

Swiss Re



# The impact of inflation on insurers

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## Summary

- Inflation concerns are rising
  - Fiscal deficits are large in many of the developed economies
  - Monetary policy is loose in most economies of the world
- Modest inflation likely in short-term, but inflation risks rise over the medium term
- Inflation affects insurers through numerous channels
  - Non-life insurers: rising claims costs
  - Life insurers: deflation poses risk to interest-rate guarantees. Inflation is a benefit, if accompanied by higher interest rates.
  - Investments: inflation impacts returns
- Insurers can partially mitigate inflation risk through contract design, reinsurance and investment strategy



## Measuring inflation

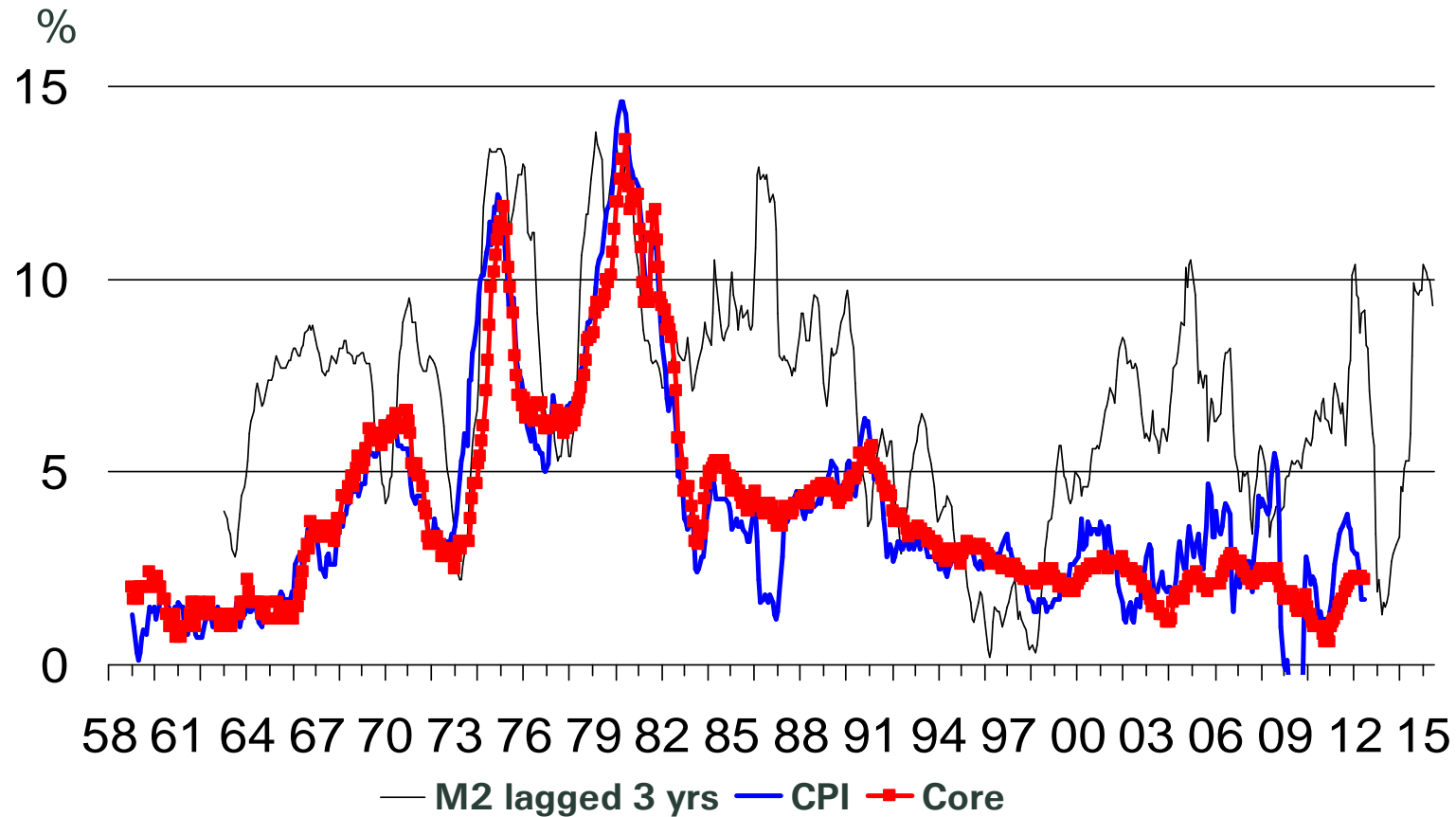
- Inflation, typically measured by the Consumer Price Index (CPI), is the rate of change of the general price level. Hedges are available for this measurement of inflation.
- When measuring inflation, governments adjust for quality improvements. (This is true for US and all EU HICPs\* also.)
  - Example: In the US, the average price of new vehicles has risen 15% over the past decade, but New Vehicle CPI has fallen 6% -- a 21% quality improvement!
- *Claims inflation*, a measure of claims severity, includes CPI inflation as well other factors
  - Example: motor insurance claims are affected by the replacement cost of the vehicle (not vehicle CPI), improvements in medical care as well as increased costs, litigation costs and the wage level of car repairmen
  - Not just CPI inflation and these factors are not what economists call "inflation," they reflect rising costs, which are what affect claims (*social cost escalation*)
- Our analysis focuses on the impact on insurers of CPI inflation, but not these additional factors

\* Harmonised Index of Consumer Prices (HICP)

## Inflation: Some background views

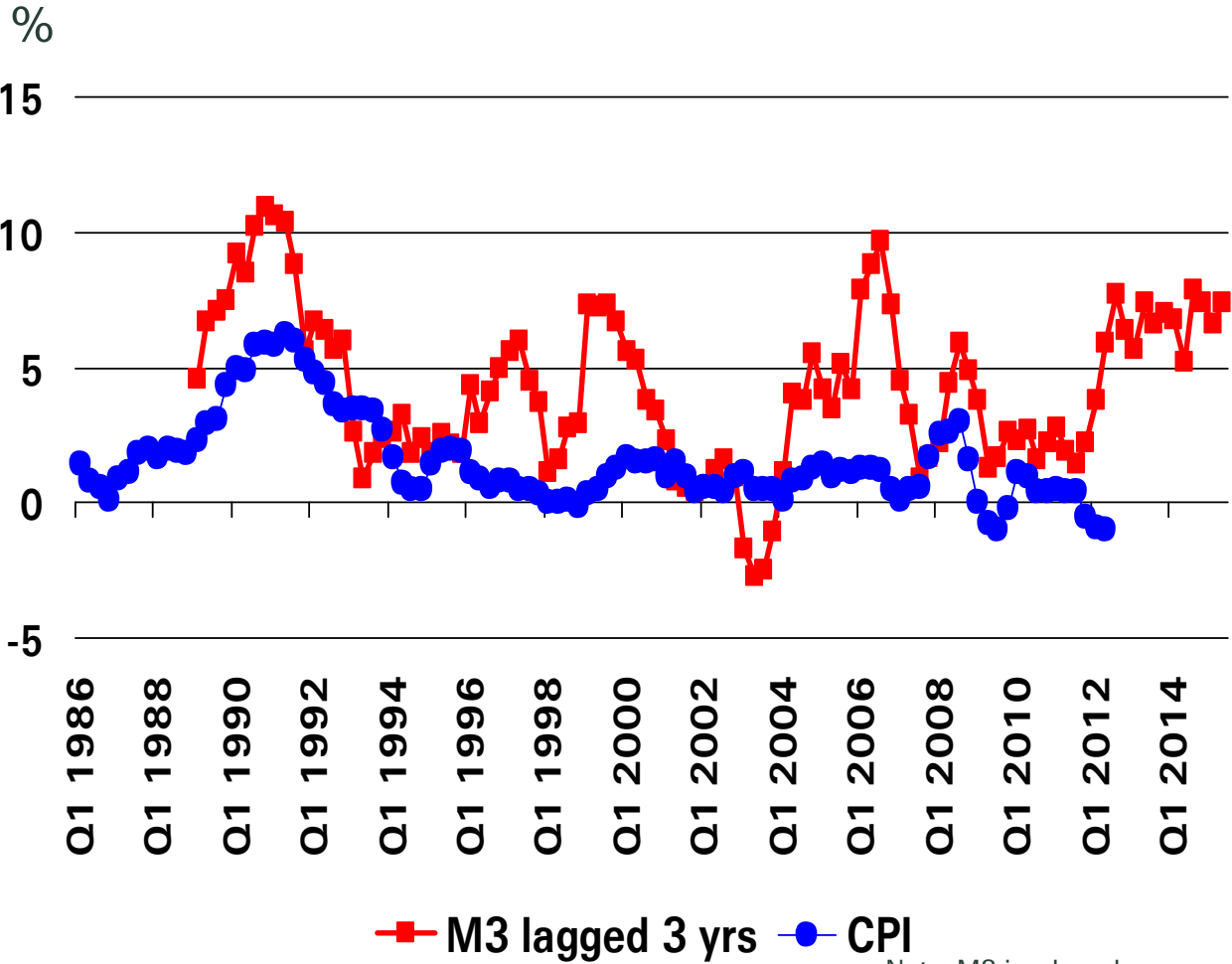
- The recent “Great Recession” and resulting monetary and fiscal policy actions have increased apprehension about potential inflation: large deficits, loose monetary policy and quantitative easing
- We have found that money supply and deficits no longer have a strong relation with CPI inflation. Instead we track
  - Core inflation (usually excludes food and energy indices), and
  - Wage inflation
  - Unemployment rate, capacity utilization in manufacturing
- Though moderate growth and inflation are the most likely in the near term, risks remain, so it is necessary to stay vigilant on inflation.
- Central banks have the tools – and the will – to control inflation
  - **But politics may intervene (the real risk of inflation)**
  - **There is a growing political desire to inflate to reduce rising debt burdens**

Broad money supply (M2) used to lead inflation, but no longer, US example (holds in Europe also)



Source: Swiss Re Economic Research & Consulting; Datastream

# Money supply and CPI, Switzerland: Not much relationship since 1990



Source: Swiss Federal Statistical Office, Swiss National Bank

Note: M3 is a broad money supply metric

## What is the risk of a spike in inflation?

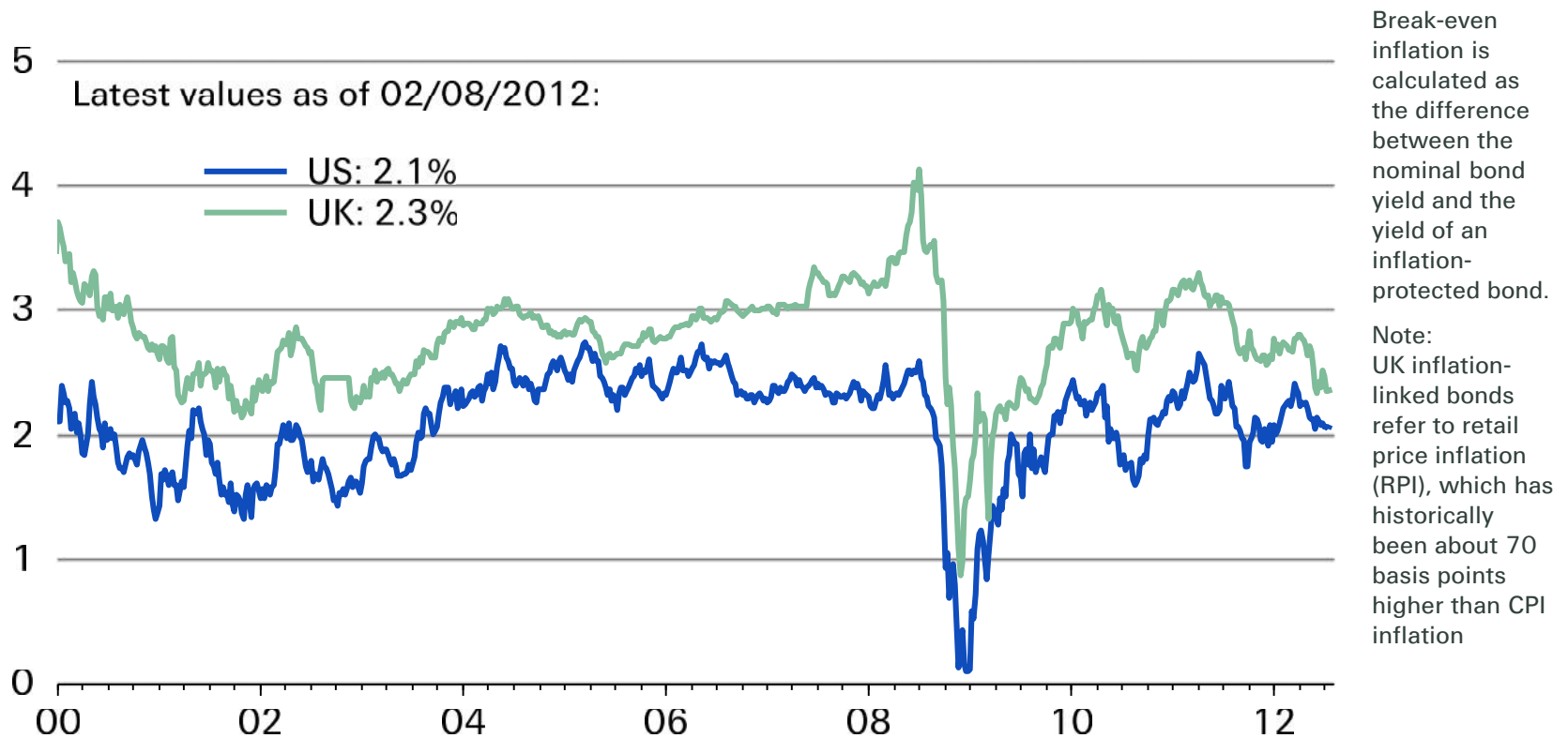
There are three key risks to inflation rising sharply

- Governments begin to monetize debt to reduce the burden of fiscal austerity measures – a more politically palatable
- Oil prices
  - This is less relevant for casualty lines since oil price increases do not necessarily increase claims costs, since they do not always feed into wages.
  - Would affect assets via a global recession if there were an oil price shock.
- Surge in economic activity and lending gets ahead of Central Banks and inflation rises because of slow monetary response

# Long-term inflation expectations remain very well contained, US and UK: No signs of market concern about inflation



Break-even Inflation, 10yr Bonds, weekly data

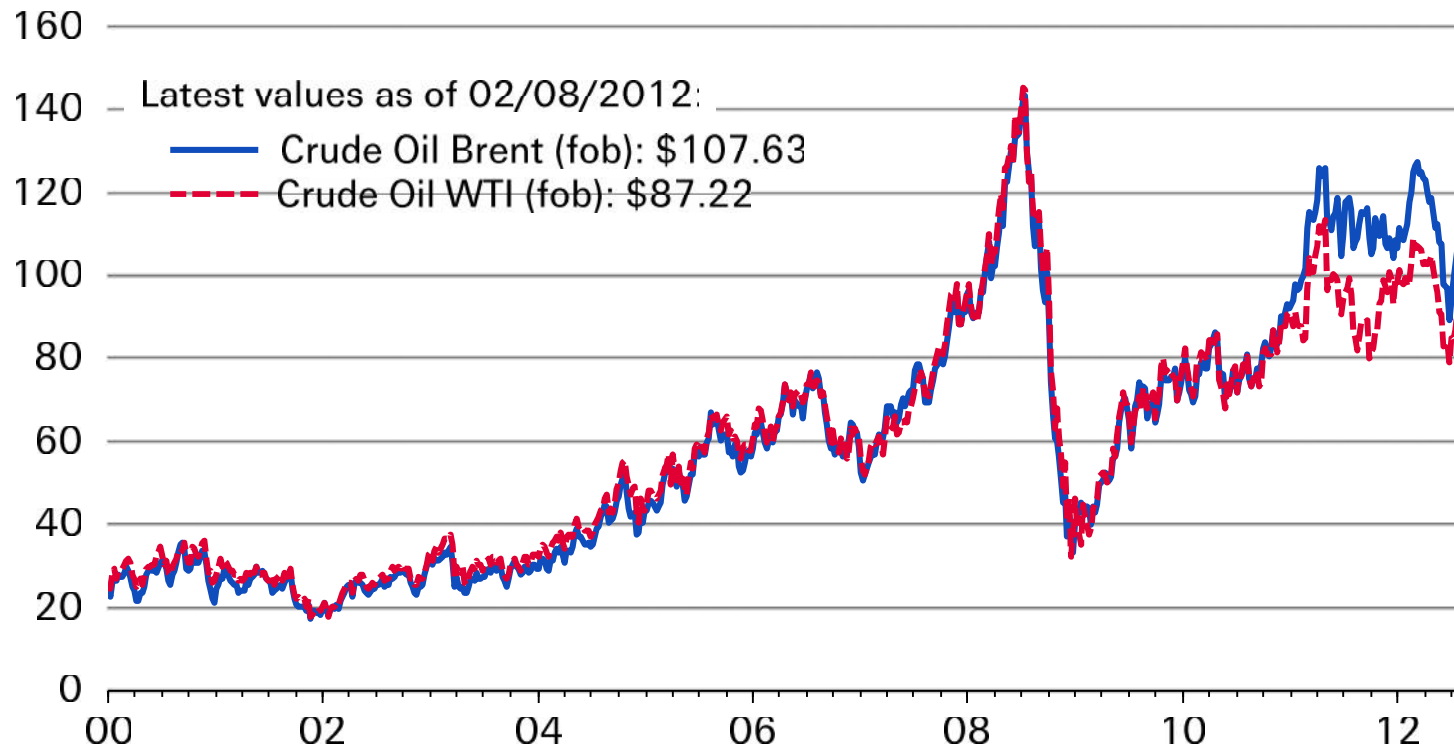


Source: Bloomberg



# Oil prices remain quite elevated – despite worries about global growth: But are not surging like in 2008

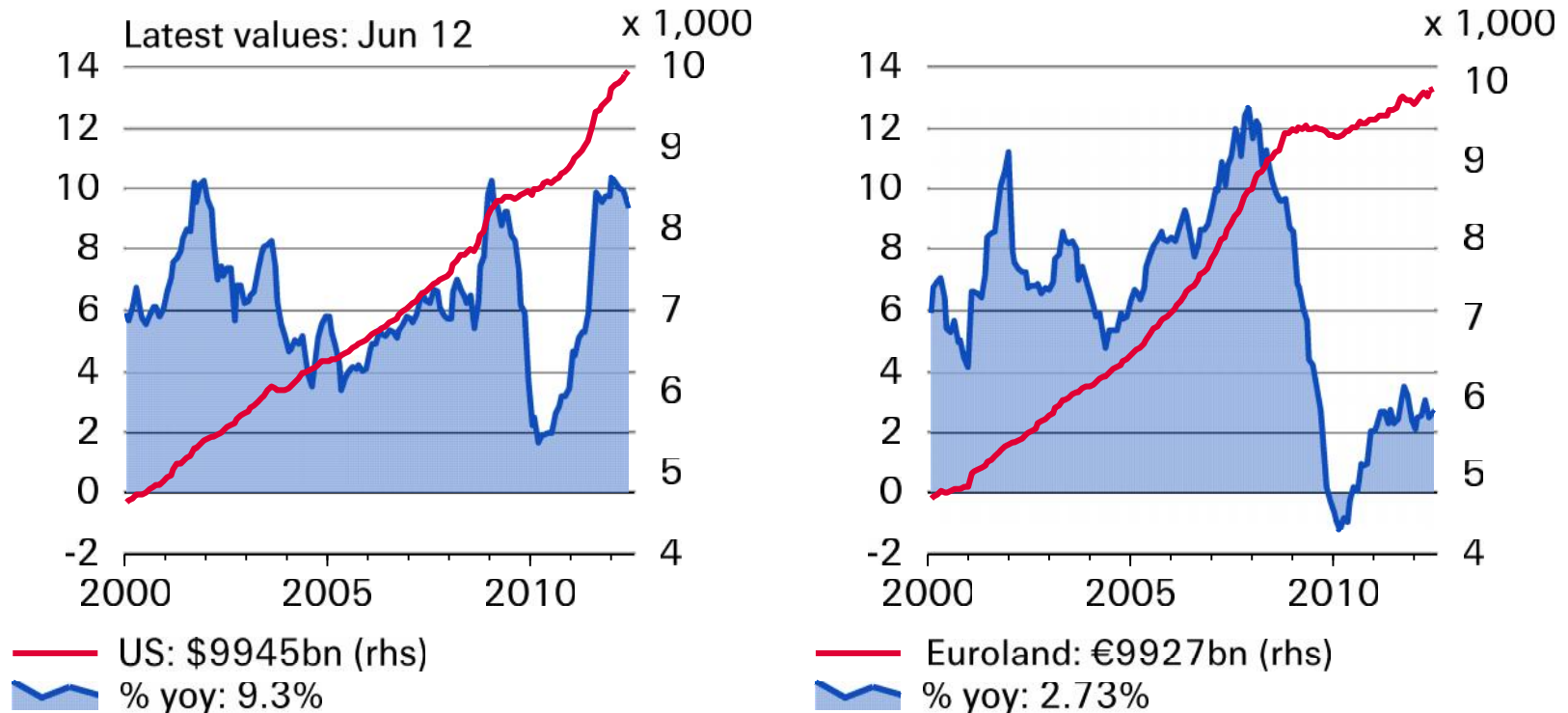
West Texas Intermediate (WTI) and Brent Crude oil spot price, USD per barrel



Source: Datastream

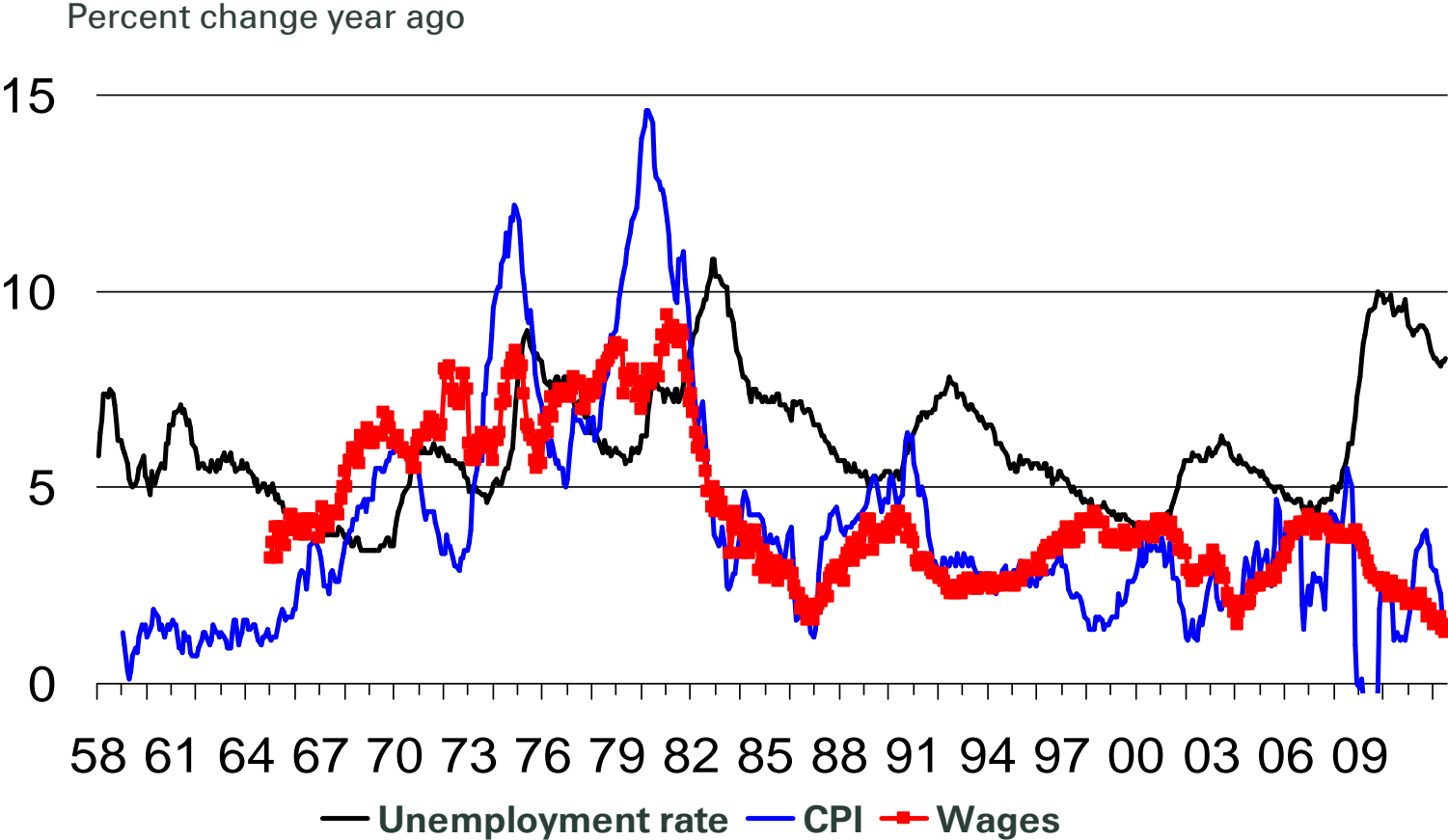
# Money supply is growing rapidly in the US but only moderately in Euroland: Greater risk of inflation in US, but no signs of it yet

US M2 money supply and Euro area M3, bn USD or EUR (left axis) and %-change yoy (right axis), monthly data



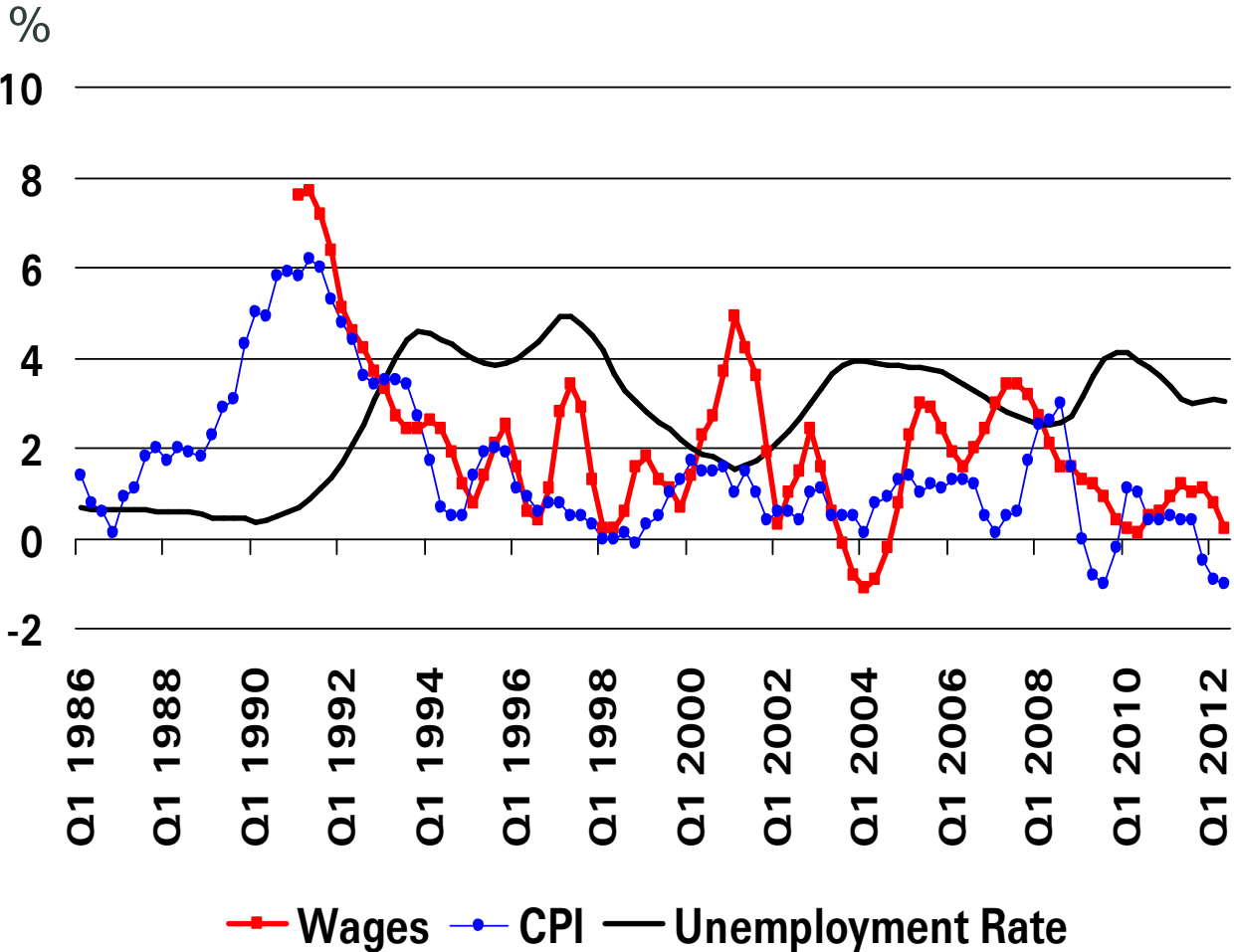
Source: Datastream

# Wages and CPI inflation, US: Wages are very subdued due to high unemployment



Source: Datastream

# Wages, CPI and Unemployment rate, Switzerland

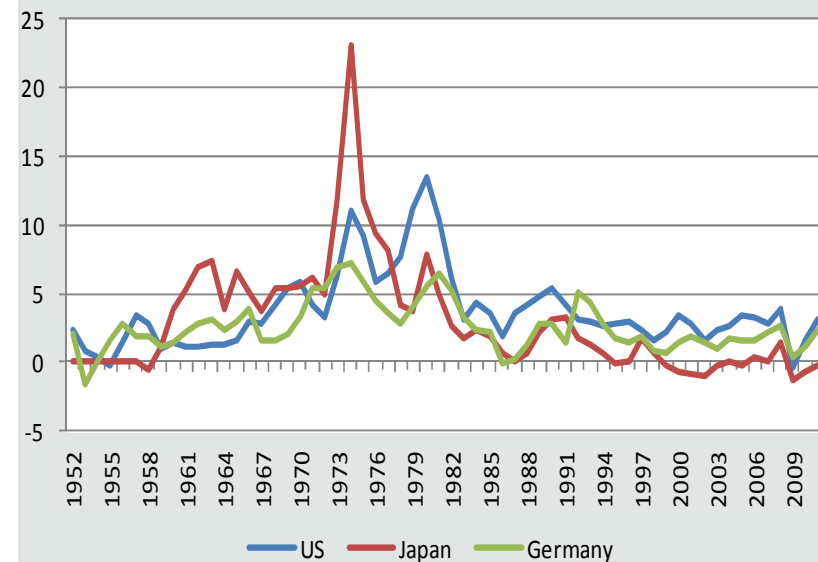


Source: Swiss Federal Statistical Office, Swiss National Bank

## The post-war inflation experience

- In developed economies, inflation was modest after World War II
- It began a slow steady rise in the 1960s, fuelled by war spending and monetary policy mistakes
- Once governments understood the policy error, they reined in inflation, but the adjustment was painful
- To avoid similar problems in the future, authorities have exercised monetary policy discipline
- Inflation under 5% since 1985

### Inflation in select countries, 1952-2011



Source: Government statistical agencies, Swiss Re Economic Research & Consulting

Source: *sigma* 4/2010 Swiss Re Economic Research & Consulting

## Impact of inflation on non-life liabilities

- In property insurance, inflation requires regular adjustments of sums insured to reflect increased values
  - Can be automated by indexing
- In liability insurance, premium rates need to be adjusted regularly to reflect rising wages and prices
  - Generally occurs with a time lag
  - Liability claims often grow faster than CPI inflation due to social cost escalation, eg, medical expenses for improved medical services
- Periods of severe or prolonged inflation shocks are problematic
- Rate regulation compounds the problem
  - Restricts ability to adjust premiums when inflation rises, yet requires a full adjustment for falling inflation



## Which non-life business lines are most vulnerable to inflation?

- Umbrella, excess liability, and non-proportional reinsurance due to the nature of excess-of-loss contracts with fixed deductibles
  - Inflation increases frequency and severity of claims exceeding the deductible
  - This is called "the leveraged effect of inflation"
- The longer the tail of a line of business, the more inflation is an issue
  - Long-tail lines include: general liability, med mal, and workers' comp
- Contract terms can reduce the inflation exposure of many property risks
  - Policy limits
  - Clauses linking premiums, limits and deductibles/retention to an inflation index

## Growth of liability claims

- In the major markets, liability insurance claims have risen much faster than general (CPI) inflation
  - Ratio of liability claims growth to CPI inflation ranges from 1.8 to 2.6
  - In US and Germany, general liability claims rise 2.2% for every 1% rise in CPI
  - Most of this additional claims growth is due to exposure growth
- Liability claims have also grown faster than the general economy (nominal GDP)
  - Ratio of liability claims growth to GDP growth ranges from 1.1 to 1.4
  - In US and Germany, general liability claims rise 1.3% for every 1% rise in GDP
- Multi-year trends in claims growth are highly correlated with:
  - growth in medical expenditures
  - CPI
  - wage inflation



## Inflation and non-life profitability

There is some evidence that inflation erodes the underwriting discipline and profitability of non-life insurers:

- In the 1970s, increases in inflation (1969-70, 1973-74, and 1979- 81) coincided with subsequent drops in underwriting and overall profitability
- Disinflation (falling inflation) in 1971-72 and 1975-76 led to subsequent improvements in underwriting results
- Recent decades, characterised by moderate and stable inflation, offer little evidence on how inflation affects profitability. Inflation has been too stable to be an influence.

## Mitigation strategies 1: Contract design

Contract design offers ways to mitigate inflation exposure in long-tail business by shortening the duration of liabilities or by indexing limits and deductibles. *This can be more effective than asset side.*

### ■ Shortening the tail

- a **“claims-made” policy** covers only claims that are reported during the policy period, regardless of the date of occurrence
- a **sunset clause** in a liability policy states that the insurer will respond only to losses reported before some predetermined future date (sunset)
- a **mandatory commutation** clause will automatically trim the duration of claims via pre-arranged commutation after a certain period.

### ■ **Index clauses** link premiums, limits, and deductibles/retention to an inflation-related index, providing important protection against scenarios of prolonged severe inflation

## Mitigation strategies 2: Reinsurance

- Reinsurance absorbs the risk of claims escalation
- In proportional treaties, the primary insurer's exposures to inflation are reduced by sharing inflation impacts with the reinsurer
- In non-proportional treaties, some of the risk of claims escalation is transferred to the reinsurer once the self retention is exceeded

## Mitigation strategies 3: Other strategies

- Structured solutions
- Frequency covers and new index-based solutions
- International diversification
  - May not work in near term due to global loose monetary policies
- Hedging with assets
  - If effective against CPI inflation, still have basis risk on claims "inflation"
  - Usually, interest rates and inflation move together, offsetting the potential losses from higher claims
- Hedging with derivatives
  - CPI derivative market is small

## Which investments best hedge inflation risk?

- **Treasury bills** closely track inflation, but earn modest returns
- **Commodities, real estate and inflation-indexed bonds** also serve as inflation hedges
- **Long-term bonds** fare poorly under inflation but are a good *deflation* hedge
- **Equity** returns are not very correlated with inflation
- Does not mitigate against *social cost escalations*

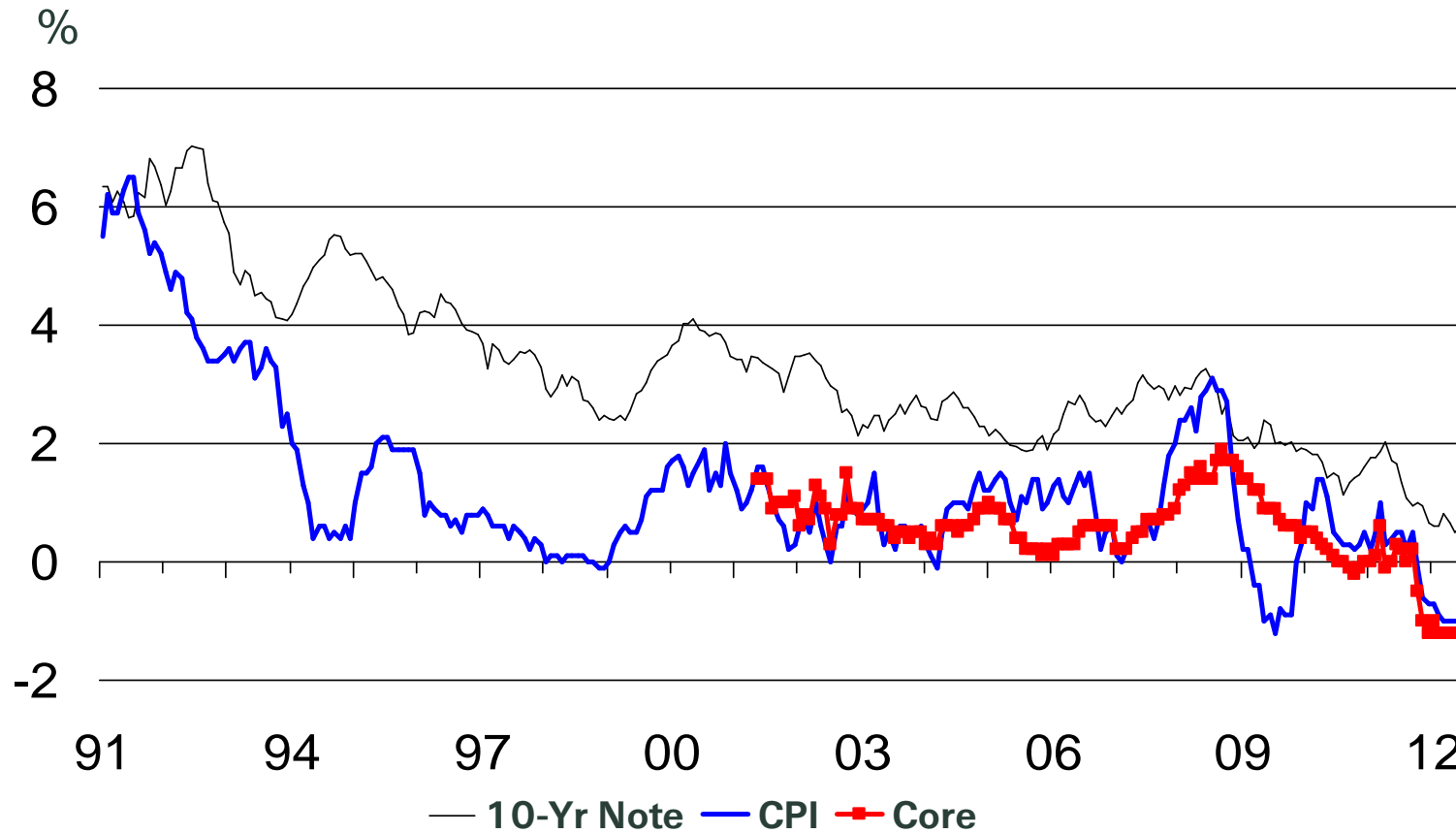
### Correlation between annual asset returns and CPI, 1998-2009

Asset class	Correlation with CPI
Treasury bills	0.64 **
TIPS	0.48
Real estate	0.43 **
Commodities	0.34 *
US stocks	-0.09
Non-US stocks	-0.10
Intermediate Treasury bond	-0.31 *
Long-term Treasury bond	-0.39 **

\*\* 99% significance;  
 \* 95% significance

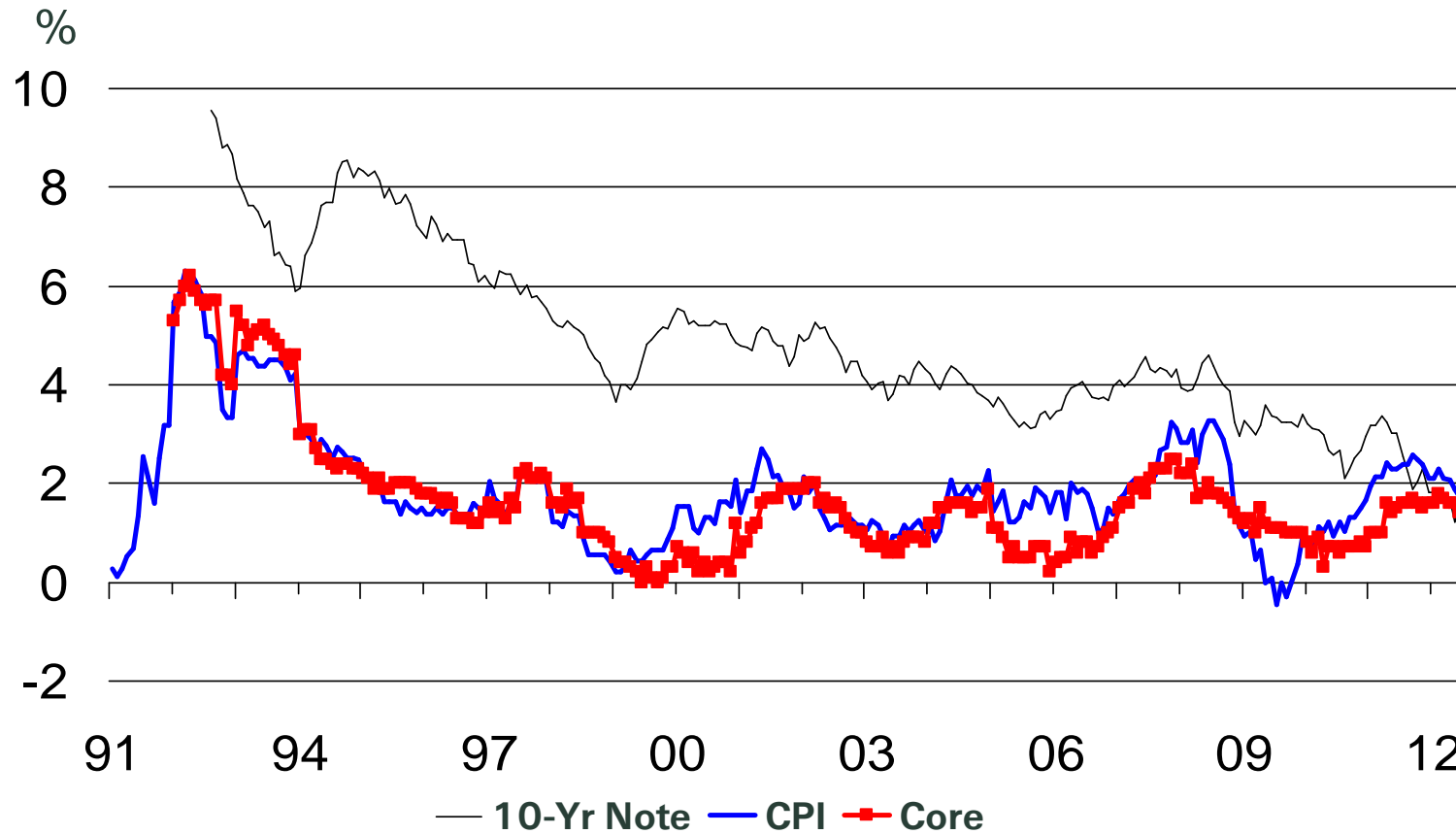
Source: Swiss Re Economic Research & Consulting; sigma 4/2012

# Yields on 10-year gov't bond and core and all items CPI inflation, Switzerland: Yields and inflation tend to move together



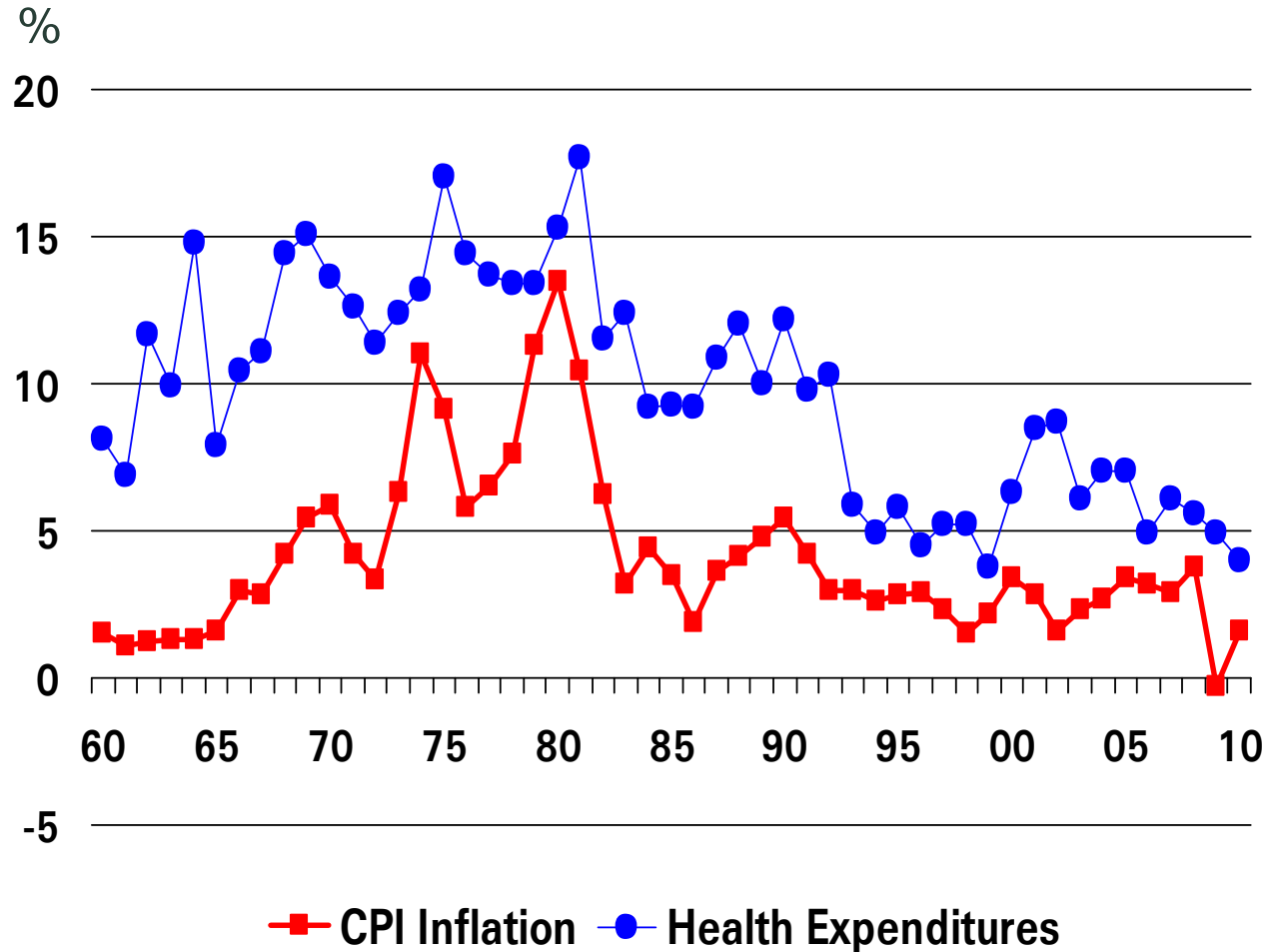
Source: Swiss Re Economic Research & Consulting; Datastream

# Yields on 10-year gov't bond and core and all items CPI inflation, Germany: Yields have fallen below inflation



Source: Swiss Re Economic Research & Consulting; Datastream

# CPI inflation and health expenditures, US: CPI inflation hedge would not be very effective



Source: Bureau of Economic Analysis, Federal Reserve Board



# Keeping up with claims inflation: Liability claims rise more rapidly than CPI, Wages or nominal GDP



Nominal growth in liability claims, CPI and Wage inflation, GDP, select countries

1975-2010	US [1]	Canada [1]	UK [1]	Germany
Liability claims growth	7.1%	9.5%	6.7%	5.0%
CPI inflation	4.1%	3.3%	5.1%	2.5%
Wage index	4.5%	4.7%	6.9%	2.4%
GDP nominal	6.2%	6.3%	7.4%	4.3%

- Could use, eg, TIPS as a partial hedge against claims growth, but there would be basis risk since CPI inflation does not match claims cost escalations.

[1] net, after reinsurance

Sources: A.M. Best and MSA for insurance data, World Bank for service sector as % of GDP, Oxford Economics for GDP, Swiss Re Economic Research & Consulting.

## Conclusions

- The recent “Great Recession” and resulting monetary policy actions have increased apprehension about potential inflation.
- Though moderate growth and inflation are the most likely over the next few years, risks remain. Insurers must stay vigilant in monitoring inflation.
- Because non-life insurers generally promise full indemnity, inflation contributes to a rise in claims severity, increasing their nominal liabilities. Many other societal factors – “social cost escalation” – also play a role.
- Deflation, generally accompanied by declining interest rates, poses a risk to life insurers writing interest-rate guarantee savings products.
- Insurers can reduce their exposure to inflation risk through:
  - carefully crafted contract terms
  - the use of reinsurance
  - investing in assets that perform well in high-inflation periods, but this is an imperfect hedge

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Thank you

*this presentation is based on: sigma No 4/2010*

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