Low Interest Rates: Global Origins and Consequences for Monetary Policy

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Short-term interest rates in major DM

Source: OECD

Long-term interest rates in major DM

Long-term government bond yields
(10-years; % p.a.)

DE — EA — UK — US

Source: ECB, Deutsche Bundesbank, Bank of England and Federal Reserve Board.
Latest observation: May 2016.

Questions

- What are the reasons of persistently low interest rates observed in major DM during last decade?
- What consequences does that persistence provoke for the economy and monetary policy?
- What central banks can/cannot do in this situation?

What answers does recent literature provide for these questions?

Possible reasons

Modern literature gives a wide range of possible causes for exceptionally low interest rates phenomenon:

1. Downward trend in the value of «neutral» interest rate;
2. Increase in convenience yield;
3. Imbalance between desired saving and investment demand;
4. Slowdown in potential growth & demographics;
5. Market perceptions regarding the probability of Great Recession repetition;
6. Increase in monopoly power and market concentration.

Neutral interest rate

Posch (2018):

- How can short-term interests rates be lowered to near zero values without inflation picking up as predicted by standard arguments?
- Simple NK-model cannot replicate observed patterns in data without taking into account shocks in natural interest rate and target inflation rate.
- Extending the NK-model with transitory shock in natural interest rate helps to explain the ZIRP period.
- Approach is fully based on extended **non-linear** NK model.

Can we be sure that the shock in natural interest rate was completely transitory when it comes to the explanation of data patterns?
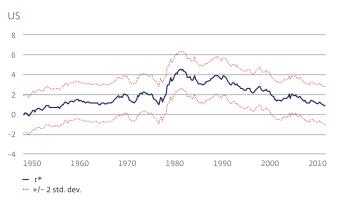
Neutral interest rate

Bonam et al. (2018):

- Develop several empirical models to estimate r^*.
- Show that the value of r^* has fallen over recent decades, but this downward trend is less marked when viewed over a period of 200 years.
- Real interest rates have been in a downward phase since the 1980s, possibly reflecting the influence of financial factors on r^*, such as deleveraging.
- Estimates of r^* are highly uncertain and depends on particular model specification.
- Conclusions coincide with *Weber et. al (2017)* that uncertainty regarding the level of r^* constrains its practical usefulness as a benchmark for monetary policy.

Estimates of neutral interest rate: USA

Figure 3.2 Estimates of r* using MUC model (percentage, quarterly data), where r* is the trend component of the real long-term interest rate
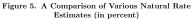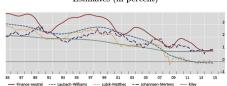

Source: *Bonam et al.(2018)*
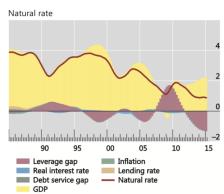
Neutral interest rate

Juselius et al. (2017):

- The estimate of r^* tends to be higher than conventional ones if financial cycle is taken into account and declines considerably less than conventional estimates during Great Recession.

Figure 5. A Comparison of Various Natural Rate Estimates (in percent)

Sources: Laubach and Williams (2015b); Lubik and Matthes (2015); Kiley (2015); Johannsen and Mertens (2016); authors' calculations.

Natural rate

Convenience yield

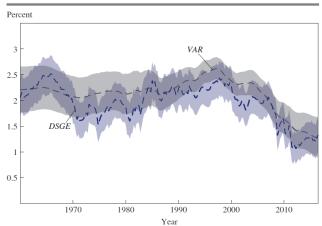*Del Negro et al. (2017), Gordon and Laarits (2018)*

- VAR and DSGE models recover very similar estimates of natural interest rate.
- Main drivers of the decline in natural interest rate in recent years are rising premiums for the safety and liquidity of Treasury bonds - *convenience yield*.
- Persistently slower economic growth also matters.
- Safety and liquidity factors also play a prominent role in business cycle fluctuations according to DSGE model.

DSGE vs VAR estimates of r^*

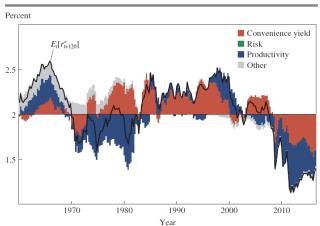**Figure 1.** The Low-Frequency Component of r_t^* in the VAR and DSGE Models, 1960–2016[a]

Source: Authors' calculations.

a. For each trend, the dashed line is the posterior median, and the shaded area shows the 68 percent posterior coverage interval for the estimate of the low-frequency component.

Source: *Del Negro et al. (2017)*

DSGE estimate of r^*

Figure 13. The 30-Year Forward Natural Real Interest Rate $E_t[r^*_{t+120}]$ and Its Drivers, 1960–2016[a]

Percent
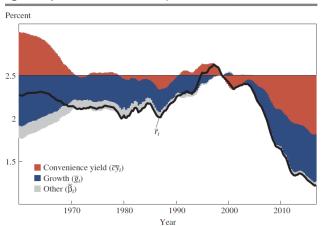
Source: Authors' calculations.

a. The solid line is the posterior median of the 30-year forward natural real rate computed using the DSGE model. The shaded areas are the contributions of the various shocks.

Source: *Del Negro et al. (2017)*

VAR estimate of r^*

Figure 14. $\bar{r}_t$ in the VAR Model with Consumption and Its Drivers, 1960–2016[a]

Source: Authors' calculations.
a. The solid line is the posterior median of $\bar{r}_t$ computed using the VAR model with consumption. The shaded areas are the posterior median estimates of the contributions of the various trends, normalized to 0 in 1998:Q1.

Source: *Del Negro et al. (2017)*

Investment-saving imbalance

- From very basic theory we know that the equilibrium real interest rate is one that makes desired saving and desired investment equal to each other.
- Thus, persistently low real interest rates in major DM could be the outcome of either or both:
  1. Very high desired saving in DM;
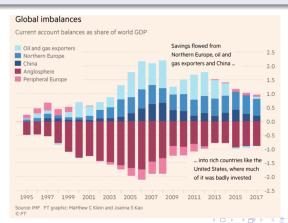 2. Very low desired investment;

What forces could have led to so high desired saving in DM?
Why desired investment could have contracted?

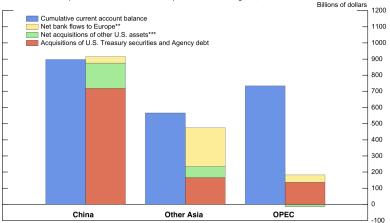# Investment-saving imbalance

«Global saving glut»

Phrase was originally introduced by Ben Bernanke in 2005 to express his concern about the «significant increase in the global supply of saving» and its implications for monetary policies, particularly in the United States.

Global imbalances

Current account balances as share of world GDP

Current account surpluses and certain financial acquisitions of GSG regions, 2003-2007*

Billions of dollars

Legend:
- Cumulative current account balance
- Net bank flows to Europe**
- Net acquisitions of other U.S. assets***
- Acquisitions of U.S. Treasury securities and Agency debt

China   Other Asia   OPEC

*Acquisitions of European and other non-U.S. securities by emerging Asia and OPEC are unavailable.
**Bank flows to Europe calculated from BIS data.
***Other U.S. assets comprises corporate securities, bank assets, and other miscellaneous assets included in the Financial Accounts.

Source: *Bernanke et al. (2011)*

Scarcity of safe assets

Higher amounts of desired saving lead to high demand for safe assets!

Was it enough supply of safe assets during GSG-period?

Caballero et al. (2016):

- When the scarcity of safe asset is acute, the ZLB becomes binding and the safe asset market equilibrates via a reduction in output (*safety trap*).
- In the open economy the scarcity of safe assets spreads from one country to the other via the capital account.
- If ZLB is reached, output becomes the adjustment variable and the world economy enters a regime of increased interdependence as countries cannot use monetary policy to insulate their economies from capital flows.
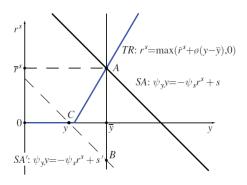
Scarcity of safe assets

FIGURE 1. TR-SA DIAGRAM FOR A CLOSED ECONOMY

Notes: Outside the ZLB, output is at potential $(\bar{y})$ and monetary policy targets the natural safe rate $(\bar{r}^s)$ (point A). If the natural safe rate is negative (point B) because of excess safe asset demand, the economy is at the ZLB and output must fall (point C).

Source: *Caballero et al. (2016)*
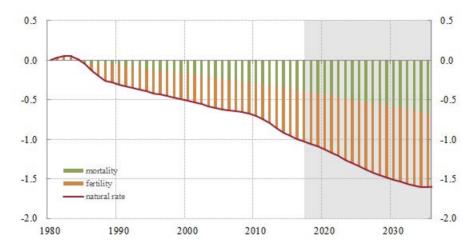
Potential growth & demographics

Brand et al. (2018), Rachel and Smith (2017), Fisher (2016):

- It is hard to explain pre-crisis fall in global real interest rates by changes in growth potential as global growth was quite steady during that period.
- Financial crisis have triggered a wider reassessment of growth potentials, therefore lower expectations of future growth play a critical role in driving most recent decline in real interest rates.
- Low fertility and rising life expectancy together account for 1 p.p. of the fall in real interest rates in US and EU since 1980s.
- Demographic factors are expected to depress real interest rates further by 0.25-0.5 p.p. by 2030.

Demographics

(a) Estimates from Bielecki *et al.* (2018)

Potential growth & productivity

Fisher (2016):

- Lower trend growth in productivity and slower labour force growth imply lower economic growth in years ahead.
- Lower long-run trend productivity growth, and thus lower trend output growth, affects the balance between saving and investment through a variety of channels.
- A slower pace of innovation means that there will be fewer profitable opportunities in which to invest, which will tend to push down investment demand.
- Lower productivity growth also reduces the future income prospects of households, lowering their consumption spending today and boosting demand for savings.
- Thus, slower productivity growth implies both lower investment and higher savings, both of which tend to push down interest rates.

Lunsford and West (2018): **No statistically significant correlation between TFP and real interest rates!!!**

Re-assessed macro risk

Kozlowski et al. (2018):

- Great Recession was perceived as an extremely unlikely event before 2007.
- Observing such an episode led agents to re-assess the probability of similar events in the future.
- Persistent increase in perceived risk makes safe, liquid assets more valuable, keeping their rates of return depressed for many years.
- After substantial negative shock the economy eventually returns to its pre-crisis stochastic steady state, but this occurs at a very slow rate.
- As a result, it takes a very long period without extreme events to convince agents that they can be ignored.

Figure 2: **The SKEW Index.**

A measure of the market price of tail risk on the S&P 500, constructed using option prices. Source: Chicago Board Options Exchange (CBOE). 1990:2016.
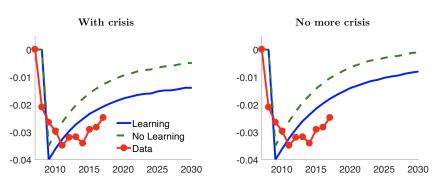
Figure 5: **Risk free rate.**

The left panel (with crisis) shows the change in the risk free rate when the data generating process is $\hat{g}_{2009}$. The right panel (no more crisis) is an identical model in which future shocks are drawn from $\hat{g}_{2007}$. The solid blue line of both panels show the solution when agents update their beliefs and the dashed green line shows the model under no learning. The red circles show changes in 1y real rates from the US data for the period 2008-2017.

Source: *Kozlowski et al. (2018):*

Monopoly power

Eggertsson et al. (2018):

- Modification of standard neoclassical model.
- An increase in firms' market power leads to increase in pure profits, thus an increase in the market value of stocks.
- An increase in pure profits will tend to drive up the average return on capital.
- To generate constant average return, as it is observed in the data, we need a decline in interest rates, which pushes down the average return on capital.

Figure 3: Average return on capital

Challenges for central banks

1. Effective lower bound;
2. Financial instability;
3. Adverse influence on the banking system.

Effective lower bound

Fisher (2016):

- Low interest rates make the economy more vulnerable to adverse shocks that can put it in a recession.
- In light of several countries currently operating with negative interest rates, there is sense in referring not to the *zero lower bound*, but to the **effective lower bound** - **a number that is close to zero but negative**.
- Operating close to the effective lower bound limits the room for central banks to combat recessions using their conventional interest rate tool - cutting the policy interest rate.
- The limitation on monetary policy imposed by low trend interest rates could therefore lead to longer and deeper recessions when the economy is hit by negative shocks.
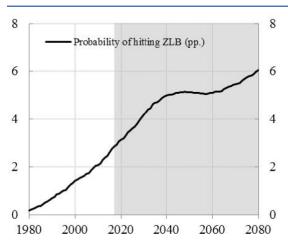
Effective lower bound

Chart 17

Projected influence of decrease in r^* on the probability of hitting the ZLB in Bielecki *et al.* (2018)

Financial instability

Acharya and Plantin (2018):

- Low interest rates may threaten financial stability as some investors reach for yield and compressed net interest margins make it harder for some financial institutions to build up capital buffers.
- In equilibrium there is a possibility for a surge in leverage and maturity transformation («carry trades») leading to the build-up of financial fragility.
- Under these circumstances, monetary easing triggers a large amount of financial risk-taking at the expense of capital expenditures.

Adverse influence on the banking system

Urbschat (2018):

- Too low or even negative interest rates could lead to declining bank profitability making an expansionary monetary policy contractionary.
- If interest rates are too low for too long banks could be induced to take too much risky credit.
- However, bank's business model plays a crucial role:
  - Banks with lower share of overnight deposits in their liabilities may benefit in the short-run via reduced refinancing costs or lower loan loss provisions.
  - Banks with high deposit ratios face lower net interest income and lower credit growth rates.
- Nevertheless, if continued for too long QE and NIRP erode bank profits for most banks eventually.

What could governments and central banks do?

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Possible stimulus

Caballero et. al (2016):

- Any policy that expends safe asset supply anywhere has expansionary effects everywhere and reduces risk premia.
- Financial injection: bank recapitalizations, support to securitization markets in the form of purchases of securitized products.
- Debt financed fiscal stimulus that increases output because it corresponds to an increase in supply of safe assets.

Fisher (2016):

- While unconventional monetary policies - such as asset purchases, balance sheet policies, and forward guidance - can provide additional accommodation, it is reasonable to think these alternatives are not perfect substitutes for conventional policy.

Other alternatives

Williams (2018):

- Maintaining the basic framework of inflation targeting possibly combined with some unconventional measures carries the risk that inflation expectations become anchored at too low a level.

- «**Average-inflation targeting**»: central bank purposefully aims to achieve an above-target inflation rate in "good" times when the lower bound is not a constraint. Properly designed and implemented, such an overshoot can offset the inflation undershoot during "bad" times so that the longer-run average inflation rate and inflation expectations are in line with the target.

- «**Price-level targeting**»: central bank commits to keep the price level near a steadily growing target path. While inflation targeting is forward looking, price-level targeting commits to reversing any temporary deviations from the target rate of inflation. If inflation fell below 2% for a time, the central bank would compensate by aiming for inflation above 2% until average inflation over the whole period had returned to 2%.

- Importantly, neither will likely be effective in practice unless communicated clearly and carried out consistently over time.