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Investment & Actuarial Consulting, Controlling and Research.

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Asset Liability Management

Interest Rate Risk and Inflation Risk

How Are Pension Funds Currently Being Affected?

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Content

1. Initial Situation

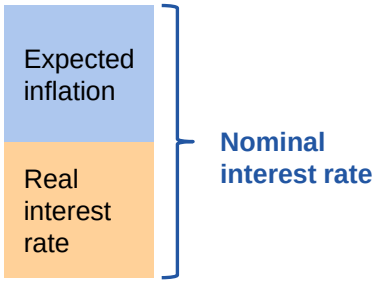
Initial Situation

- Switzerland has been in a historically **unprecedented low interest environment** for more than five years now.
- In **other currency areas** (e.g. EUR, USD, GBP), **interest rates** have also **fallen progressively**.
- For some time, interest rates on **German government bonds** even fell below the level of Federal government bonds.
- The global low interest environment is not least a consequence of the exceptionally **expansionary monetary policies** of the major central banks.
- Starting with the global **financial crisis 2007/2008**, intensified by the **European debt crisis from 2010** onwards and completed with the expansionary government spending policies during the **coronavirus crisis 2020**, we have seen a decade of highly expansionary monetary policies.
- The question arises increasingly whether interest rate and inflation risks have increased and **what this means for pension funds**, especially in light of the sharp rise in national debt during the coronavirus crisis.

2. Basic Principles and Historic Development

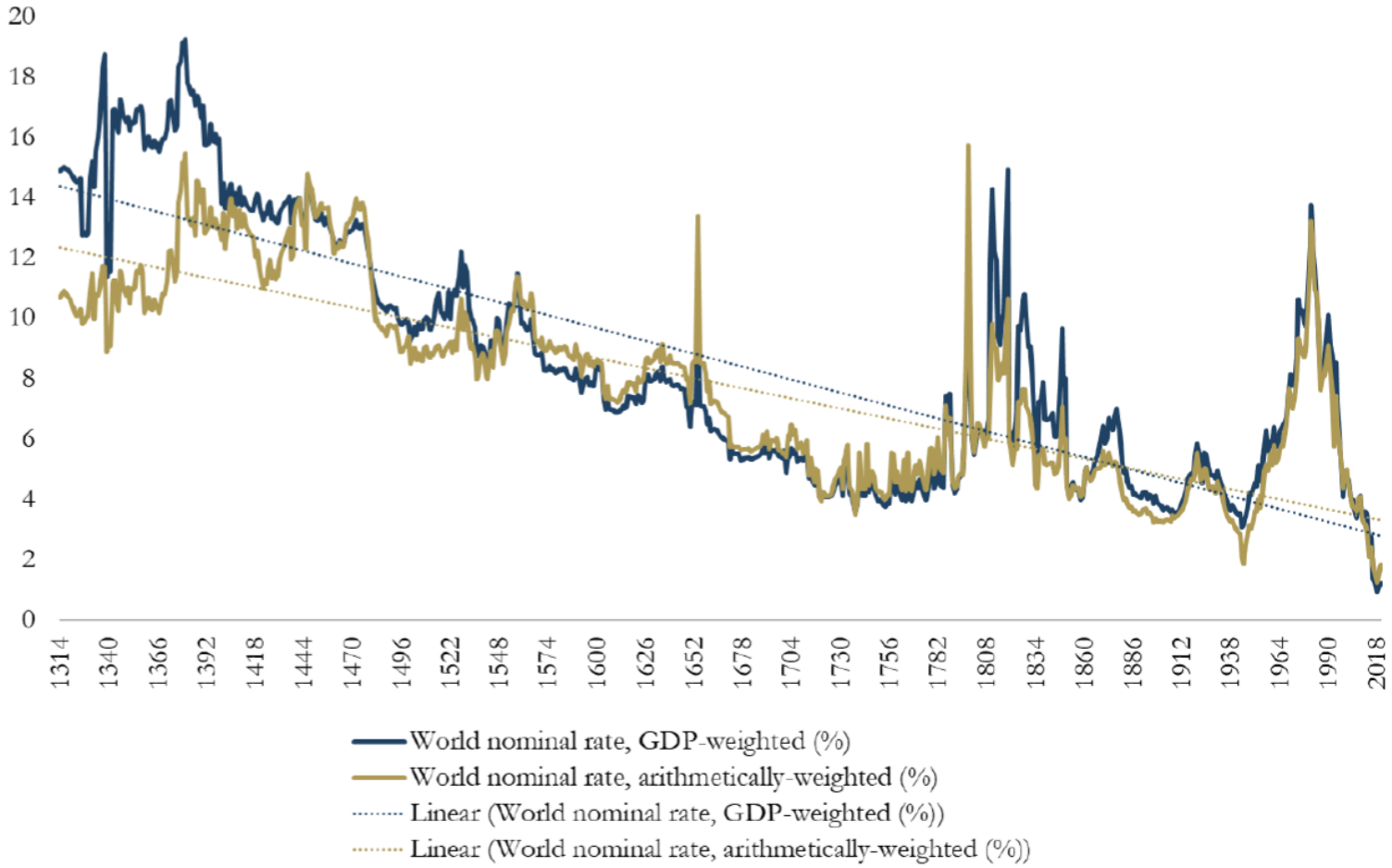
Real and Nominal Interest Rate

- The **interest rate risk** refers to the **sensitivity** of an investment's value (e.g. bond) to fluctuations in the **risk-free interest rate.**
- This risk-free interest rate (nominal interest rate) can be **broken down** into a **real interest rate** and an **inflation component**.



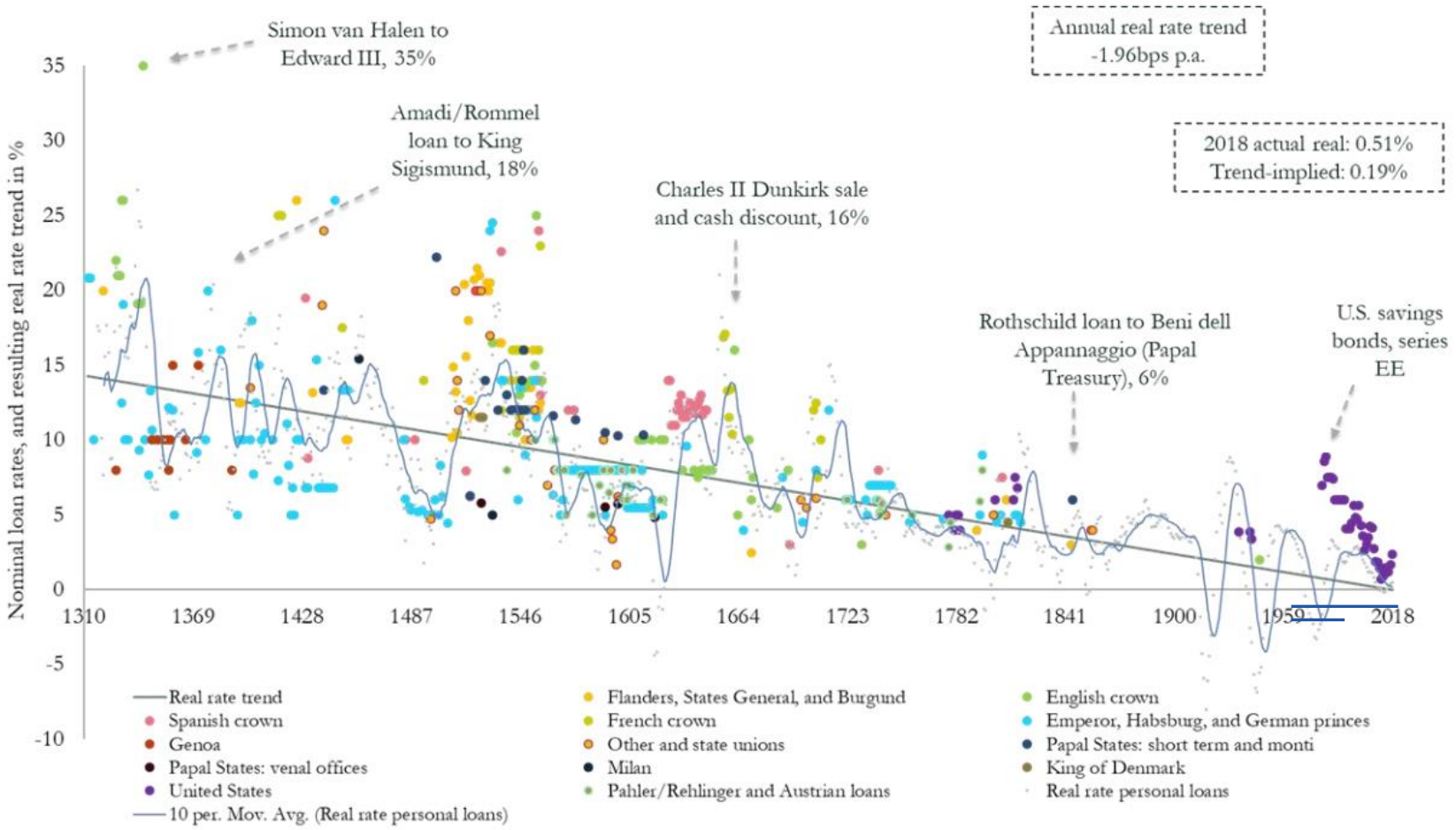
- The **real interest** rate compensates creditors for their willingness to postpone consumption into the future and the **uncertainties** linked to it.
- The **inflation component compensates** the creditors for the expected price increase (inflation) and the **loss of purchasing power** of the CHF amount lent that is linked to it.

Historical Development of Nominal Interest Rates



Source: Bank of England, Staff Working Paper No. 845, "Eight centuries of global real interest rates, R-G, and the 'suprasecular' decline, 1311–2018", Paul Schmelzing, January 2020

Historical Development of the Real Interest Rate



Source: Bank of England, Staff Working Paper No. 845, "Eight centuries of global real interest rates, R-G, and the 'suprasecular' decline, 1311–2018", Paul Schmelzing, January 2020

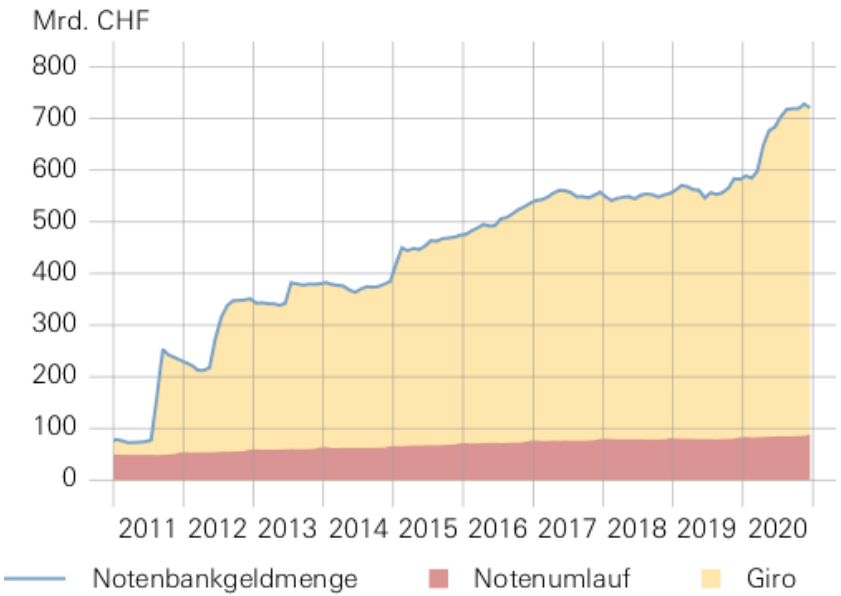
Interpretation of Historical Developments

- Because of fluctuating inflation expectations (esp. from the 19th century onwards), the **nominal interest** rate shows **strong fluctuations**.
- High inflation rates have always been a monetary phenomenon (extreme expansion of money supply).
- Historically, the **real interest rate clearly decreased**, but showed significant fluctuations as well.
- In particular, there were always phases in which the real interest rate temporarily rose sharply, for example:
  - First half of the 16th century (Reformation)
  - Late 18th and early 19th century (Napoleonic Wars)
  - First half of the 20th century (after World War I and II)
- Phases of high insecurity regarding the economic development and high demand for capital were typically phases of high real interest rates.
- The historically falling real interest rate is consistent with the continuously decreasing economic insecurity.

3. Interest Rate Risk and Inflation Risk: Current Situation

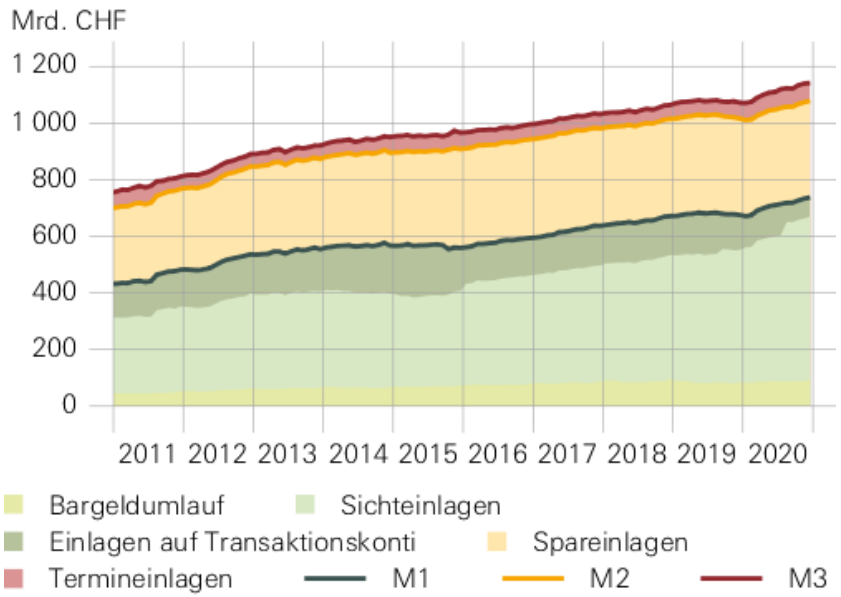
Money Supply Expansion

NOTENBANKGELDMENGE



Quelle: SNB

GELDMENGEN

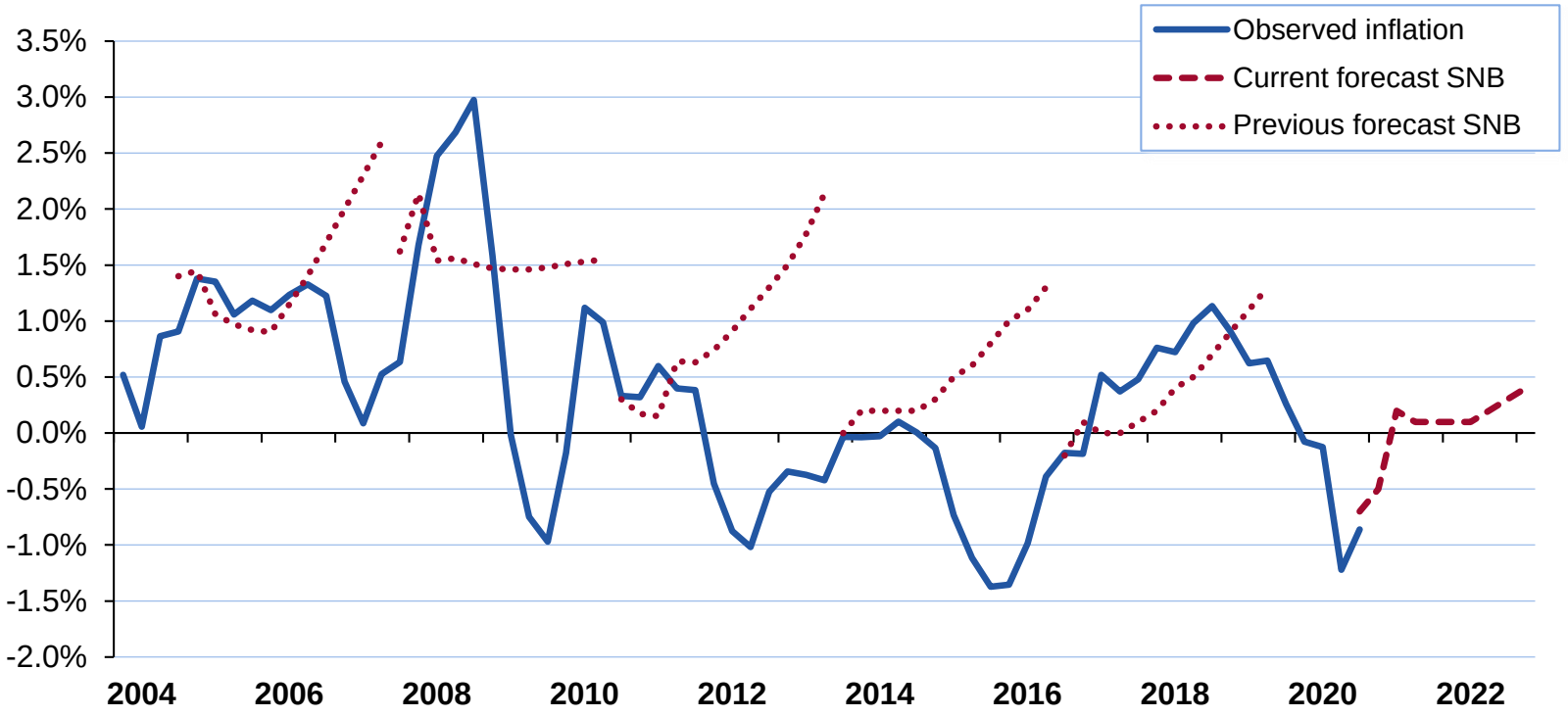


Quelle: SNB

- The Swiss National Bank's (SNB) **monetary policy** has been **unprecedentedly expansionary** over the past ten years.

Inflation and Inflation Forecasts of the SNB

Inflation Forecasts SNB (quarterly)

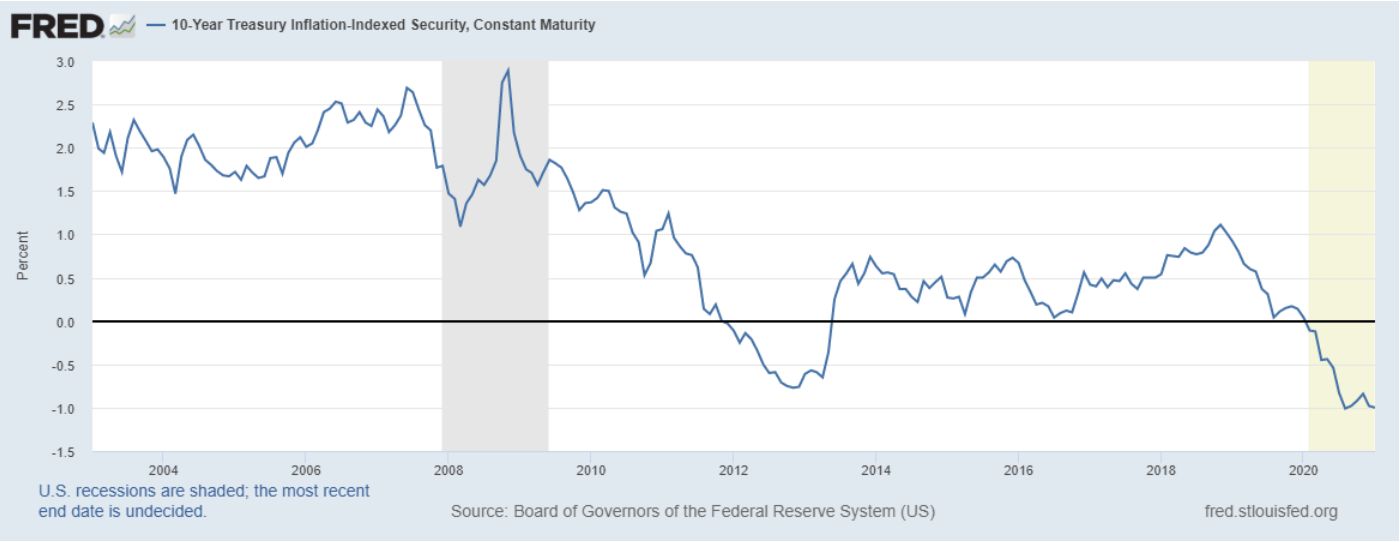


Source: SNB, own representation

- However, current **inflation rates** and **inflation forecasts** are **close to zero**.

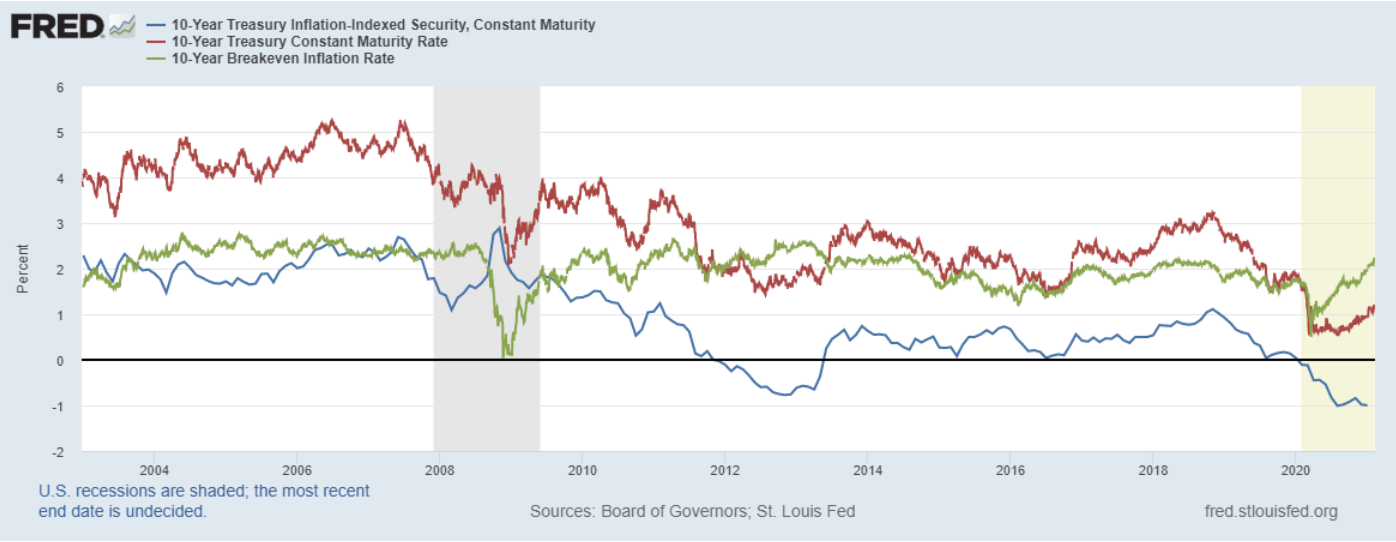
International Perspective

- Unfortunately, **no inflation-linked bonds are traded** in **CHF**. Therefore, there is **no market opinion on expected inflation and the real interest rate**.
- There is **a broad market for inflation-linked federal bonds** in the **US**, on the basis of which the long-term real interest rate can be determined.
- The following graph shows that the **real interest rate** has declined sharply over the last few years and is **currently clearly negative**.



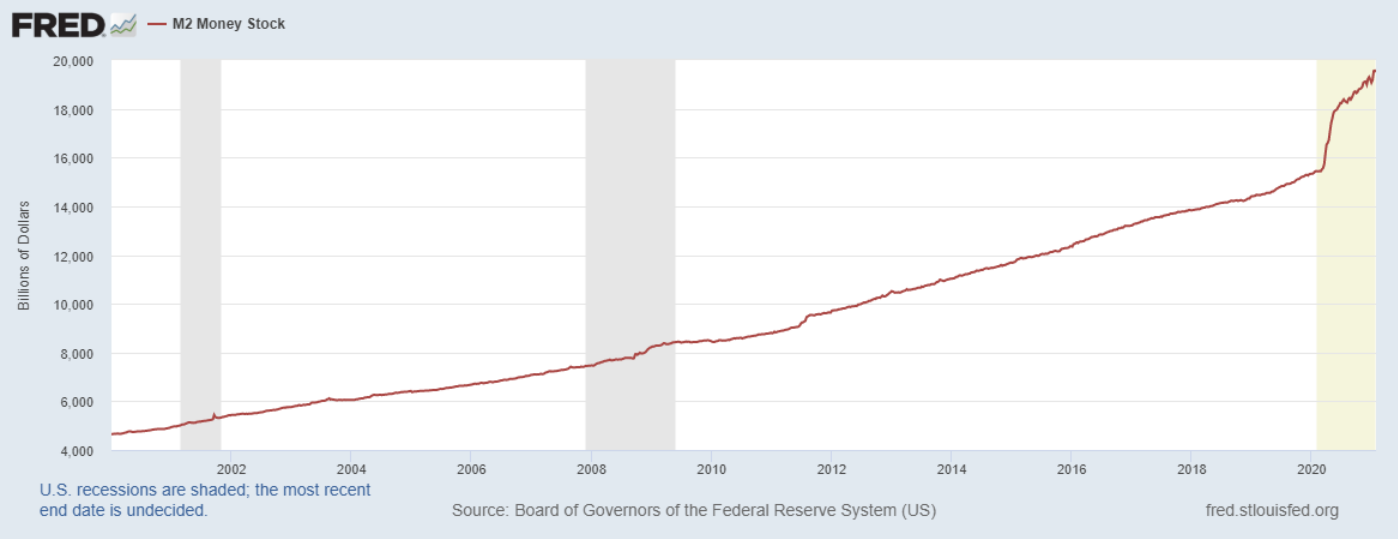
Real Interest Rate, Inflation Expectation and Nominal Interest Rate

- Inflation expectations (over ten years) have been comparatively stable in USD terms over the past 20 years at around 2% p.a.
- The decline in the nominal interest rate is almost entirely due to a decline in the real interest rate.
- **Inflation expectations are still very low** at present, too.



A Growing Money Supply – Since the Coronavirus Pandemic Also in the US

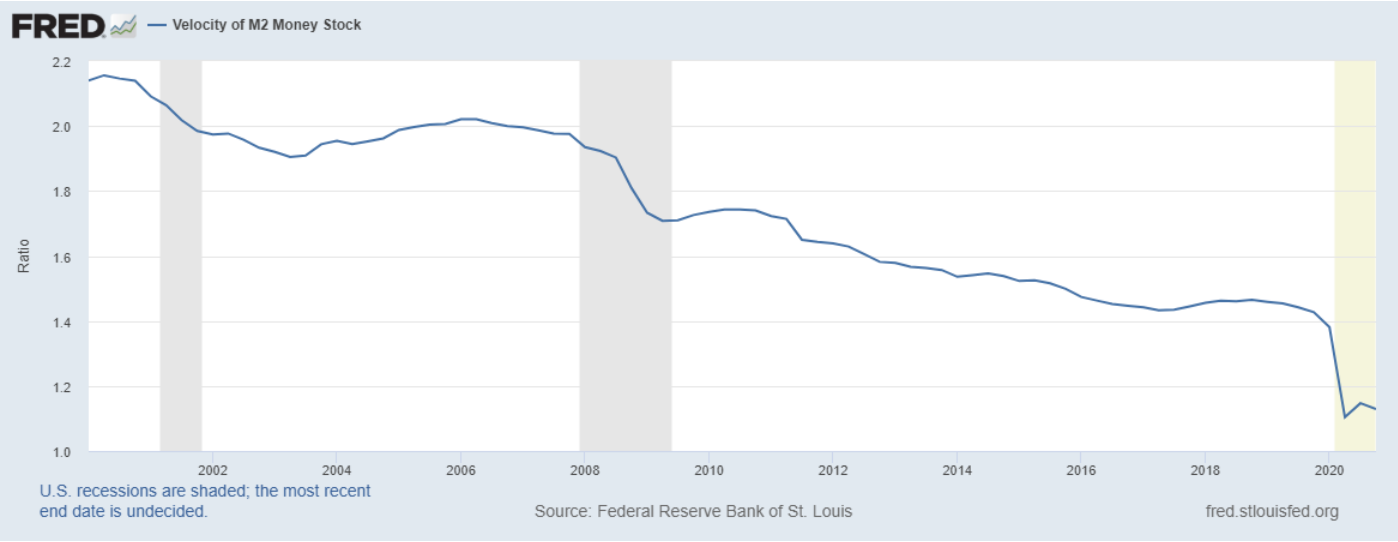
- Money supply has been increasing at a very high rate in the US as well in the wake of the coronavirus crisis.



- **Why do inflation expectations remain cautious?**
- **In Switzerland, we have also been observing this phenomenon since the European debt crisis.**

Money Supply and Velocity of Circulation

- The most important reason for the low inflationary impact of the increased money supply is that the **velocity of circulation of money** (which measures the number of times a unit of currency is used in a year) **has fallen sharply**.



- **Question: What happens if the velocity of circulation of money picks up again?** (or, in other terms, if consumers, instead of parking their money in accounts, increasingly use it for purchases?)

Monetary Public Financing

NZZ am Sonntag

KOLUMNE

Die Europäische Zentralbank bleibt standhaft – vorerst zumindest

Die EZB lehnt Forderungen von europäischen Ökonomen nach einem Schuldenschnitt ab. Doch ein Meinungswechsel wäre keine Überraschung.

Source: NZZ am Sonntag, 13.02.2021

- As soon as **central banks give money away**, they are powerless in the event of an increase in the velocity of circulation (because they can no longer reduce the money supply).
- In this case, an increase in the velocity of circulation would lead to inflation.
- At present, however, all major **central banks vehemently refrain** from taking steps in this direction.

Assessment of the Current Interest Rate Risk and Inflation Risk

- **Real interest rates** have been **falling for centuries** and are currently negative.
- The current market values reflect low nominal and real interest rates in the future as well and low (albeit slightly rising) inflation rates.
- In the past, **sharp shifts** in real interest rates have almost always been the **result of sudden events** such as crises and wars, which have led to a sharp rise in the demand for capital.
- The same applies to **inflationary shocks**, which were practically always the consequence of a **loss of monetary control**.
- At present, market players expect on average neither an inflationary shock nor a sharp rise in real interest rates.
- Insofar, **sharply rising interest rates** are currently considered **rather unlikely** by the market, but they **cannot be ruled out**.

4. Recommendations for Pension Funds

What Pension Funds Can Do (1)

- Swiss pension funds **mainly have nominally fixed liabilities**.
- This means that the amount of the **liabilities is explicitly not influenced by inflation**. The **decline in the purchasing power** of a certain amount of money has **no direct consequences** for a pension fund.
- Since pension fund liabilities extend very far into the future, the present value of these liabilities is, conversely, very sensitive to changes in nominal interest rates.
- **From the pension fund's point of view, the high interest rate sensitivity of the present value of its liabilities should be reflected as best as possible in the investments.**
  - In the event of further falling interest rates, the pension fund would be protected against these interest rate declines.
  - In the event of a sharp rise in interest rates, the pension fund assets would decrease, but the present value of the liabilities would fall to the same extent (not perfectly synchronous in case of a delayed adjustment of the technical interest rate).

What Pension Funds Can Do (2)

- However, a pension fund may also have the objective of ensuring that its pensioners do not suffer a major loss in purchasing power in the event of an inflationary shock.
- From this perspective, a lower level of interest rate risk and inflation risk relative to the liabilities on the investment side makes perfect sense.
- This manifests itself in a shorter investment duration compared to the liabilities.

- **The more a pension fund wants to be able to compensate its pensioners for inflation, the less inflation risk it should take on its investments.**
- **On the other hand, the better a pension fund wants to protect itself against further falling interest rates and deflationary tendencies, the more interest rate and inflation risk it should take on its investments.**
- **In any case it is beneficial to evaluate the interest rate sensitivities of the individual asset classes and compare them with the interest rate risks of the liabilities.**

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