

# U.S. Digital Cash: Principles & Practical Steps

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November 2018

***Note: The views expressed here should not be interpreted as conveying the views of any other person or institution.***

# Introduction

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- 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

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- 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

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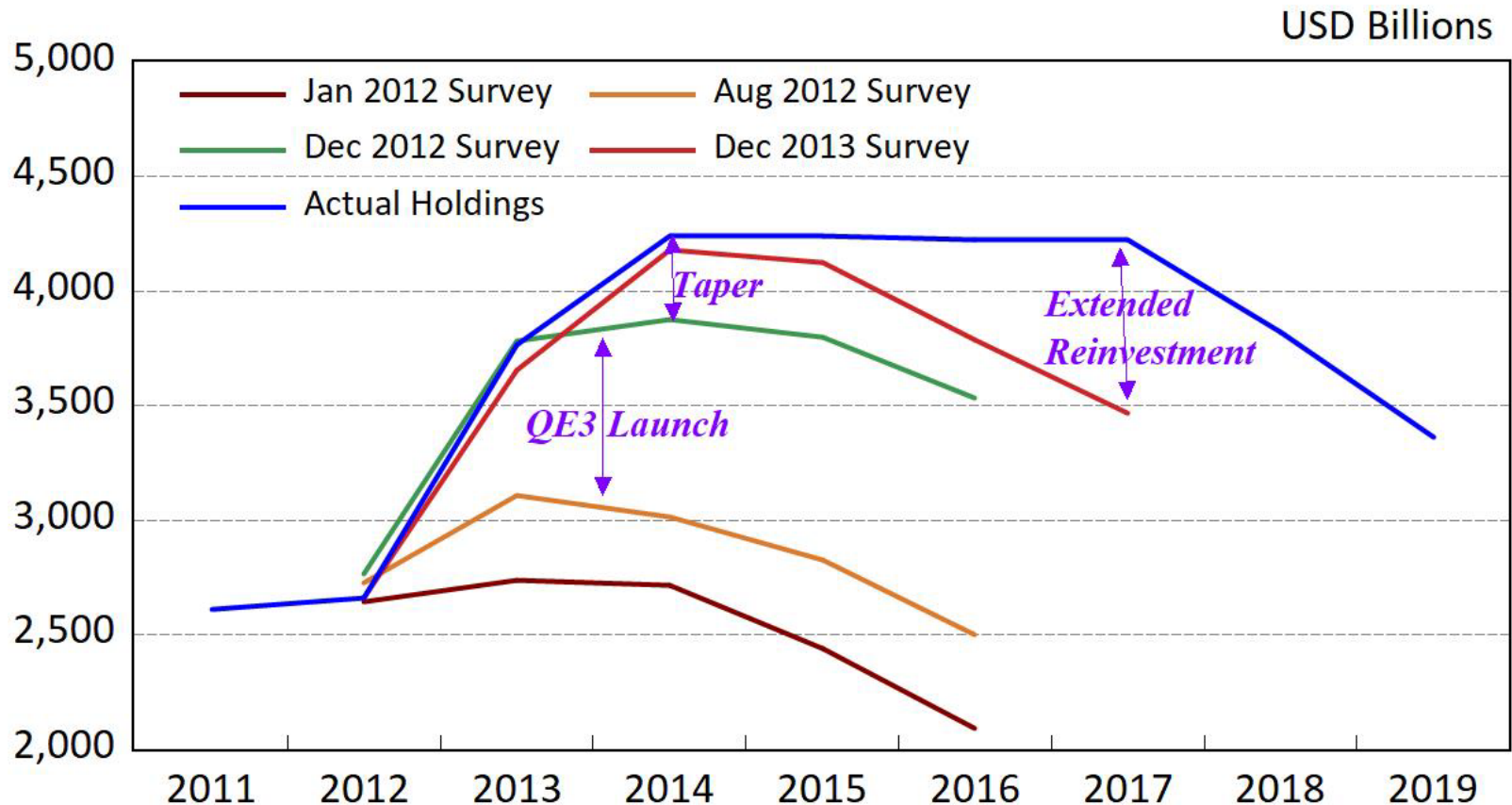
- **The Fed and other major central banks took emergency actions in 2008-2009 to provide liquidity, i.e., serving as lender of last resort.**
- **By contrast, the Fed's subsequent actions (especially QE3 and explicit forward guidance ) were intended to provide monetary stimulus when rates were constrained 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

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- 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

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



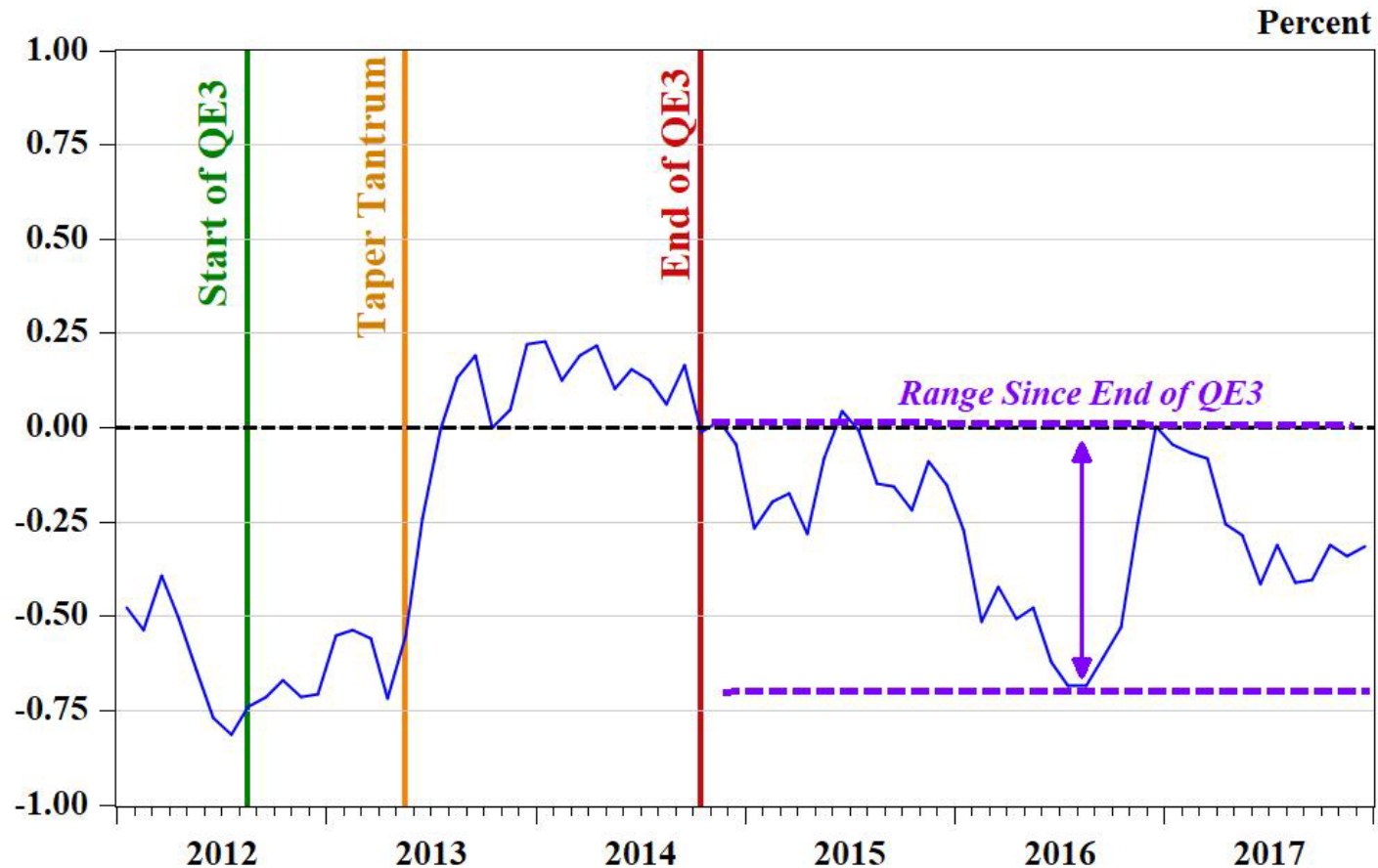
**Source: Federal Reserve Bank of New York surveys of primary dealers; Federal Reserve Board H.4.1 data.**

# Effects of QE3 on Treasury Yields

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- 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



**Source: Federal Reserve Board updates of Kim & Wright (2006) for term premium on 10-year constant maturity Treasury bond.**

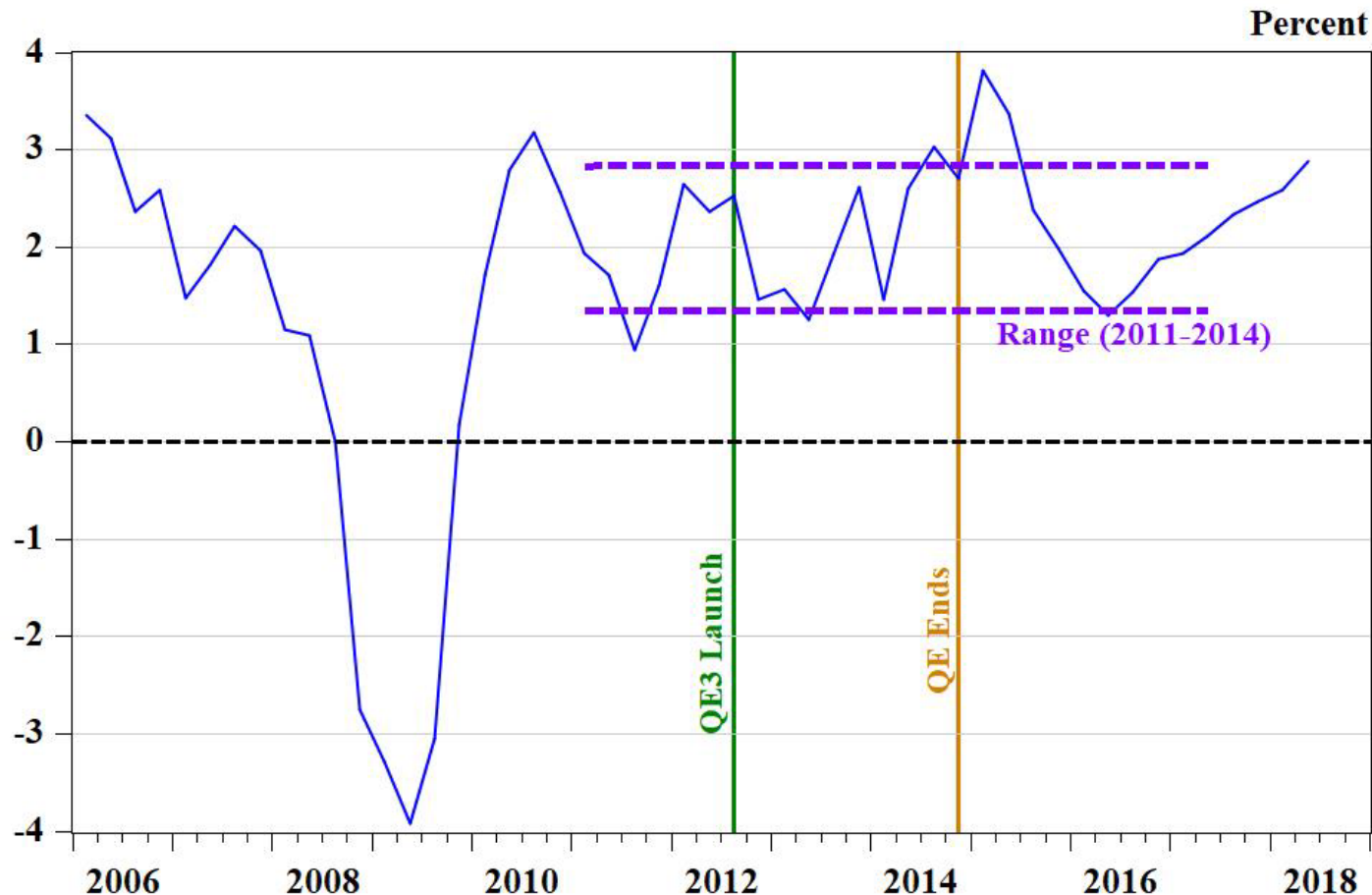


# Effects of QE3 on the Macroeconomy

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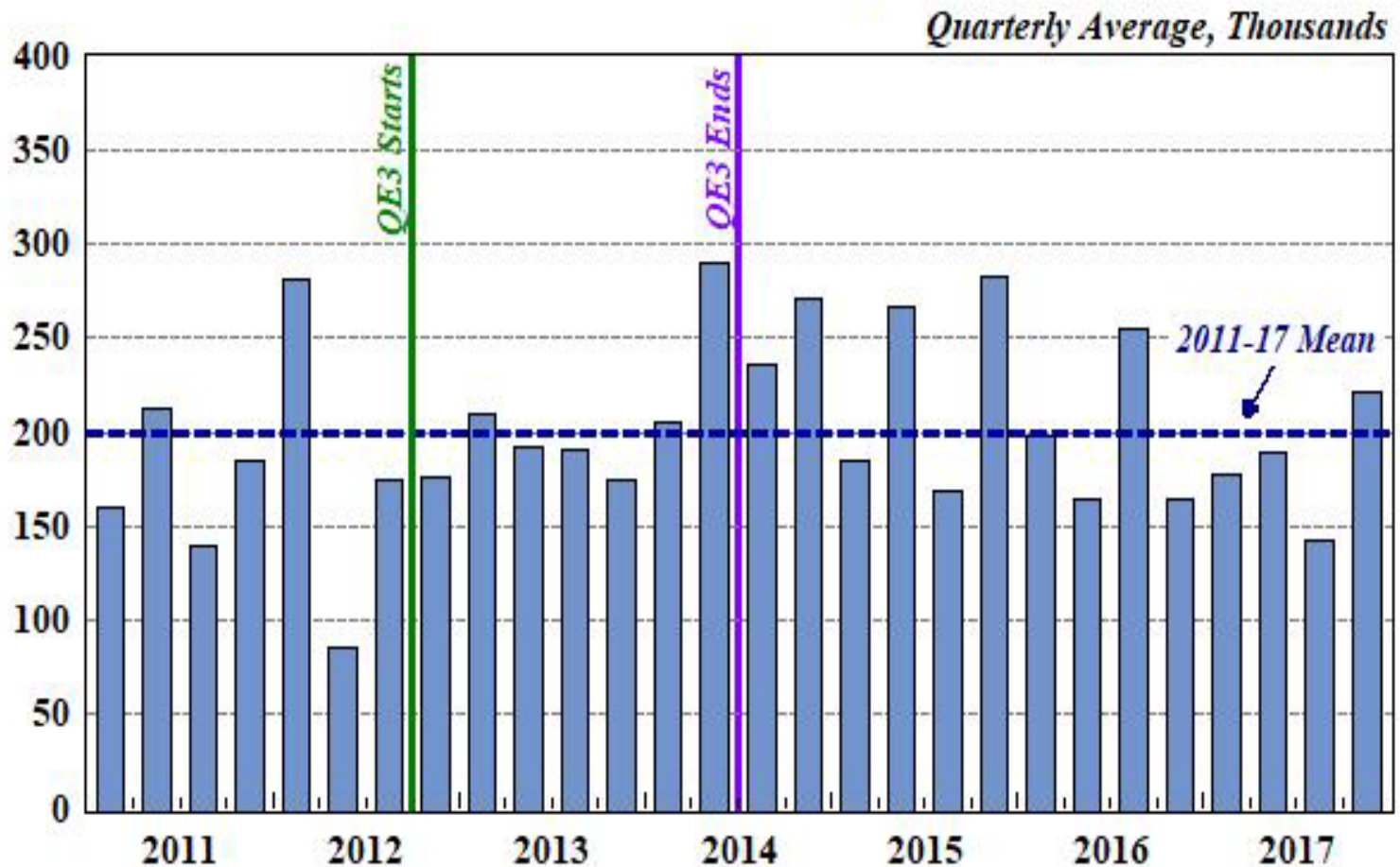
- A large empirical literature has found that conventional monetary stimulus affects output and jobs within a few quarters.
- By contrast, the launch of QE3 had only **negligible effects on growth of U.S. real GDP and employment** over subsequent quarters.
- Likewise, QE3 had **no apparent impact on 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



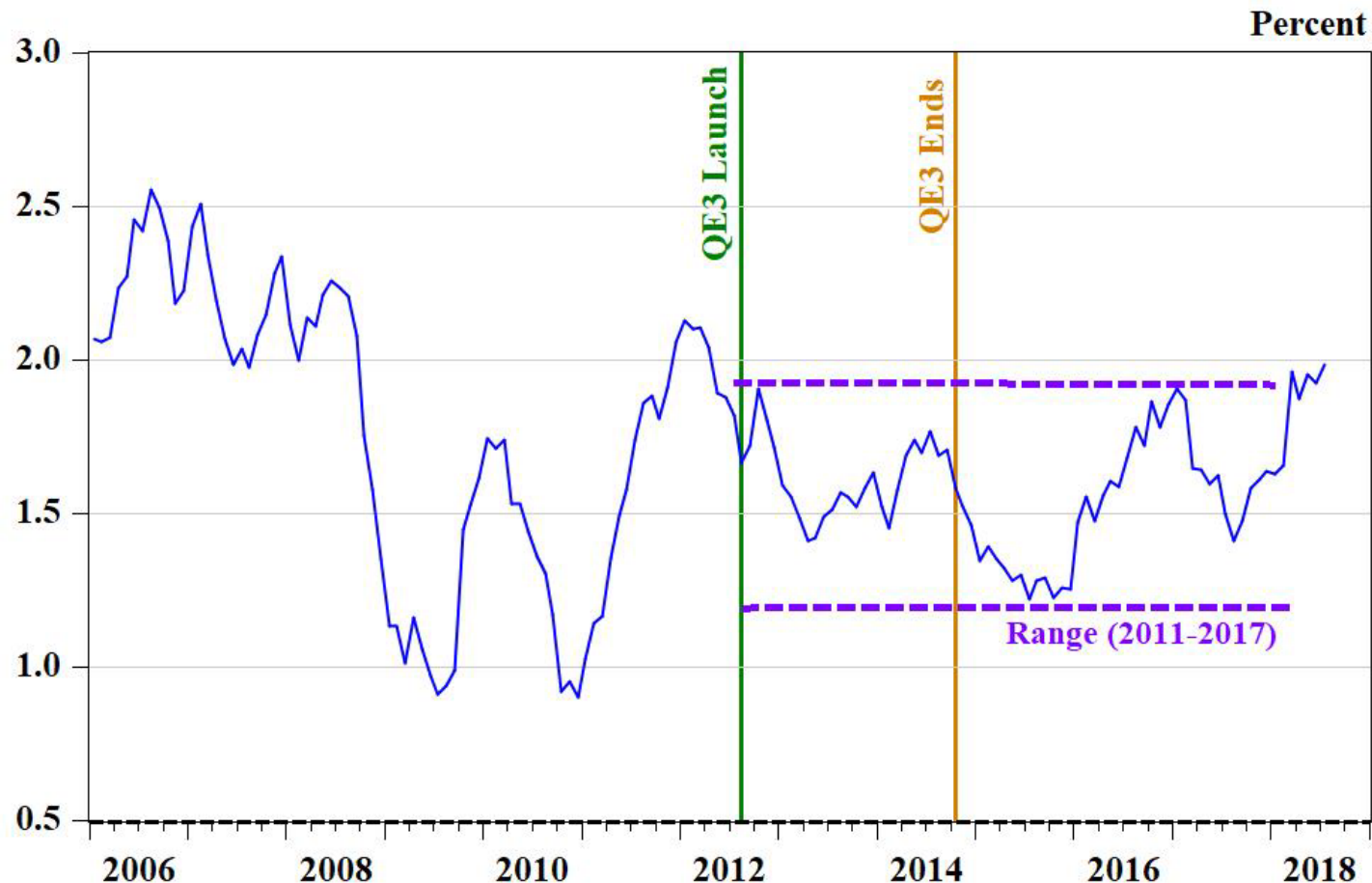
**Source: U.S. Bureau of Economic Analysis (4-quarter chg, %)**

# 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



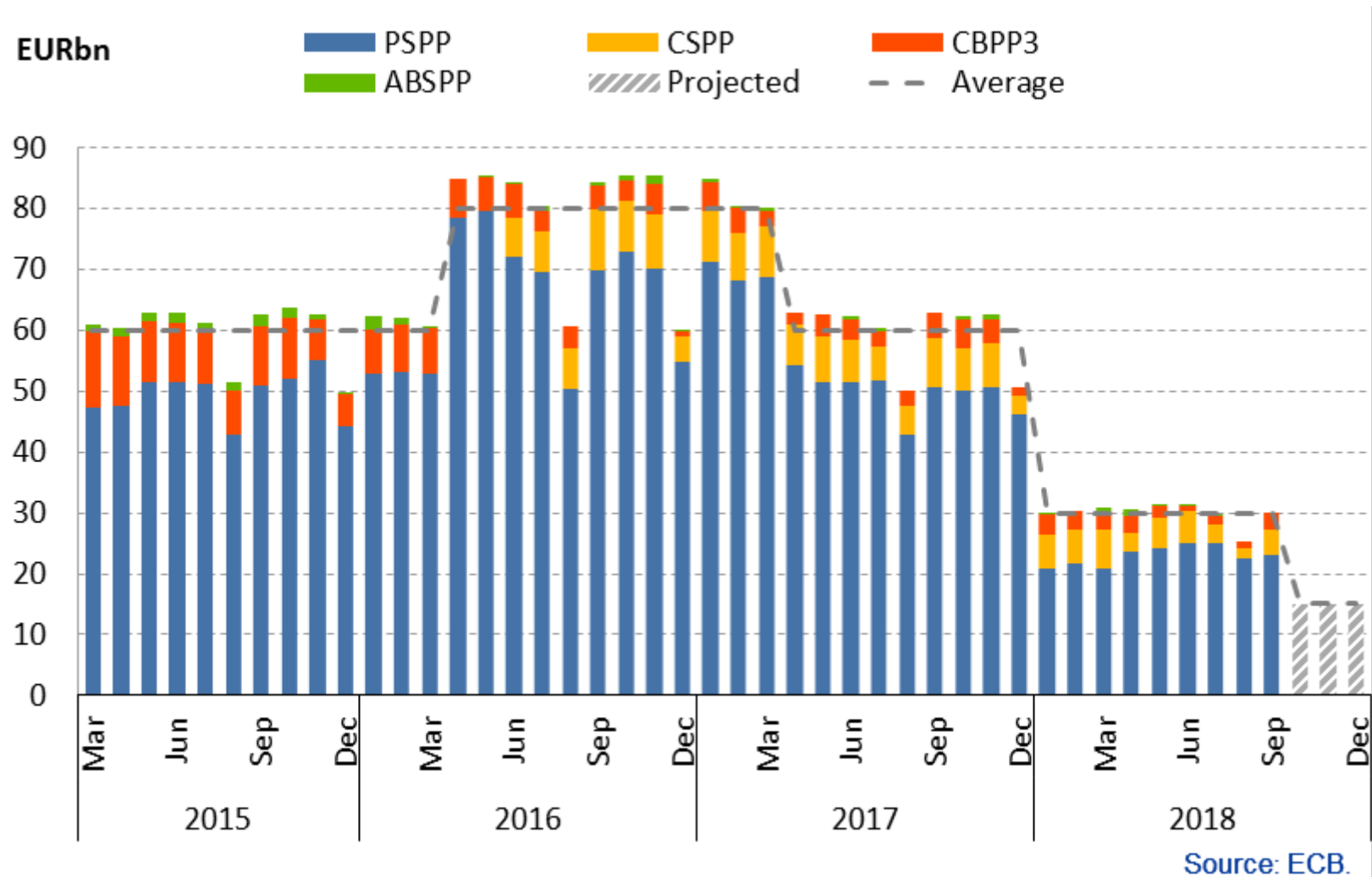
**Source: U.S. Bureau of Economic Analysis (4-quarter chg, %)**

## QE in Other Major Economies

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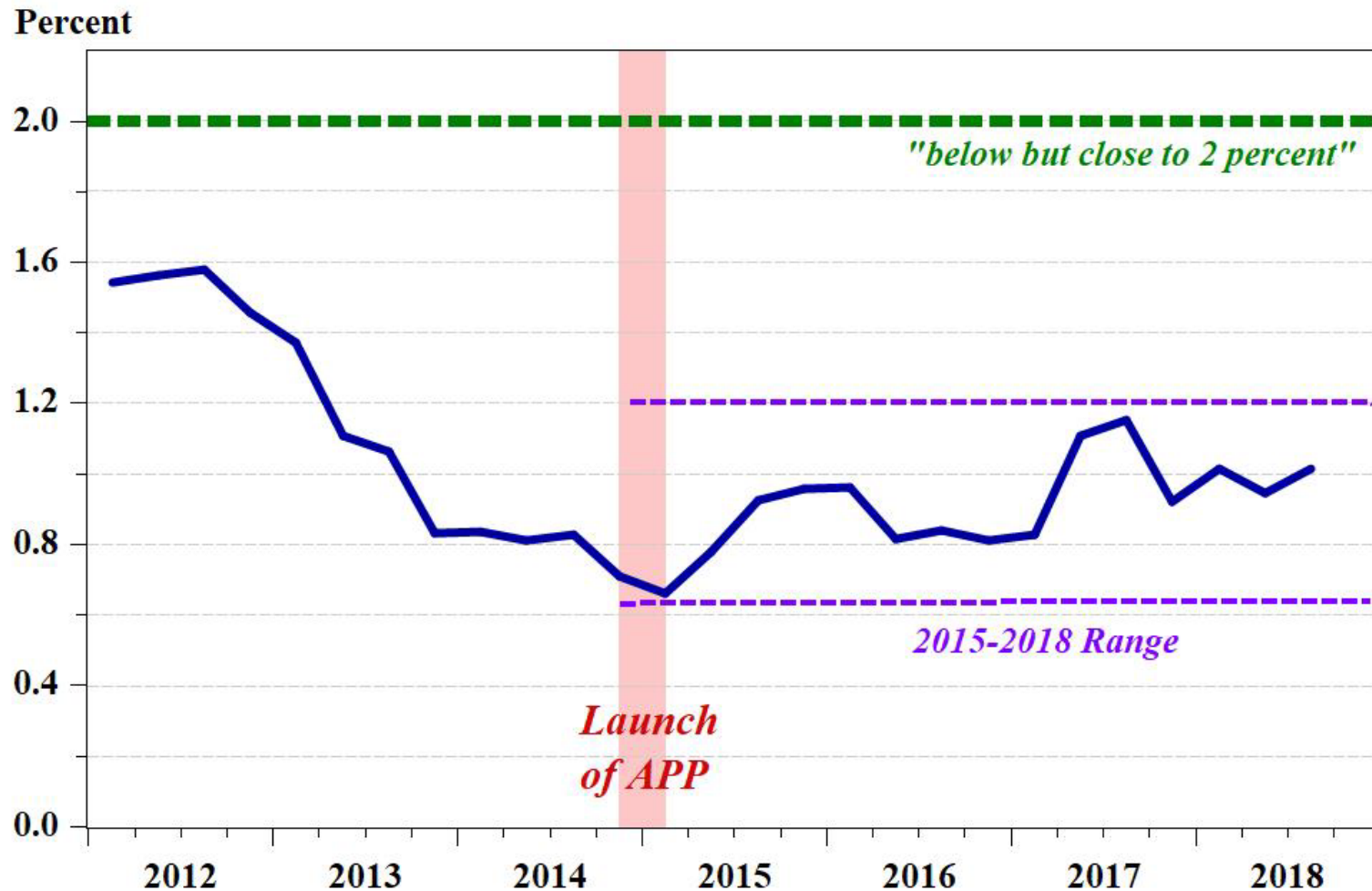
- The **European Central Bank** began conducting large-scale asset purchases in early 2015 and is now winding down its asset purchases.
- The **Bank of Japan** launched its quantitative & qualitative easing (QQE) program in 2014 and initiated yield curve control (YCC) in 2016.
- In each case, these unconventional 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



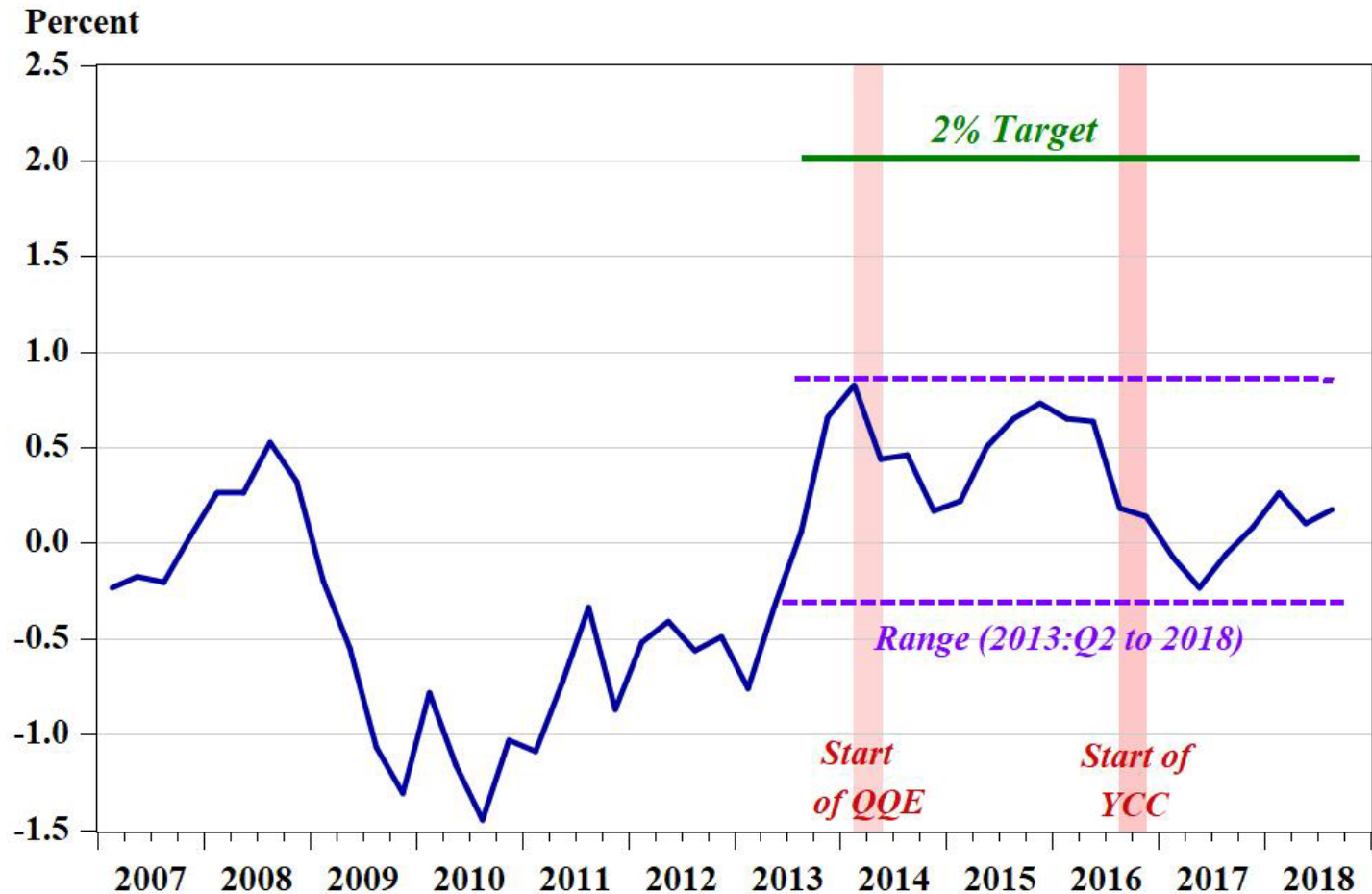
# Euro Area Core Inflation

## *Core HICP Inflation (excluding food & energy)*



# Lessons from the Japanese Experience

## Core-Core CPI Inflation (ex. food & energy)





# Alternative Ways to Mitigate the ELB

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- **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

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- **Efficient medium of exchange:** facilitates economic and financial transactions  
==> zero cost per transaction
- **Secure store of value:** bears the same rate of return as other risk-free assets  
==> zero opportunity cost
- **Stable unit of account:** serves as a measure of real value that facilitates planning and decision-making of households & firms  
==> zero average inflation rate

# Specific Design Characteristics

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- **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

# Public-Private Partnerships

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**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

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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

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**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

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- 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**.

# Fostering True Price Stability

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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

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- **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

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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

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- 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

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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

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- 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.

# Conclusion

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- 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.