

# Why Have Interest Rates Fallen far Below the Return on Capital

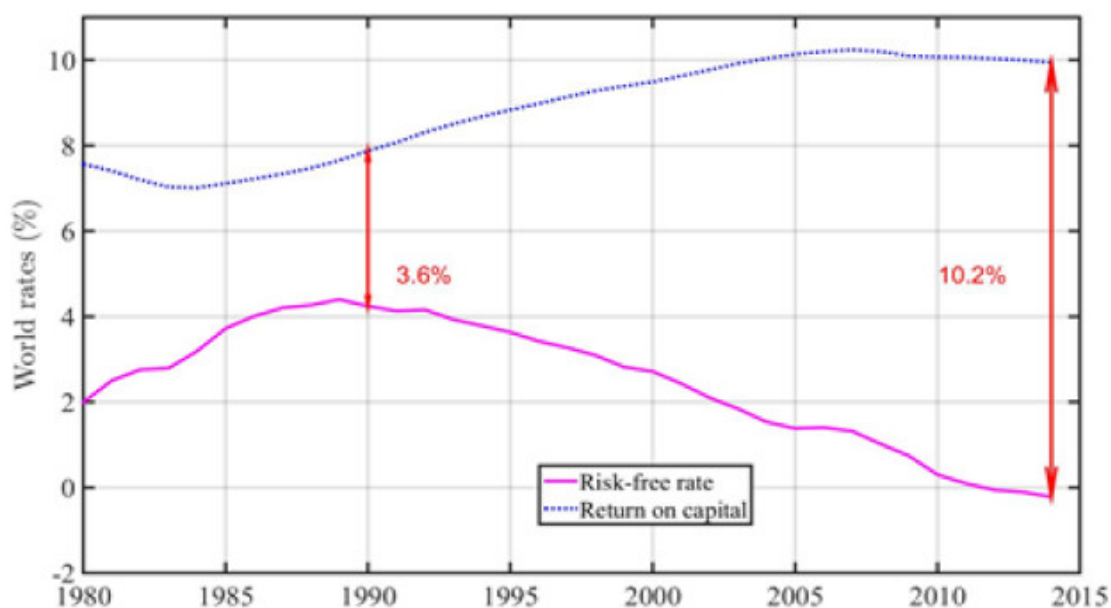
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*Risk-free rates have been falling since the 1980s while the return on capital has not (Figure 1). In the framework of an overlapping-generation model, Marx, Mojon, Velde (2017) show that these contrasted developments can be mainly explained by an increase in the (perceived) risk on productivity growth. This implies that real rates are likely to stay low for several years.*

**Figure 1: Increase in the risk-premium from 1990 to 2015**



*Risk-free rate: average of US & French real rates, drawn from [Hamilton et al. \(2016\)](#)*

*Return on capital: average of US & EA real returns on capital, computed using the AMECO national accounts database (authors' computations of "profits/stock of capital")*

A worldwide abundance of savings due to the retirement of OECD "baby-boomers" and the Chinese "one child policy" is the best intuition behind the fall in long-term real interest rates, from around 4.5% in 1990 to around 0% since 2015. By contrast, the return on capital, defined here as profits over the stock of capital, if anything, increased from 1990 to 2000 and remained stable around 10% until 2015. This increase in the risk premium from around 3.5% to some 10% (see Figure 1) is puzzling because an increasing gap between savings and investment should affect all returns similarly according to most macroeconomic models.

## A model that embeds all the "usual suspects"

Marx, Mojon and Velde (2017) develop a specific model to understand why interest rates have fallen far below the return on capital. The model includes the main ingredients of the debate on secular stagnation:

- demographics because the aging of OECD baby-boomers and the Chinese population could explain an increase in savings world-wide,

- trend productivity because it determines wealth and savings over the long run,
- time-varying credit constraints in order to account for the post crisis deleveraging hypothesis,
- two assets, capital whose return is uncertain and debt whose return is “safe”, or at least much less uncertain than the one on capital.

One factor that can explain the growing risk premium reported in Figure 1 is a change in the perception of risk, which in the model, takes the form of uncertainty on the growth rate of productivity. We show that even a moderate increase in the standard deviation of the year-on-year growth rate of productivity, from 0.08% to 0.1%, can explain the fact that the difference between the return on capital and the real interest rate has increased from 3.6% to 10.2%. In other words, for an average long term growth rate of productivity of 2% (see the upper left hand panel of Figure 2), a growth rate somewhere between 1.8% and 2.2% leads investors to hold a much larger proportion of “safe asset/debt” in their portfolio than if this growth rate fluctuates between 1.84% and 2.16%. In the former case, the uncertainty on how fast the economy will grow in the foreseeable future is larger, and the demand for safer assets is pushing down interest rates by several percent.

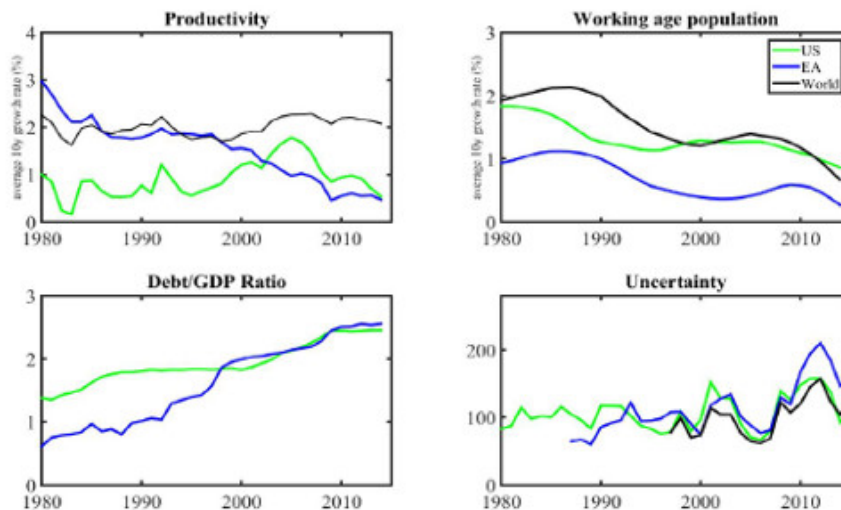
Interestingly, once the effect of rising uncertainty on growth is taken into account, the equilibrium interest rate falls even without any deleveraging. Indeed, according to our model, explaining a 3 % fall in real interest rates only by deleveraging would require that debt be halved since 1990. This is in sharp contrast with the data. Indebtedness over GDP actually increased (see Figure 2, bottom left hand panel). In addition, such deleveraging would explain only a 1% increase in the risk premium, a small contribution to the 6.5% increase that we see in the data (see Figure 1). These results invalidate a widely held view, for instance by Paul Krugman, that the deleveraging mainly explains the fall in the real rate.

Turning to the other “usual suspects”, aging (i.e. the decline in the rate of growth of the working age population from 2% in the 1990s to 0.7% today: black line in Figure 2 upper right hand panel) accounts for a decline of 1.2% in the world real interest rate. World productivity (Figure 2 upper left hand panel) remains rather stable and hence cannot contribute to explaining a fall in real interest rates.

Our results are derived from a model embedding overlapping generations and somewhat richer preferences than in textbook macroeconomic models. We use the so-called “Epstein-Zin preferences” where life-cycle behaviour and attitudes toward risk can be independent of one another. In particular, households will consume less and save more if either demographics or productivity reduces the growth rate of the economy; when credit constraints are more binding, i.e. when agents must reduce their indebtedness, interest rates will fall; lastly, if households are more uncertain about the growth rate of productivity, they will not only save more but hold a smaller proportion of their savings in the form of capital, such as physical investment, in favour of deposits or bonds.

As shown above, the model allows us to quantify the contribution of each factor to the 4.5 % fall in the ten year average real interest rates since 1990. In this post, we focused on a simulation of a world economy that aggregates China, the euro area, Japan and the United States using GDP weights. As shown in Marx, Mojon and Velde (2017) the main patterns are quite similar if we focus instead on the euro area or the United States.

Figure 2: Determinants of interest rates and the return on capital



Data for productivity growth: [Fernald \(2012\)](#) for the United States, NAWM database for the EA, aggregate data of China, EA, Japan & United States for the world. Data for working age population: OECD for the EA & United States, aggregated with China & Japan for the world. Debt is total debt (public + households + firms). Data for uncertainty are yearly average of EPU indexes from [Baker, Bloom and Davis \(2016\)](#)

### Is it the case that the world economy has become more uncertain?

First, [Baker, Bloom and Davis \(2016\)](#) have shown that uncertainty, which they measure by quantifying the news coverage of policy-related uncertainty, has been higher over the last decade, which includes the Lehman crisis and the euro area sovereign debt crisis, than it was in the 1980s (see figure 2 bottom right hand panel). Second, globalisation implies that a larger share of world output is produced in emerging markets. These economies remain more volatile than advanced ones. It may be the case indeed that the growth rate of the world economy has become more uncertain.

One important conclusion of this analysis is that equilibrium real interest rates may have fallen under the pressure of structural and persistent economic forces: mainly the perception that risks to the growth rate of the economy have increased and, to a lesser extent, because of aging and the slowdown in productivity.

What does this tell us about the future? First, it is very unlikely that real interest rates would increase rapidly. Hence reducing the inflation objectives of central banks seems dangerous because, especially in recessions, it would reduce the ability of real interest rates to match the level of the equilibrium real interest rate. Second, the main lever for obtaining higher real interest rates would be to reduce uncertainty, which would spur investment in productive capital.