments
  - Sales vs. Runoff of Securities

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U.S. Primary Dealers’ Expectations about the Fed’s Security Holdings

Source: Federal Reserve Bank of New York surveys of primary dealers; Federal Reserve Board H.4.1 data.
Effects of QE3 on Treasury Yields

- The initial launch of QE3 had practically no effect on the yield curve, as indicated by the term premium on 10-year U.S. Treasuries.
- The “taper tantrum” of spring 2012 was associated with a sharp rise in Treasury yields.
- The NY Fed’s survey found that “changes in perception and heightened uncertainty about the FOMC’s view of appropriate monetary policy were key factors” behind the tantrum.
- The term premium remained at elevated levels throughout the remainder of the QE3 program.
The U.S. Treasury Bond Term Premium

Effects of QE3 on the Macroeconomy

- A large empirical literature has found that conventional monetary stimulus affects output and jobs within a few quarters.

- By contrast, the launch of QE3 had only negligible effects on growth of U.S. real GDP and employment over subsequent quarters.

- Likewise, QE3 had no apparent impact on core inflation, which was actually lower in 2014-15 compared with its level in 2011-12.
Gauging the Impact of QE3 on U.S. Real GDP Growth

Source: U.S. Bureau of Economic Analysis (4-quarter chg, %)
Gauging the Impact of QE3 on Growth in U.S. Nonfarm Payrolls

Source: U.S. Bureau of Labor Statistics
Gauging the Impact of QE3 on U.S. Core PCE Inflation

Source: U.S. Bureau of Economic Analysis (4-quarter chg, %)
QE in Other Major Economies

- The European Central Bank began conducting large-scale asset purchases in early 2015 and is now winding down its asset purchases.
- The Bank of Japan launched its quantitative & qualitative easing (QQE) program in 2014 and initiated yield curve control (YCC) in 2016.
- In each case, these unconventional forms of monetary stimulus have had little or no impact on measures of core inflation, which remain well below each central bank’s stated goal.
The ECB’s Asset Purchase Programme

Source: ECB.
Euro Area Core Inflation

Core HICP Inflation (excluding food & energy)

Percent

"below but close to 2 percent"

2015-2018 Range

Launch of APP
Lessons from the Japanese Experience

Core-Core CPI Inflation (ex. food & energy)
Alternative Ways to Mitigate the ELB

- **Raising the inflation target** to 4 or 5 percent (or more) would raise the average level of nominal rates, providing more room for cuts in response to severe shocks, but would also:
  - *Return to the inflation of the early-to-mid 1970s*
  - *Complicate plans of consumers & small firms*
  - *Trigger the renewed indexation of contracts*
  - *Turn the nominal anchor into a political football*
  - *Throw out the baby with the bath water*

- **Implementing digital cash** would allow the central bank to foster true price stability.
Basic Design Principles for Digital Cash

- **Efficient medium of exchange:** facilitates economic and financial transactions
  \[\Rightarrow\text{zero cost per transaction}\]

- **Secure store of value:** bears the same rate of return as other risk-free assets
  \[\Rightarrow\text{zero opportunity cost}\]

- **Stable unit of account:** serves as a measure of real value that facilitates planning and decision-making of households & firms
  \[\Rightarrow\text{zero average inflation rate}\]
Specific Design Characteristics

- **Legal Tender**: can be used for all public and private payment transactions
- **Digital Accounts**: more secure than tokens
- **Real-Time Settlement**: minimizes overhead costs and eliminates counterparty risks
- **Interest-Bearing**: minimal spread between digital cash vs. reserves at the central bank
Digital cash should be provided to the public via designated accounts at financial institutions that are overseen by the central bank:

- Fosters **competition** among providers
- Protects **privacy** of individual transactions
- Facilitates **law enforcement**
- Strengthens **public confidence**

In effect, this provision of digital cash would be similar to that of many other public goods (e.g., water, electricity, transportation).
The Obsolescence of Paper Cash

Paper cash should not be abolished but will rapidly fall into disuse (like VHS & audio tapes).

- Paper cash is costly, so banks and retailers have strong incentives to diminish its use.

- Declining acceptance by retailers diminishes consumers’ rationale for keeping paper cash; this feedback loop has been rapid in Sweden.

- Digital cash should be particularly beneficial for vulnerable households (elderly, disabled, and others who receive social assistance).
Eliminating the ELB

Transfers between digital cash and paper cash should be subject to a graduated system of fees:

- No fees on small withdrawals and deposits of paper cash, effectively exempting ordinary consumers and small business from such fees
- Moderate fees on larger transfers, similar to current ATM fees and cash deposit charges

This fee structure would curtail incentives for arbitrage between paper cash & digital cash, thereby eliminating the ELB while still leaving people free to use paper cash if desired.
Monetary Policy Framework

- By eliminating the ELB, there will no longer be a compelling rationale for targeting a positive inflation rate (the “inflation buffer”).
- The central bank can foster true price stability, i.e., zero average inflation of consumer prices.
- The interest rate on digital cash can serve as the primary tool of monetary policy, even in responding to severe adverse shocks.
- This framework will enable monetary policy to be more systematic, transparent, and effective.
True price stability can be fostered via a simple benchmark, analogous to the Taylor Rule:

\[ i_t = \tilde{\pi}_t + r_t^* + \alpha(\tilde{p}_t - p^*) + \beta(p_t - p^*) + \delta(y_t - y_t^*) \]

where \( i_t \) is the interest rate on digital cash, \( p^* \) is the target price level, \( p_t \) is the actual price index, and \( \tilde{p}_t \) is the core price index. As in the Taylor Rule, this benchmark also involves the equilibrium real rate \( (r_t^*) \), core inflation \( (\tilde{\pi}_t) \), and the output gap \( (y_t - y_t^*) \).
Central Bank Operational Independence

- With the obsolescence of paper currency, the central bank will no longer generate significant amounts of seignorage revenue.
- The interest rate spread between digital cash and Treasury bills will be negligible.
- Fiscal authorities will be solely responsible for determining the maturity composition of government debt held by the public.
- Thus, digital cash will insulate the central bank from political interference & fiscal pressures.
Near-Term Practical Steps

The Federal Reserve can take two crucial steps towards implementing U.S. digital cash by 2020:

- Establish a **real-time payment system (RTPS)**, enabling consumers and businesses to make instantaneous and secure payments at practically zero cost.

- Encourage **narrow banks**, which can offer safe and liquid accounts that accrue roughly the same interest rate as U.S. Treasury bills.
Real-Time Payments

- The European Central Bank is launching a new **instant payments system** this month:
  - No setup or maintenance charges
  - Transaction fee of 0.2 eurocents (€0.002)
- A Federal Reserve task force recently concluded that RTPS will “help level the playing field and enhance competition” and called on the Fed to “begin efforts immediately” for launching RTPS “by 2020.”
- Last month the Federal Reserve issued a notice soliciting public comments on RTPS.
Narrow Banks

A narrow bank holds all of its deposits as reserves at the central bank and pays that interest rate (less a tiny margin) on its deposits.

- Narrow banks can enhance competition without displacing conventional banks that focus on customer relationships and/or raise funds in wholesale markets.

- Narrow banks can operate under the same legal arrangements as other commercial banks but may not need any FDIC insurance.

- Thus, the Fed should welcome narrow banks.
Digital Cash and Financial Stability

- In a financial crisis, cutting the digital cash interest rate below zero would prevent runs from other assets into digital cash.

- A temporary surge in risk spreads would be reflected in a lower risk-free rate, insulating the nonfinancial economy from the crisis.

- A relatively steep yield curve would foster bank lending and rapid recovery, in contrast to unconventional tools that flatten the yield curve and hence induce imprudent behavior in conjunction with a sluggish recovery.
The global economy remains turbulent, and the ELB is likely to be a recurring constraint on U.S. monetary policy.

Recent experience shows that unconventional tools are complex, opaque, and ineffectual.

Raising the inflation target is undesirable.

Digital cash can enhance all aspects of the monetary system and eliminate the ELB.

The Federal Reserve should act promptly to foster the implementation of U.S. digital cash.