

Global Financial Cycles

Hélène Rey

London Business School & NBER & CEPR

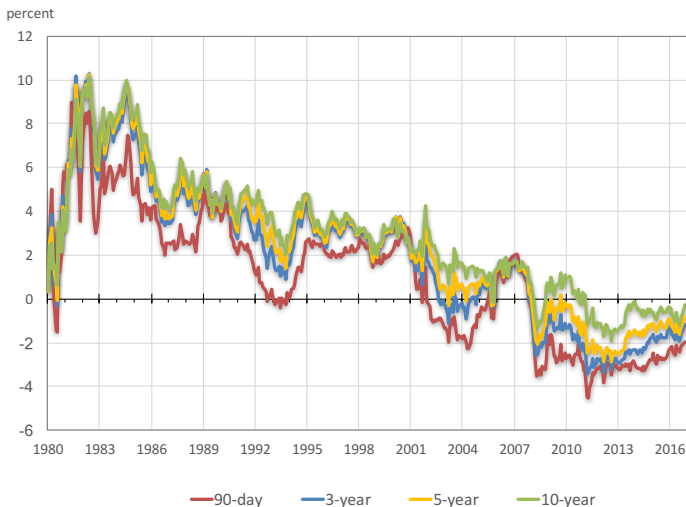
2018

Julis-Rabinowitz Center for Public Policy and Finance 7th Conference

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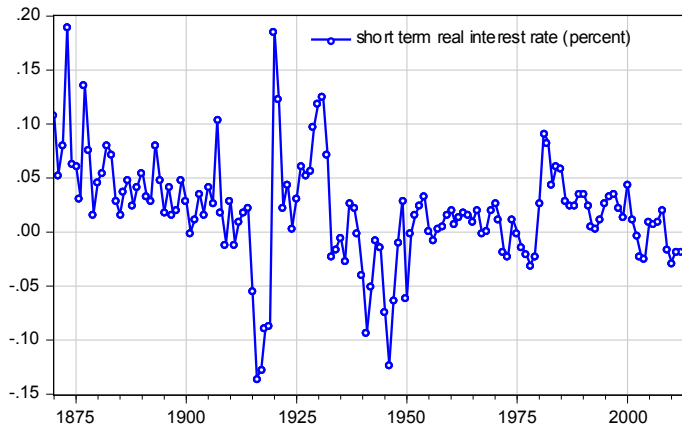
- ▶ Fluctuations in financial activity (risk taking, credit creation, asset prices, capital flows, spreads, leverage) on a global scale (Bruno and Shin (2015), Miranda-Agrippino and Rey (2015), Baskaya et al. (2017)).
- ▶ Particularly interesting to link the **Global Financial Cycle** to issues of **financial stability** (waves of crises) and to constraints it puts on **monetary policy**.
- ▶ **Dilemma versus trilemma**: monetary conditions (including spreads, price of risk) are affected by the centre country(ies) even under floating rates (Rey (2013, 2016)).
- ▶ **Low real rates** and zero lower bound: important constraint for most advanced economies (Global Real Rates: A Secular Approach (Gourinchas and Rey, 2016)).

U.S. Real Rates



Ex-ante real yields on U.S. Treasury Securities constructed using median expected price changes from the University of Michigan's Survey of Consumers. Source: FRED.

'Historical' U.S. Real Rates, 1871-2011



The figure reports the annualized ex-post real 3-month interest rate for the U.S. since 1871.

Source: Jordà et al (2016).

Global Real Rates: A Secular Approach

Empirical approach using the world budget constraint and historical data.

- ▶ Law of accumulation of wealth for the world (closed economy):

$$\bar{W}_{t+1} = \bar{R}_{t+1}(\bar{W}_t - C_t)$$

- ▶ Log-linearize around the steady-state consumption-wealth ratio and derive the world's intertemporal budget constraint:

$$\ln C_t / \bar{W}_t \simeq \mathbb{E}_t \sum_{s=1}^{\infty} \rho_w^s (\bar{r}_{t+s}^w - \Delta \ln C_{t+s})$$

- ▶ Present value relation:

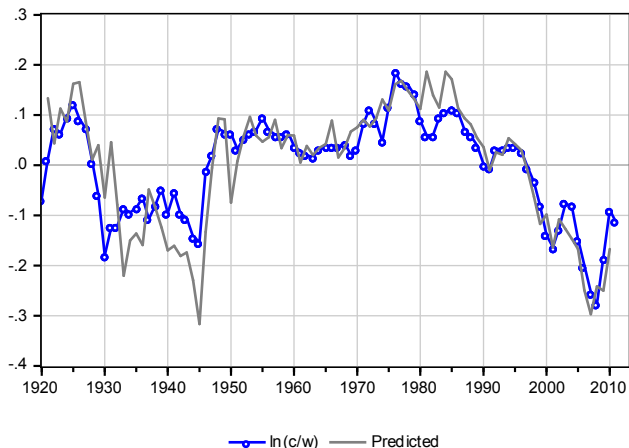
$$\begin{aligned} \ln C_t / W_t &\simeq \mathbb{E}_t \sum_s \rho_w^s r_{t+s}^f + \nu \mathbb{E}_t \sum_s \rho_w^s r_{t+s}^{rp} - \mathbb{E}_t \sum_s \rho_w^s \Delta \ln C_{t+s} + \varepsilon_t \\ &\equiv cw_t^f + cw_t^{rp} + cw_t^c + \varepsilon_t \end{aligned}$$

Global Consumption/Wealth Ratio: Hansen and Summers



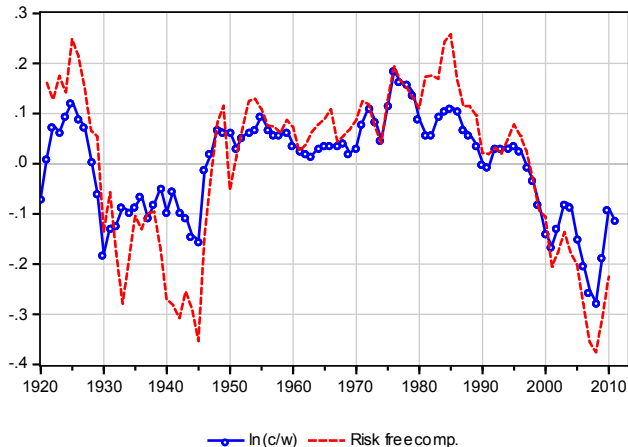
The figure decomposes the fluctuations in $\ln(C/W)$ around its mean into a risk-free component (cw^f), an excess return component (cw^P) and a consumption growth component (cw^c).

Decomposing the Global Consumption/Wealth Ratio



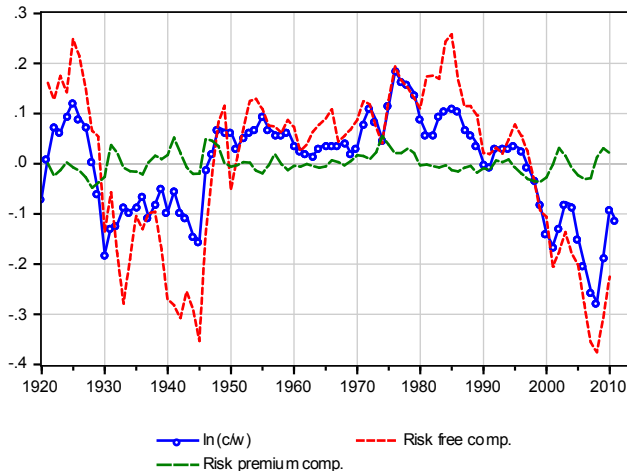
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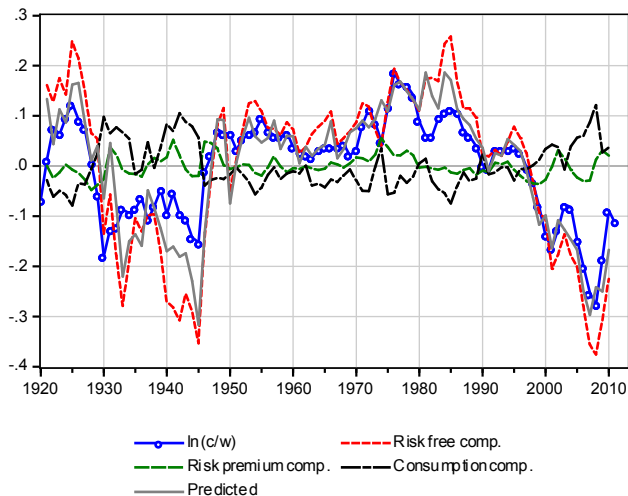
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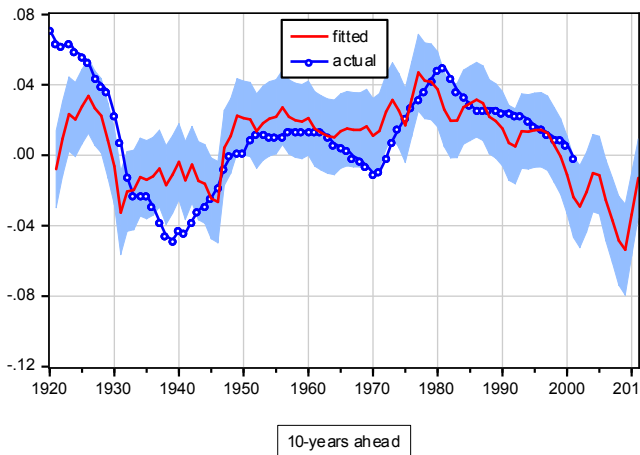
Results

- ▶ Very good fit of the VAR
- ▶ Most of the movements in the consumption-wealth ratio reflect expected movements in the future risk-free rate
- ▶ Consumption-wealth ratio today contains significant information on future real rates.
- ▶ This is not a causal decomposition: the risk free and risky returns as well as consumption growth are endogenous and interdependent.

Interpretation

- ▶ Most of the action is in the joint dynamics of the consumption wealth ratio and the risk free rate.
- ▶ Plausible interpretation:
 - ▶ 'Irrational exuberance' in asset prices ('Roaring 20s' and the 'Exuberant 1990-2000s') leads to fast growing financial wealth and fast declining consumption-wealth ratios.
 - ▶ Large financial crises (in 1929 and in 2008) lead to deleveraging (increased savings and lower consumption) for an extended time and to low real rates.
 - ▶ Therefore low consumption wealth ratios tend to be associated with expected low real rates.
- ▶ This is consistent with the important role of **debt overhang effects** and **credit dynamics**, (Schularick and Taylor (2013), Reinhart and Rogoff (2014), Mian, Sufi and Verner (2015) and a **global financial boom/bust cycle** (Miranda-Agrippino & Rey (2015)).

An Aside: Predicting Global Real Risk-free Rates



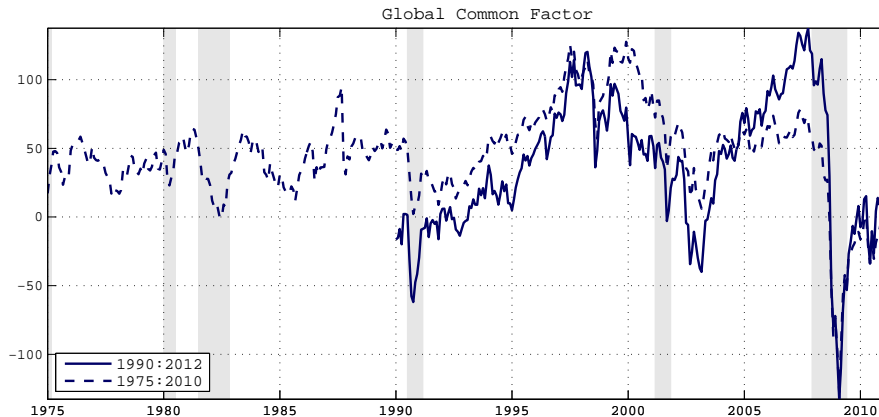
The figure forecasts the 10-year average future short risk-free rate using $\ln(C/W)$. Graph includes 2 standard deviation bands.

2011-2021 forecast: -1.3%

Global Financial Cycle and Risky Asset Prices

- ▶ Large panel of risky returns around the world.
- ▶ We test for the number of global factors.
- ▶ The data cannot reject the existence of one and only one global factor. That single factor explains about a quarter of the variance of the data.

Global Factor in World Asset Prices.



Volatility Component and Aggregate Risk Aversion

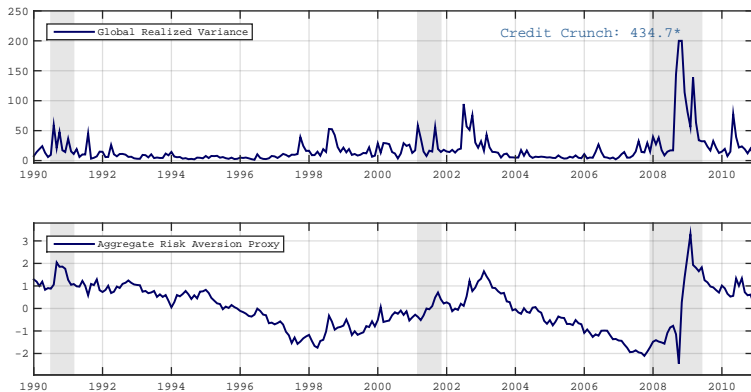
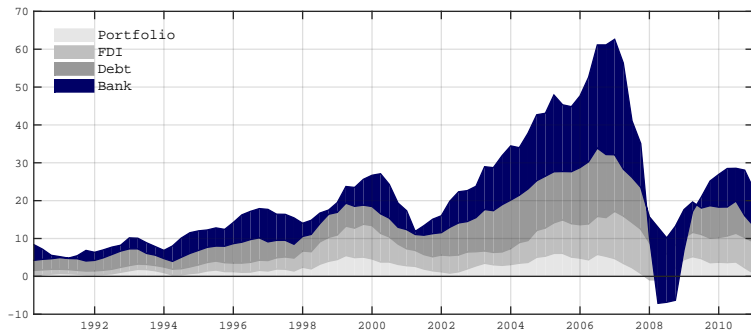


Figure: Decomposition of the global factor in a volatility component and a risk aversion component; the measure of realized monthly global variance is computed using daily returns of the MSCI world index.

Share of Banking Flows in Cross-Border Flows



US Monetary Policy and the Global Financial Cycle

- ▶ **Dilemma versus trilemma**: monetary conditions (including credit creation, price of risk) are affected by the centre country(ies) even under floating rates.
- ▶ We estimate a Bayesian VAR (in levels) with 4 lags. Typical set of macroeconomic variables, including output, inflation, investment and labor data PLUS global credit, cross border credit flows, financial leverage, global factor in asset prices, term spread (25 variables)
- ▶ The monetary policy shock is identified using the effective federal funds rate as the instrument for monetary policy and (i) block-ordering the variables into slow-moving and fast-moving ones; (ii) using the Romer and Romer narrative approach as instrument (also experimented with high frequency instruments).

Response of domestic Business Cycle

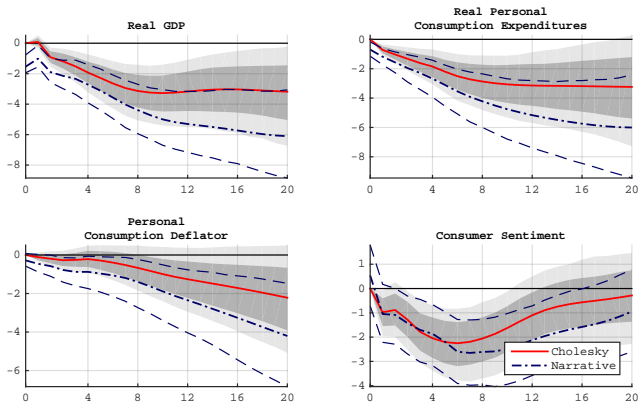


Figure: Response of Business Cycle (% points) to a monetary policy shock inducing a 100bp increase in the Effective Fed Funds Rate.

Response of Global Asset Prices

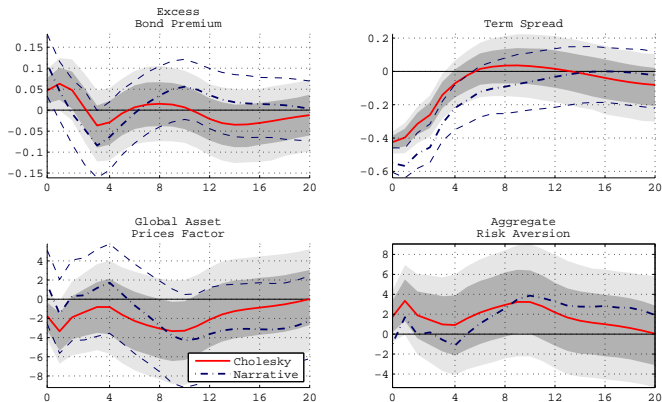


Figure: Response of Asset Prices (% points) to a monetary policy shock inducing a 100bp increase in the Effective Fed Funds Rate.

Response of Global Credit, with and without US

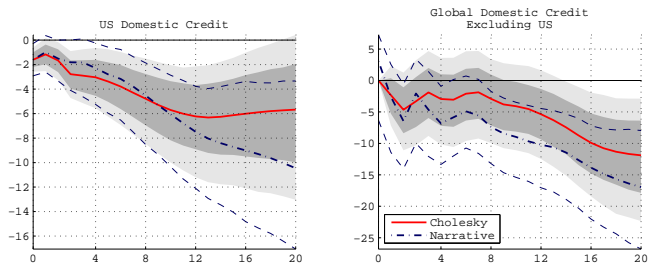


Figure: Response of Global Credit (% points) to a monetary policy shock inducing a 100bp increase in the Effective Fed Funds Rate.

Response of Global Credit and of Cross Border Credit

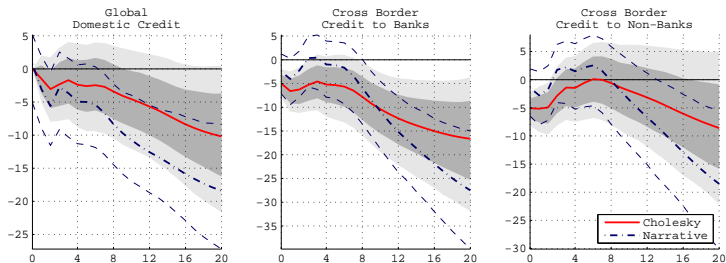


Figure: Response of Global Credit (% points) to a monetary policy shock inducing a 100bp increase in the Effective Fed Funds Rate.

Response of Banks Leverage in the US, Euro area, UK (GSIBs)

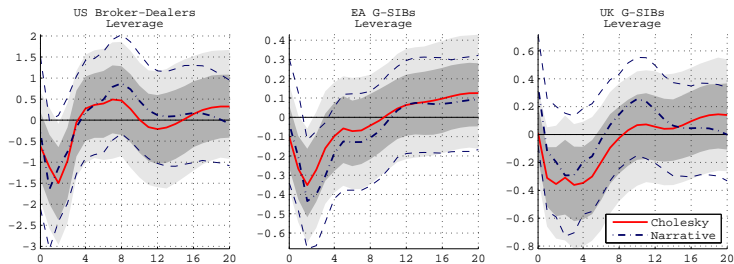


Figure: Response of Banking Sector Leverage (% points) to a monetary policy shock inducing a 100bp increase in the Effective Fed Funds Rate.

Conclusions

- ▶ We use historical data to understand determinants of long run real rates.
- ▶ Empirical evidence consistent with [global financial boom/bust cycle](#). Euphoria pre-crisis leads to rapid increase in wealth (1920s, 1990s-2000s). This is followed by deleveraging post crisis (1929, 2008).
- ▶ We use a medium scale BVAR to understand the influence of US monetary policy on the global financial cycle.
- ▶ US monetary policy is a determinant of global monetary and financial conditions. This puts in question one leg of the Mundellian Trilemma.
- ▶ [Research agenda](#) for the Global Financial Cycle: source, propagation, amplification mechanisms, endogenous risk build ups.
- ▶ My view: Models with [heterogenous intermediaries and moral hazard](#) (risk-taking not properly priced) are what we need.

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