

# Monetary policy in a low interest rate world

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Disclaimer: The views expressed here are my own and do not necessarily reflect the views of the Bank of Greece or the Eurosystem.

# Three main questions:

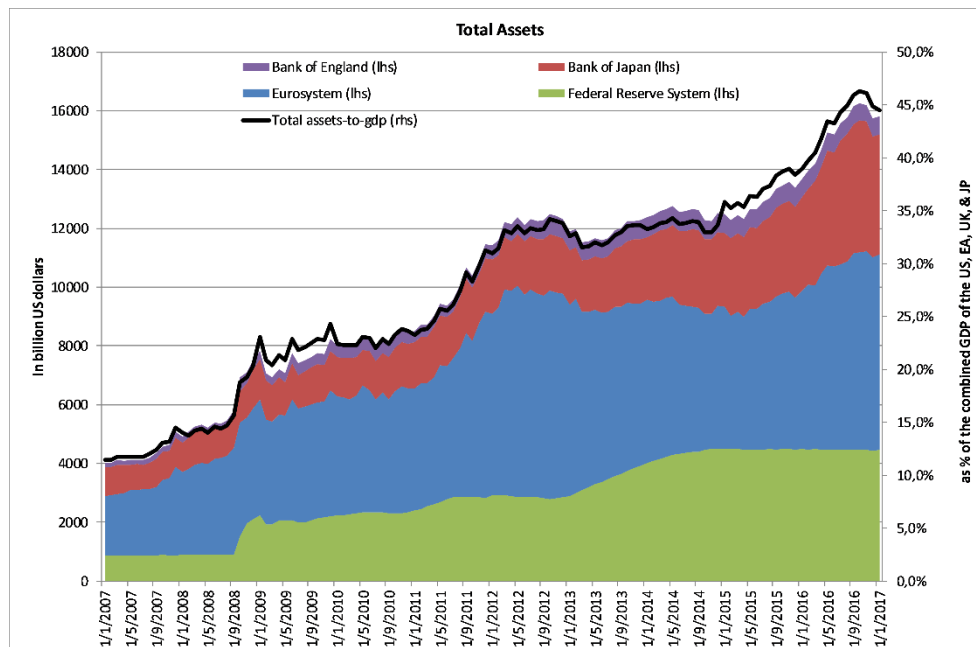
1. **Low interest rate environment: will it last and how much longer?**
  - QE as a global factor? Secular decline in  $r^*$ ? Or temporary? What is the view of bond markets?
2. **Will central banks continue to use QE in the future (and why)?**
3. **Should central banks keep their balance sheets large (and why)?**

**I will argue that:**

1. **Low interest rates likely to last but not forever.**
2. **Central banks will likely continue to use QE in the future.**
  - Because ZLB will remain binding (at least) until the next economic downturn.
3. **Central banks should consider benefits from keeping their balance sheets large.**
  - Because of “shortage of safe assets”, “collateral traps” and financial stability considerations.

## QE has led to a massive expansion of central banks' balance sheets

### Combined balance sheet of four major central banks

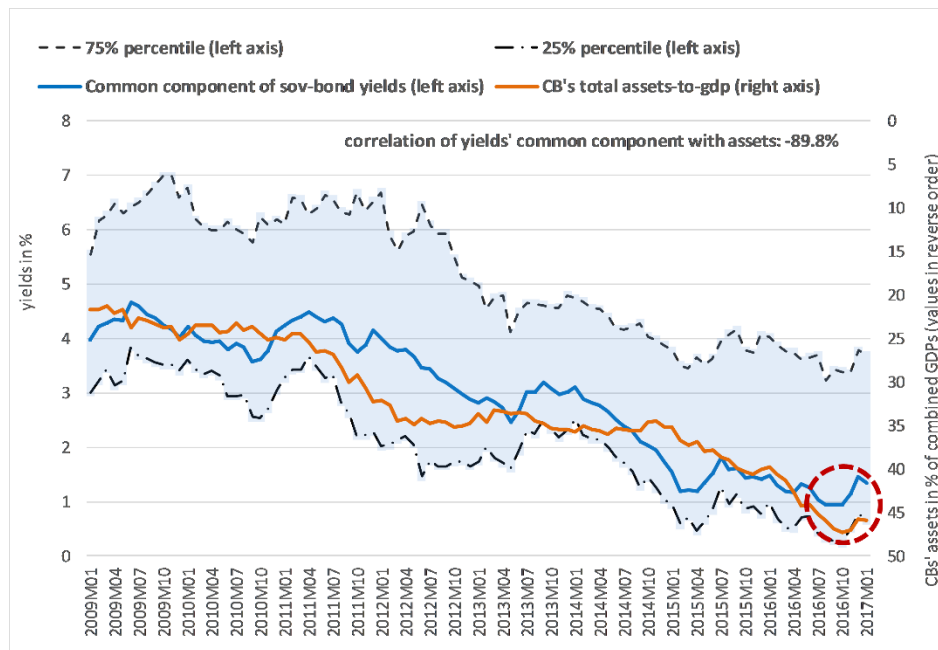


Source: Malliaropoulos and Migiakis (2018): Unconventional monetary policy and sovereign bond yields: a global perspective (Bank of Greece, unpublished working paper).

- The size of the aggregate balance sheet of the four major central banks (Fed, ECB, BoJ, BoE) quadrupled from USD 4 trillion in 2007 to about USD 16 trillion currently.
- This is equivalent to 45% of combined GDP in the four countries/economic areas, up from about 10% of GDP in 2007.

## QE is a global risk factor: motivation

### Size of balance sheet and global yields

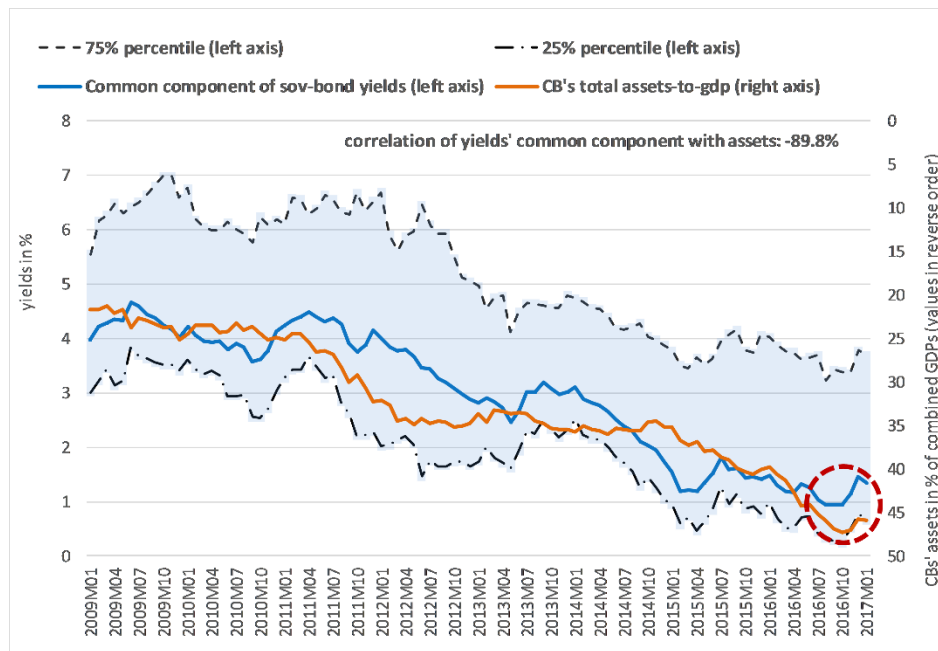


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- Aggregate balance sheet of the four major central banks as a share of the combined GDP of the four countries/areas is strongly correlated with the first principal component of ten-year sovereign bond yields of 45 sovereigns across all rating classes.
- Graph suggests a long-run relationship between size of CBs' balance sheets and global bond yields.

# QE is a global risk factor: evidence

## Size of balance sheet and global yields



Source: Malliaropoulos and Migiakis (2018): Unconventional monetary policy and sovereign bond yields: a global perspective (Bank of Greece, unpublished working paper).

Regression:

$$R_{it} = \alpha_i + \beta_1 c_{it} + \beta_2 \left( \frac{CBs' \text{ total assets}}{GDP} \right)_t + \beta_3 \left( \frac{CBs' \text{ total assets}}{GDP} \right)_t \cdot c_{it} + e_{it}$$

↑
↑
↑

Credit ratings
QE
Interaction

$R_{it}$  : 10-year bond yield of sovereign  $i$ , ( $i=1, \dots, 45$ );

$c_{it}$  : credit rating of sovereign;

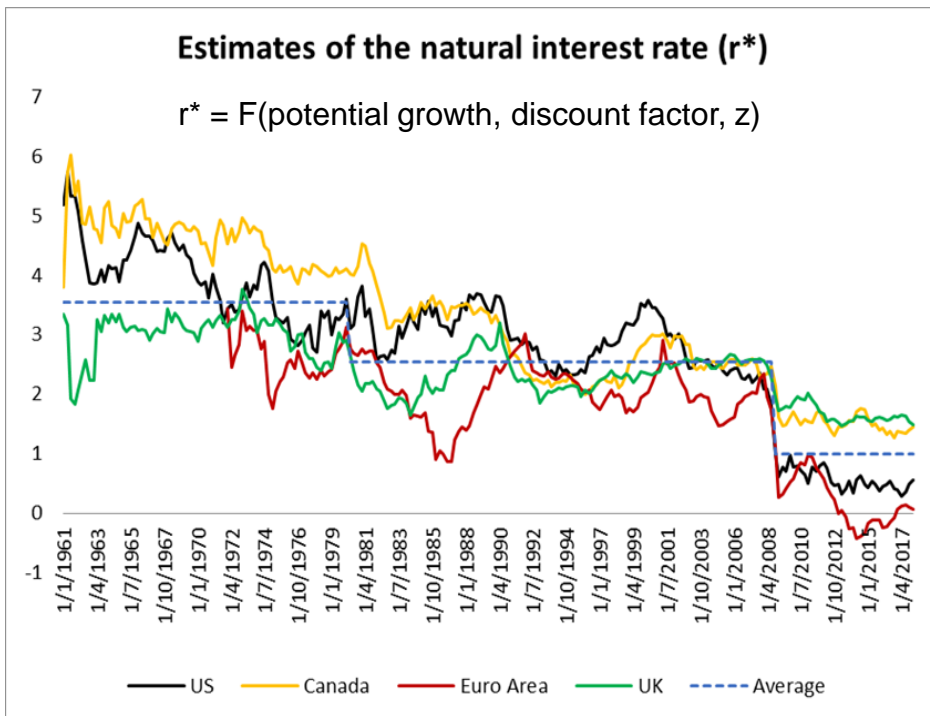
$(CBs' \text{ total assets}/GDP)$ : size of the balance sheet of the four major central banks as a fraction of GDP.

Findings:

- QE has led to a *permanent* decline in sovereign bond yields globally, ranging from 250 bps for AAA rated bonds to 330 bps for B rated bonds.
- Interpretation: large-scale asset purchases of central banks reduce the effective supply of government bonds available to the private sector.

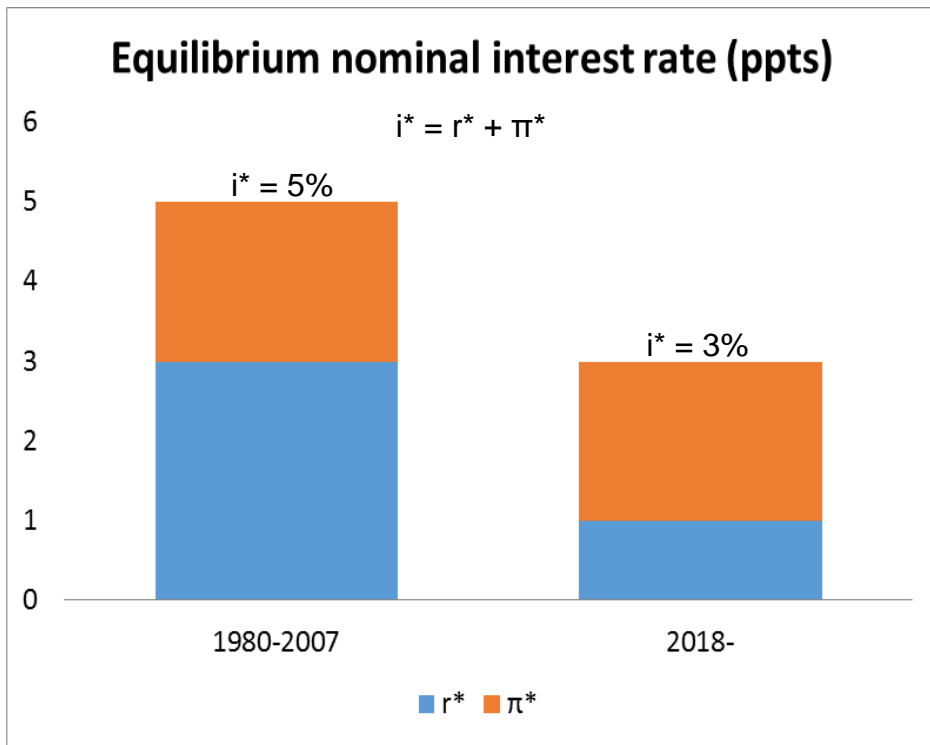
# The secular decline in the “natural” interest rate

## (A revival of Knut Wicksell, Solow-Swan and Ramsey models)



- The secular decline in the natural (equilibrium real) rate may be related to:
- the slowdown in trend productivity growth, - “secular stagnation” hypothesis (Gordon 2015, 2016, Summers 2016 and others);
- the decline in the growth rate of labour supply, due to ageing of population;
- the increase in life expectancy (people must save more for retirement, hence are ready to accept a lower real return on their savings);
- Global factors such as the “global savings glut” (Bernanke 2005);
- The decline in the relative price of capital goods (Rachel and Smith 2015) → decline in aggregate investment relative to savings;
- the increase in the share of services sectors (Summers 2014) → less capital intensive → less investment needed on aggregate (WhatsApp vs Sony).

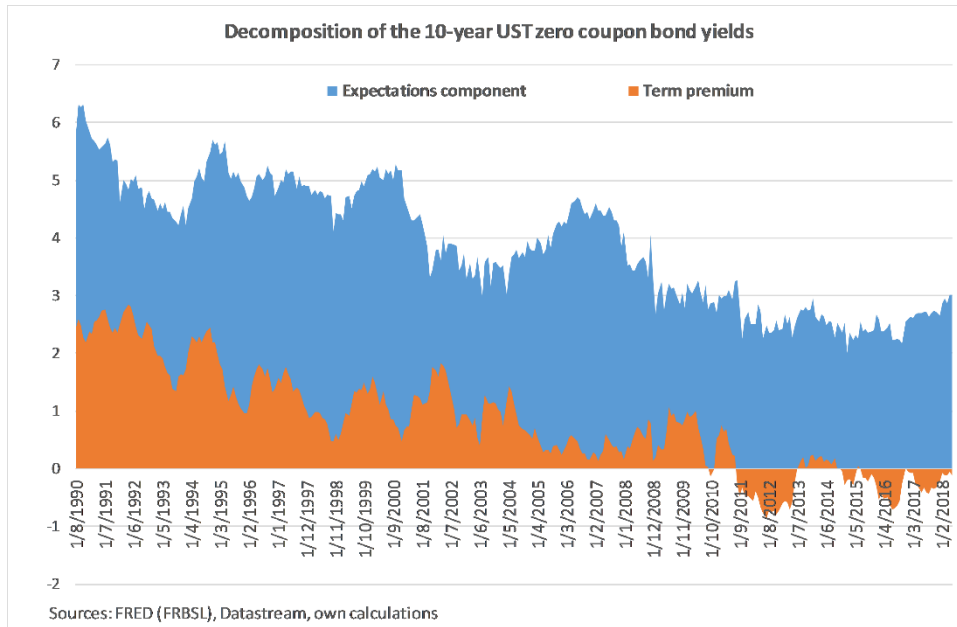
## The secular decline in the “natural” interest rate: implications



Source: author's calculations.

- If  $r^*$  in fact declined permanently to 1% from 3% and  $\pi^*=2$ , then equilibrium nominal short-term interest rate = 3% rather than 5%.
- Policy rates will be more constrained by ZLB.
- Central banks have less room to cut rates in a recession.
- Kiley and Roberts (2017): Fed Funds rate will be at the ZLB 38% of the time.

# Bond markets agree with the view that short-term interest rates will be lower in the future



- 10-year treasury yields discount an average Fed Funds rate of 3% over the next 10 years!
- Term premia fell to negative territory after mid-2011.



## Proposed strategies to mitigate decline in $r^*$

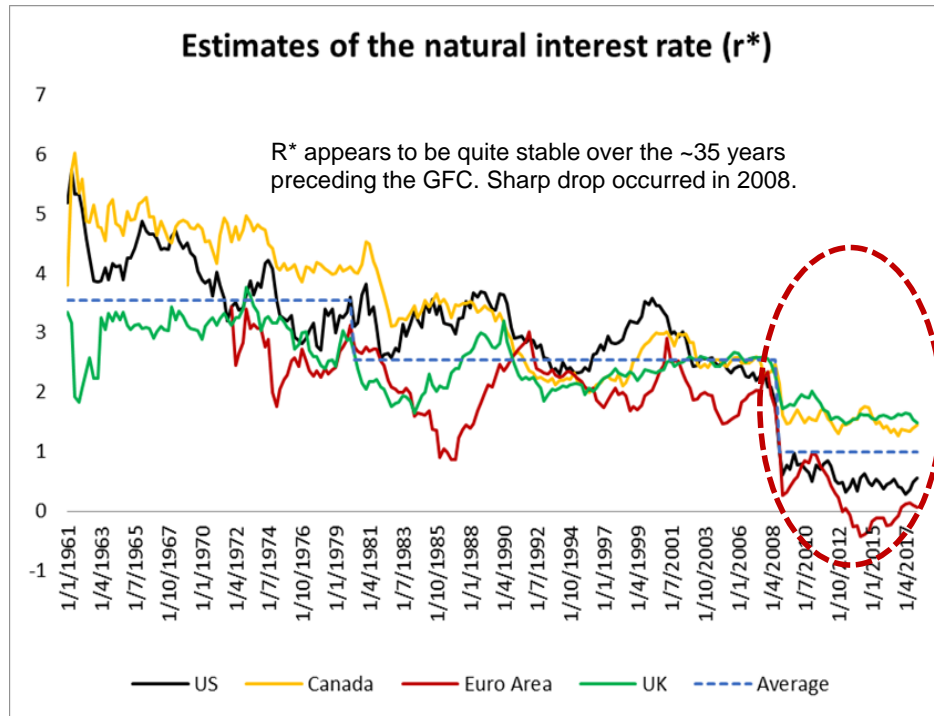
- **Structural policies** aiming at raising productivity, pension reforms etc.
- **Monetary policy:**
  - Raising the inflation target
  - Switching to a price level / nominal GDP target
  - Negative interest rates
  - Abolishing cash

## A critical reassessment of the secular decline in $r^*$ hypothesis

Econometric and conceptual issues limit the usefulness of  $r^*$  concept for monetary policy.

1. Due to parameter uncertainty and ex post data revisions, estimates of  $r^*$  are quite imprecise;
2. Theory's predictions about a stable relationship between real risk-free rates and economic growth does not work well empirically - "risk-free rate puzzle" (Weil 1989);
3. Return of capital has been on an upward path over the past 40 years or so, in contrast to estimates of  $r^*$  which are trending downwards.
4. Equilibrium real interest rate is sensitive to regulatory constraints, the level of inflation, asset bubbles, headwinds to economic recovery and monetary policy itself (Hamilton et al 2015).

## The decline in $r^*$ may be less “secular” than thought



Source: Holston, Laubach and Williams (2017).

Sharp drop in 2008 may be related to *temporary (but relatively persistent) headwinds*, arising from the GFC, rather than structural factors:

- hysteresis of potential output due to a chronic weakness of demand (Summers 2014);
- the slow deleveraging process of private and public sector due to debt overhang: “balance-sheet recession” (Reinhart and Rogoff 2009);
- a “debt supercycle” (Rogoff 2015, Lo and Rogoff 2015);
- the decline in the global supply of safe assets: “safety trap” (Caballero and Fahri 2014).

## Monetary policy in the “new normal”

- There is no strong case for a fundamental change in the monetary policy framework.
- Nevertheless, central banks will continue to use the size of their balance sheet and forward guidance as a complement to the standard interest rate policy.
- There are a number of both theoretical and practical reasons for doing so:
  1. The ZLB will continue to be a binding constraint on interest rate policy in a low inflation - low interest rate environment. Race against time until next recession hits!
  2. There are good arguments in favour of central banks keeping large balance sheets.
    - a. Liquidity is desired, especially in a crisis, and creating liquidity enhances financial stability: crowding out of “inside liquidity” in shadow-banking system (Greenwood, Hanson and Stein 2016, Bernanke 2016);
    - b. Central banks can provide short-term safe assets to the financial system when there is a shortage of safe assets (Caballero and Fahri 2014).
    - c. Due to profits from seignorage, central banks have a cost advantage over Treasuries in the provision of safe assets.
    - d. Central banks can use collateral swaps (high-quality against low-quality) to mitigate “collateral traps” (Boissay and Cooper 2014).
    - e. If QE has led to a permanent decline in global bond yields, then reducing the size of the balance sheet too fast may induce financial instability (Malliaropulos and Migiakis 2018).

## Monetary policy dilemmas in EMEs

- Monetary policy dilemmas confronting emerging markets are very different from those of advanced economies.
- First, and most importantly, EMEs were never constrained by the ZLB. Unlike advanced economies, monetary policy dilemmas in EMEs derive from traditional sources such as **fiscal dominance**, **supply-side constraints** leading to stagflationary episodes and **spillovers** from monetary policy in advanced economies (Sheel 2016).
- The debate on monetary policy in EMEs is centered on the **monetary trilemma** (“impossible trinity”) of the Mundell-Fleming model. According to the trilemma theory, a country can have only two of the following three: *fixed exchange rate*, *monetary independence*, and *free capital flows*.
- Following the GFC and the increased role of US monetary policy in influencing other countries’ national monetary policy through capital flows, credit growth and bank leverage, the debate centers on whether the trilemma has currently reduced to a **dilemma between monetary independence and free capital mobility** (Rey 2013).
- However, regardless of whether the exchange rate regime matters or not, central banks in EMEs must carefully steer their economies in rough waters: while trade protectionism and a slowdown of external demand calls for an easing of monetary policy, the turning of the QE cycle and the resulting threat of sudden stops call for higher interest rates.

# References

- Andrle, M. (2013): What is in your output gap? Unified framework & decomposition into observables. IMF Working Paper 13/105.
- Ball, L. (2014): The case for a long-run inflation target of four percent. IMF Working Papers 14/92.
- Barclays (2012): Equity gilt study.
- Bernanke, B. (2005): The global savings glut and the U.S. current account deficit. Sandridge Lecture. <http://www.federalreserve.gov/boarddocs/speeches/2005/200503102/>
- Bernanke, B. (2016): Should the Fed keep its balance sheet large? Brookings Institution. <https://www.brookings.edu/blog/ben-bernanke/2016/09/02/should-the-fed-keep-its-balance-sheet-large/>
- Bernanke, B. (2017), "Monetary Policy in a New Era", conference on Rethinking Macroeconomic Policy, Peterson Institute for International Economics, 12-13 October 2017.
- Boissay, F. and Cooper, R. (2014): The collateral trap. NBER Working Paper No. 20703.
- Buiter, W., Rahbari, E., Jensen, K.D. and Rojas, C. (2017): Global economic views: Why does the Fed (or any central bank) want to shrink its balance sheet? City Research, Global Economic Views, 9, August 2017.
- Caballero, R.J. and Fahri, E., (2014): The safety trap. NBER Working Paper No 19927.
- Constancio, V. (2016): The challenge of low interest rates for monetary policy, Speech at the Macroeconomics Symposium at Utrecht School of Economics, 15 June 2016.
- Constancio, V. (2017): Past and future of ECB monetary policy, Speech at the Conference on "Central Banks in Historical Perspective: What Changed After the Financial Crisis?", organised by the Central Bank of Malta, Valletta, 4 May 2017.
- Del Negro, M., Giannone, D., Giannoni, M.P. and Tambalotti, A. (2017): Safety, liquidity, and the natural rate of interest. Brookings Papers on Economic Activity, Spring 2017.
- Eggertsson, G. and Woodford, M. (2003): The zero bound on interest rates and optimal monetary policy. Brookings Papers on Economic Activity, No 1, pp. 139-211.
- Greenwood, R. Hanson, S.G. and Stein, J.C. (2016): The Federal Reserve's balance sheet as a financial tool. Paper presented at the 2016 Jackson Hole Symposium of the Federal Reserve Bank of Kansas City.
- Gordon, R.J. (2015): Secular stagnation: A supply-side view. American Economic Review, Papers and Proceedings, Vol 105(5), pp. 54-59.
- Golec, P. and Perotti, E. (2017): Safe assets: A review. ECB Working Paper No. 2035.
- Gordon, R.J. (2016): The rise and fall of American growth: The US standard of living since the civil war. Princeton University Press.
- Hamilton, J.D., Harris, E.S., Hatzius, J. and West, K.D. (2015): The equilibrium real funds rate: Past, present and future. NBER Working Paper No. 21476.
- Holston, K., Laubach, T. and Williams, J.C. (2017): Measuring the natural rate of interest: International trends and determinants. Journal of International Economics 108, pp. S59-S75.
- Kiley, M. (2015): What can the data tell us about the equilibrium real interest rate? Finance and Economics Discussion Series 2017-77. Washington: Board of Governors of the Federal Reserve System.
- Kiley, M. (2018): Quantitative easing and the "new normal" in monetary policy. Finance and Economics Discussion Series 2018-004. Washington: Board of Governors of the Federal Reserve System.
- Kiley, M. and Roberts, J. (2017): Monetary policy in a low interest rate world. Brookings Papers on Economic Activity, Spring 2017, pp. 317-372.
- Laubach, T. and Williams, J.C. (2003): Measuring the natural rate of interest. Review of Economics and Statistics, Vol 85(4), pp. 1063-70.
- Lo, S. and Rogoff, K. (2015): Secular stagnation, debt overhang and other rationales for sluggish growth, six years on. BIS Working Paper 482. <http://www.bis.org/publ/work482.htm>.
- Malliaropoulos, D. and Migiakis, P. (2018): Unconventional monetary policy and sovereign bond yields: A global perspective. Bank of Greece Unpublished Working Paper.
- MacDonald, M. (2017): International capital market frictions and spillovers from quantitative easing. Journal of International Money and Finance 70, pp. 135-156.
- Martinelli, T. (2016): Euro CAC and the existing rules on sovereign debt restructuring in the euro area: An appraisal four years after the Greek debt swap. Ademu Working Paper Series No 2016/043.
- Rachel, L. and Smith, T.D. (2015): Secular drivers of the global real interest rate. Bank of England Staff Working Paper No. 571.
- Reifschneider, D. (2016): Gauging the ability of the FOMC to respond to future recessions. Finance and Economics Discussion Series 2016-068. Washington: Board of Governors of the Federal Reserve System.
- Reinhart, C. and Rogoff, K. (2009): This time is different: Eight centuries of financial folly. Princeton University Press.
- Rey, H. (2013): Dilemma not Trilemma: The global financial cycle and monetary policy independence. Paper presented at the 2013 Jackson Hole Symposium of the Federal Reserve Bank of Kansas City.
- Rogoff, R. (2015): Debt supercycle, not secular stagnation, 22 April 2015. [www.voxeu.org/article/debtsupercycle-not-secular-stagnation](http://www.voxeu.org/article/debtsupercycle-not-secular-stagnation)
- Summers, L. (2014): US economic prospects: Secular stagnation, hysteresis, and the zero lower bound. Business Economics, vol. 49(2), pp. 65-73.
- Summers, L. (2016): The age of secular stagnation: what it is and what to do about it. Foreign Affairs March/April 2016.
- Sheel, A. (2016): Monetary policy dilemmas at the current juncture. Economic and Political Weekly, March 19, 2016, pp. 46-55.
- Weil, P. (1989): The equity premium puzzle and the risk-free rate puzzle. Journal of Monetary Economics, Vol. 24, pp. 401-421.
- Williams, J.C. (2016): Monetary policy in a low R-star world. FRBSF Economic Letter 2016-23, August 15, 2016.