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**State Secretariat for Economic Affairs SECO**

# Quarterly GDP Estimation in R

Christoph Sax, SECO, [c.sax@seco.admin.ch](mailto:c.sax@seco.admin.ch)

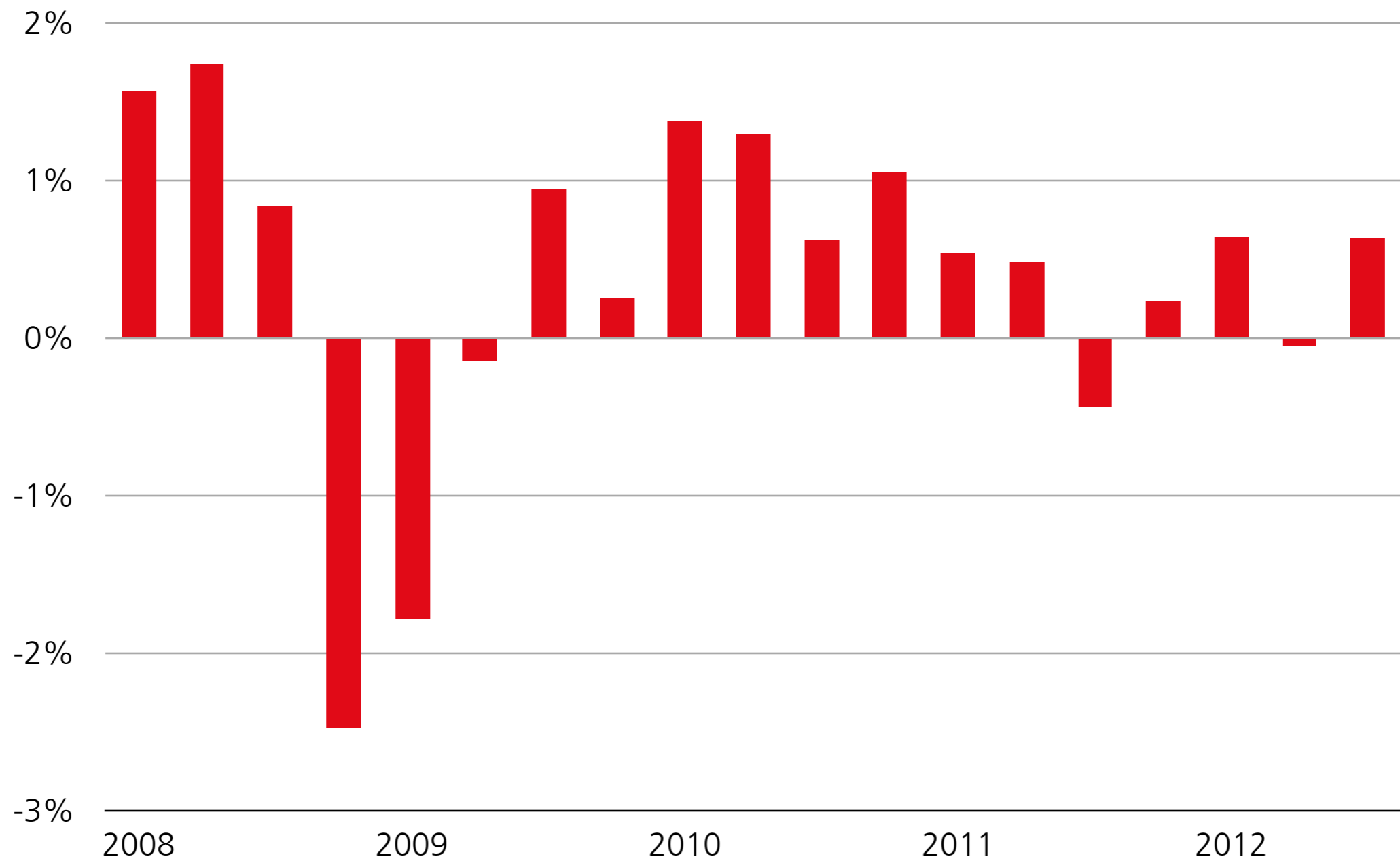
**BaselR**, February 21, 2013

# Gross Domestic Product

- The value of all goods and services produced over a specific time period.
- One of the main indicators on economic health.
- Guideline for
  - Policy makers
  - Monetary policy
  - Companies

# Gross Domestic Product

seasonally adjusted, percentage change to the previous quarter

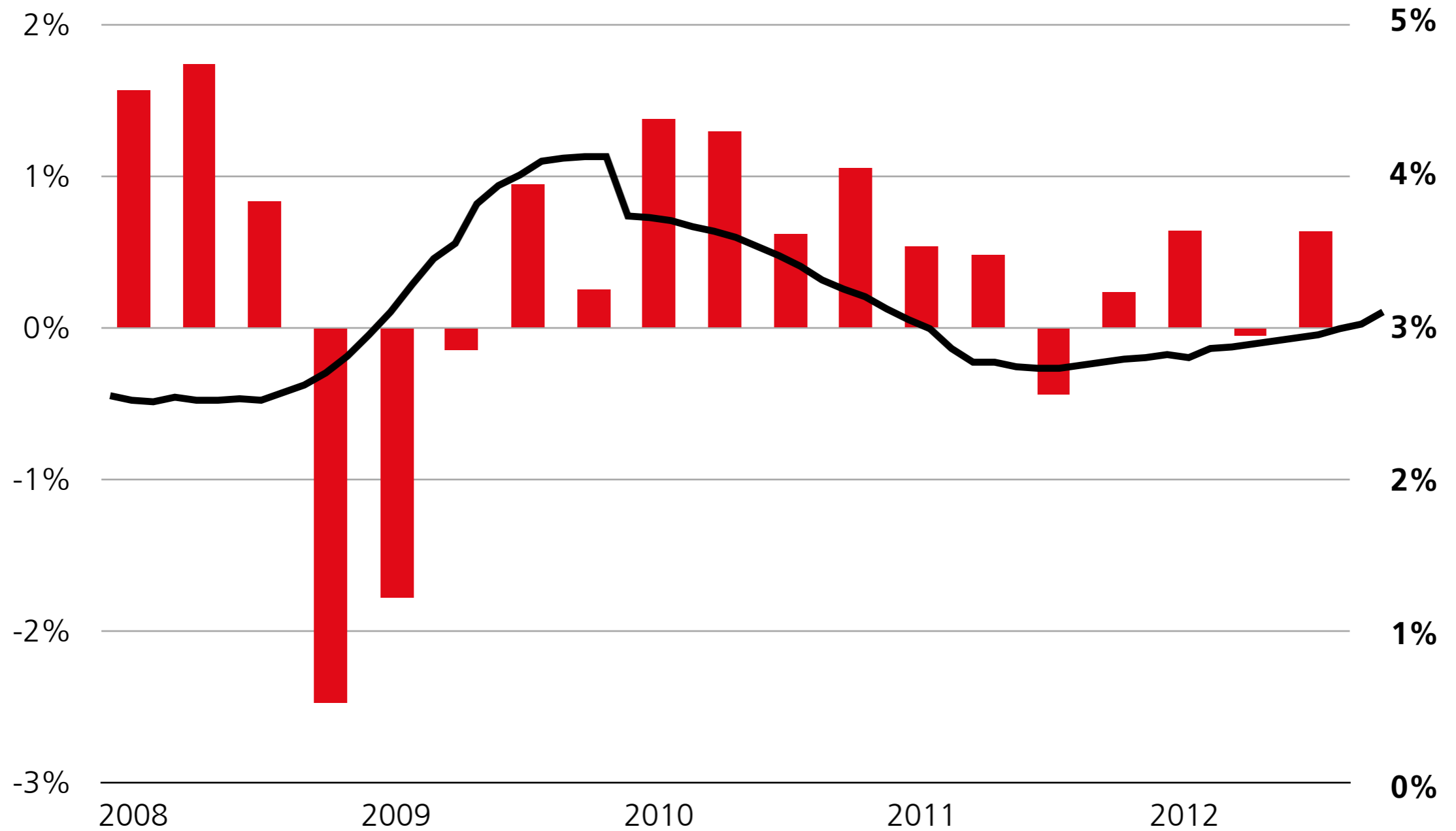


source: SECO

# Gross Domestic Product

seasonally adjusted, percentage change to the previous quarter

## Unemployment Rate

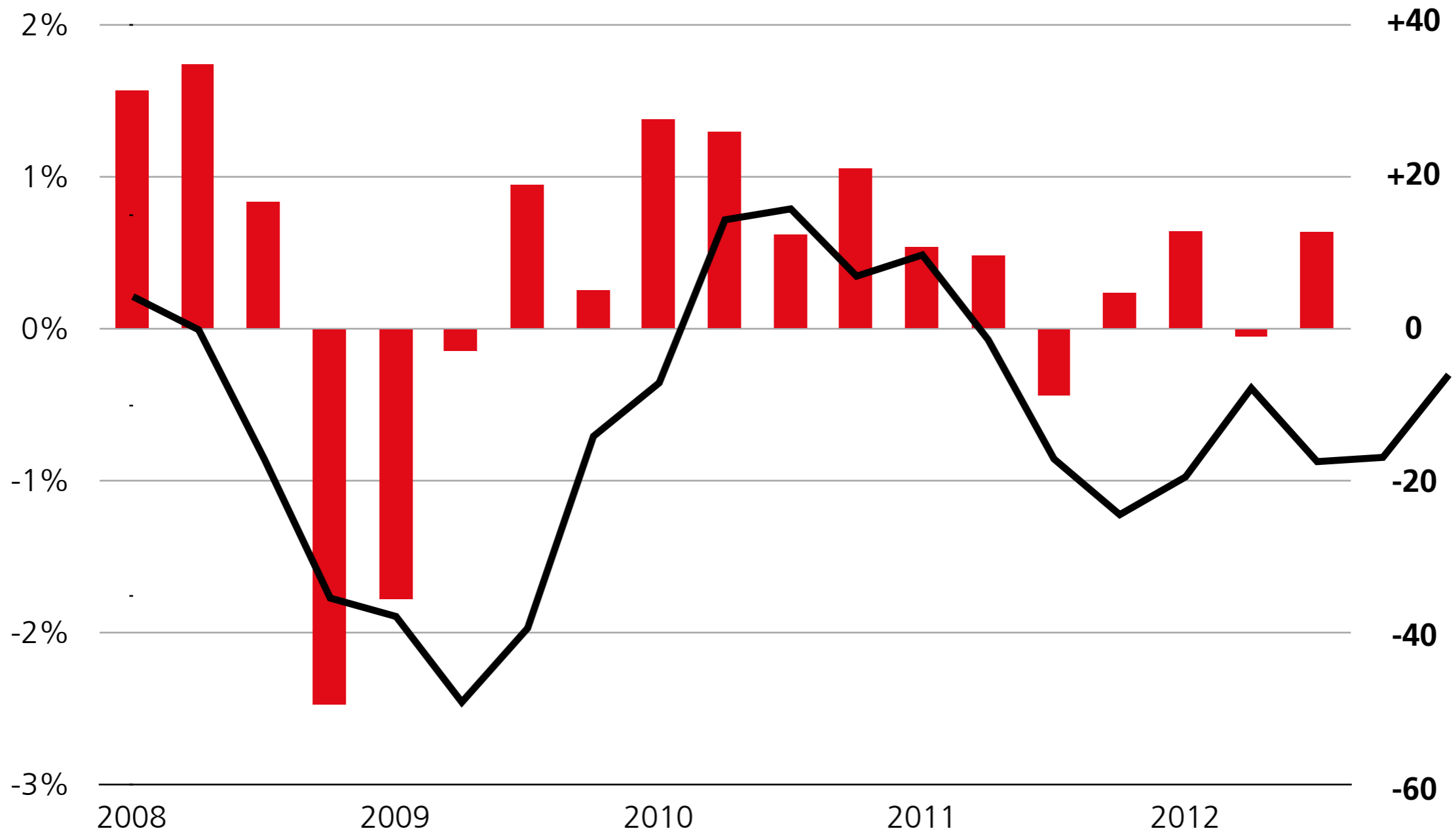


source: SECO

# Gross Domestic Product

seasonally adjusted, percentage change to the previous quarter

## SECO Consumer Sentiment Index



source: SECO

# Quarterly and Annual GDP

- Annual GDP

- Calculated by the Federal Statistical Office (FSO)
- Based on all available data
- First estimation: approx. 8 months after the end of the year
- Final estimation: approx. 2 years, 8 month after the end of the year

- Quarterly GDP

- Calculated by the State Secretariat for Economic Affairs (SECO)
- Based on quickly available data
- First estimation: approx. 60 days after the end of the quarter

# Three Approaches to GDP

- Production Approach
  - Summing the value added by all producers
- Expenditure Approach
  - Summing the amount spend by all users of output
- Income Approach
  - Summing the amount income received

# Disaggregated Estimation

- Disaggregated estimation
  - 18 subsections for the production approach
  - 12 subsections for private consumption
- About 700 series each quarter
  - series at current and constant prices
  - raw series and seasonally adjusted



# Estimating GDP in R

- Integrating the estimation procedure:
  - Data preparation
  - Main Estimation
  - Seasonal adjustment
  - Output generation
- A single script for each major component:
  - Production approach
  - Exports and imports
  - Private and public consumption
  - Investment
  - Income approach

# Chow-Lin (1971)

- Disaggregation of annual series to quarterly series
- Performs interpolation and extrapolation.
- Uses one or several indicator series.
- Regression of the annual values on the annualized quarterly indicator series
- Ensures that the sum of the quarterly series is consistent with the annual series.

# Statistical Core: *tempdisagg*

- Methods for Temporal Disaggregation and Interpolation of Time Series
- Chow-Lin, Litterman, Fernandez, Denton
- CRAN package (with Peter Steiner)

# Example: Value Added in Financial Industries

- Value added at current prices
- There are two major sources of revenue for banks:
  - Revenue from Commissions
  - Revenue from Interest Spread
- Quarterly data is available on:
  - Exports of Banking Commissions
  - Revenue from Interest Spread
- Both series are based on surveys conducted by the Swiss National Bank

# Conclusions

- Advantages

- Fast
- Reliable
- Transparent
- Standardized

- Disadvantages

- You need to learn some R.