

Workshop on *Secular Stagnation and Financial Cycles* - Banca d'Italia
Discussion by Andrea Gazzani

Low Frequency Drivers of the Real Interest Rate: a Band Spectrum Regression Approach

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Summary

- ▶ Research question: How can we (empirically) explain the **fall in real interest rate** (r) occurred over the last decades?
- ▶ Methodology: **Band Spectrum Regression** (BSR) = linear regression in the frequency domain
- ▶ Results: **TFP** and **demographics** are the main drivers
- ▶ Literature:
 - Real / structural - Secular Stagnation \Rightarrow Summers (2014), Eggertson & Mehrotra (2014), Gordon (2016)
 - **Technology**, **demographics**, investment opportunities, relative price of investment goods, **Income**/wealth **inequality**, saving glut
 - Financial/cyclical - Borio (2012); Lo & Rogoff (2015)
 - Over-accomodating monetary policy, asset prices, financial deregulation, overly-optimistic expectations (**credit to GDP (gap) ratio**)

Methodology

- ▶ **Band Spectrum Regression (BSR)**: linear regression in the frequency domain
 - Focus on the relationship between variables at desired frequencies (here low frequencies)
- ▶ Intuition: similar to bandpass filtering but with two main advantages
 1. BSR decomposes variables into **orthogonal components** at different frequency bands
 2. BSR does not generate autocorrelation in the residuals
- ▶ Advantage over trend-cycle decomposition: agnostic stance on the structure of the economy

Empirical Analysis

- ▶ Sample: 1980 - 2014 (annual data)
- ▶ Countries: Canada, France, Germany, Italy, Spain, US, UK
- ▶ 3 frequencies considered: (3,7) years; > 7 years; > 15 years
- ▶ Pooled regression and country fixed effects regression
- ▶ Explanatory variables for r :
 - **TFP**
 - **Human capital**
 - **Age dependency ratio**
 - **Share of working age population**
 - Gini index (income inequality)
 - Credit to GDP ratio

Comments: Key Assumption

- ▶ Direction of **causality** goes from regressors to r but there is no feedback in the opposite direction
- ▶ Is it reasonable for all the regressors?
 - Low frequency bands extracted from annual data
 - Ferrero, Gross & Neri (2017) allow feedback from real interest rates on TFP (and find it significant)
 - Credit to GDP gap ratio \Rightarrow low real rates endanger financial stability?

Comments: Explanatory Variables

Potentially important **omitted variables**:

1. **Saving glut**: demand for safe assets from emerging markets
2. **Fiscal policy**: supply of safe assets (Caballero & Farhi, 2014; Caballero, Farhi & Gourinchas, 2017)
3. Income inequality VS **wealth inequality** ▶ Income VS Wealth
4. The **financial view** of low real interest rates seems less represented than the structural view

Additional Comments

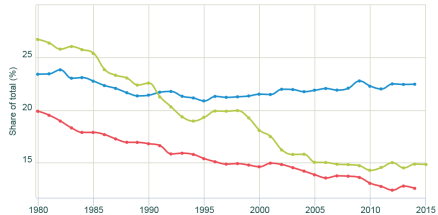
- ▶ Sample starts in 1980? E.g. Hamilton et al. (2016): annual data from 1800
- ▶ Robutness: long-term real rate
- ▶ Being agnostic: by far the most important driver of r is TFP, which is still a residual
 - Interesting exercise on human capital
 - Can we find other sub-factors that enter TFP and include them directly in the BSR?

Conclusion

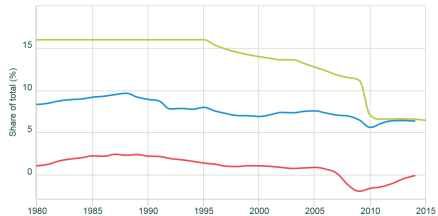
- ▶ Very interesting paper: very exciting methodology!
 - Not very well known among macroeconomists
- ▶ Is it possible to extend BSR to other frameworks?
- ▶ If endogeneity is an issue, can we have Band Spectrum VARs (via SUR)?

Income VS Wealth Inequality

Bottom 50% national income share



Bottom 50% net personal wealth share



— USA — France — China

Graph provided by www.wid.world