# Economic Perceptions and Mental Health

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# Introduction

- ▶ **Motivation:** Mental health is one of the leading causes of disability worldwide (GBD 2019).
- ▶ **Research question:** How do perceptions of economic conditions affect mental health care consumption?
- ▶ **Natural experiment:** Appreciation of the Swiss Franc following discontinuation of minimum exchange rate in 2015. This deteriorated perceptions about job security, while actual unemployment remained virtually unchanged.
- ▶ **Empirical strategy:** Compare individuals categorized by their proximity to the Swiss border in a difference-in-differences setting.
- ▶ **Data:** Register data on individuals from largest Swiss health insurer.

# Introduction

**Main findings:**

- ▶ Probability of at least one monthly psychotherapist visit increases by 12.1% for individuals living closest to the border.

- ▶ Probability of buying at least one prescribed psychotherapeutic drug in a month increases by 1.6% for individuals living closest to the border.

- ▶ Results are robust to several robustness checks
  - ▶ Changes of treatment group definition (continuous measure of distance, distance of closest labor market center to the border)
  - ▶ Changes in the sample (including only identifying observations)
  - ▶ Controlling for observed and unobserved changes over time (labor market-specific time trends, monthly number of refugees in municipality)

# Introduction

**Our contribution:**

1. Causal evidence on impact of economic perceptions on mental health care consumption
   - ▶ Worker perspective: increase of job insecurity
     ⇒ negative impact on mental health
   - ▶ Consumer perspective: increase of real income
     ⇒ positive impact on mental health

2. Objective mental health measure
   - ▶ Claim-based utilization (vs. survey data)
   - ▶ Severity: Only cases referred from doctors to psychiatrist/psychotherapist

3. Descriptive evidence on impact of currency shock on economic perceptions

**Literature strand 1:**
**Perception of economic conditions $\rightarrow$ mental health**

▶ Expectations over future consumption (perceptions of economic conditions) (Engelberg and Parson, 2016, *JoF*)

▶ Effects of commodity prices (perceived job security) (Johnston et al., 2020, *AJHE*)

**Literature strand 2:**
**Actual (individual) economic changes $\rightarrow$ mental health**

▶ Housing market crash for homeowners (stress) (Yilmazer et al., 2015, *SSM*); or no effect (Fishera and Gathergood, 2016, *HE*)

▶ Stock market fluctuations (stress) (Schwandt, 2018, *AEJ*)

▶ Lottery winnings (long-run life satisfaction) (Lindqvist, 2020, *ReStud*)
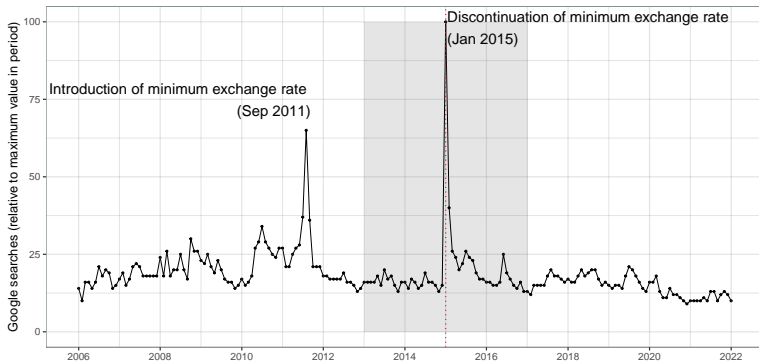
▶ Additional Literature

# The 2015 Currency Shock



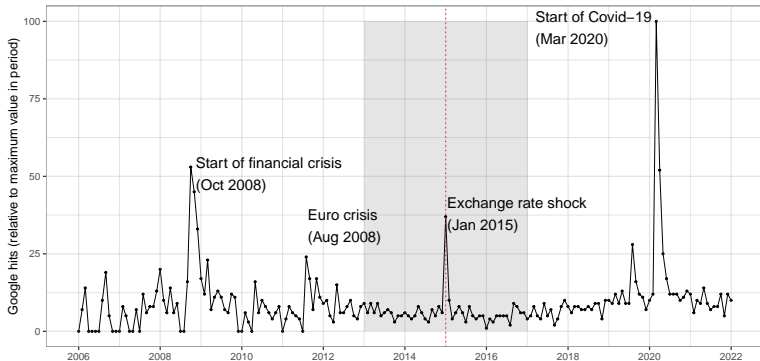Exchange rate CHF to
— Euro — US Dollar

# Implications of a Currency Shock in Switzerland

**Google searches: Search term "exchange rate"**

# Implications of a Currency Shock in Switzerland

**Google searches: Search term "recession"**

# Main Data

**Insurance Data**

- ▶ Individual-level data from largest health insurer in Switzerland
- ▶ Utilization and cost data on monthly basis in the years 2013-2016
- ▶ Information on residence ("geocoding")
- ▶ Distance to border to assess sensitivity to changes in exchange rate ("routing")
- ▶ Sample restriction: focus on working population (26-64/5), living in Switzerland, exclude movers
- ▶ 653,301 individuals; of which 423,279 in working age (main sample)

  ▸ People moving

# Estimation Method

▶ We argue that individuals closer to the border are more affected by the currency shock.

▶ We estimate a DiD model and use the distance measured in commuting minutes by car from the place of residence to the closest border crossing.

▶ This is consistent with the identification strategy by Beerli et al. (2021, *AER*) who estimate the effect of cross-border workers on the Swiss labor market.

# Estimation Method: Treatment

**Treatment: Distance from residence to border crossing**
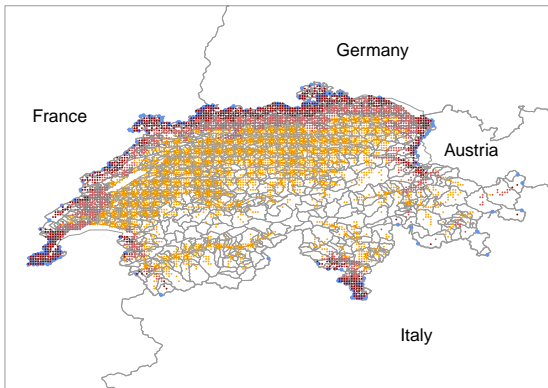


Distance to next
border crossing
(marked in blue)

- 🔴 0–15 minutes
- 🔴 >15–30 minutes
- 🟠 >30 minutes

France

Germany

Austria

Italy

▸ Cross-border workers

# Estimation Method: Summary Statistics

| Treatment category | 0-15 minutes | >15-30 minutes | >30 minutes |
|---|---|---|---|
| **(A) Health care consumption** | | | |
| Any visit with psychotherapist | 0.012 | 0.011 | 0.010 |
| Any relevant drug consumption | 0.053 | 0.047 | 0.042 |
| Any visit with general practitioner | 0.206 | 0.191 | 0.191 |
| **(B) Distance Variable** | | | |
| Distance to border crossing | 7.666 | 23.243 | 50.960 |
| (in minutes) | | | |
| **(C) Sociodemographic variables** | | | |
| Female | 0.500 | 0.502 | 0.506 |
| Foreign background | 0.209 | 0.160 | 0.148 |
| Age | 46.290 | 46.099 | 46.167 |
| Income index | 0.580 | 0.521 | 0.458 |
| % Individuals missing | 34.5% | 29.0% | 29.4 % |
| **(D) Insurance contract variables** | | | |
| Accident coverage included | 0.344 | 0.315 | 0.298 |
| High deductible | 0.439 | 0.476 | 0.468 |
| **(E) Geographical Indicators** | | | |
| Urbanity | 0.406 | 0.205 | 0.166 |
| Number of Psychiatrists within 20 min | 113 | 101 | 57 |
| Number of observations | 4,099,152 | 4,103,040 | 12,115,200 |
| Number of individuals | 85,399 | 85,480 | 252,400 |

## Estimation Method

We estimate the following regression equation

$$Y_{it} = \mu_i + \eta_\tau + \kappa_\iota + Post_t\beta_2 + D_i \times Post_t\theta + \boldsymbol{X}_{it}\beta_3 + \varepsilon_{it}$$

- ▶ $Y_{it}$: outcome of interest
- ▶ $\mu_i$: individual-level fixed effect
- ▶ $\eta_\tau$: calendar month fixed effect
- ▶ $\kappa_\iota$: canton fixed effect
- ▶ $Post_t$: currency shock indicator ($= 1$ after January 15, 2015; $= 0$ otherwise)
- ▶ $D_i$: individual treatment indicator ($= 1$ if distance $\leq 15$ min; $= 0$ if distance $> 30$ min)
- ▶ $\boldsymbol{X}_{it}$: matrix of covariates (including dummy for deductible $> 500$ Swiss Francs, dummy for inclusion of accident coverage, and dummy for urbanity of municipality of residence)
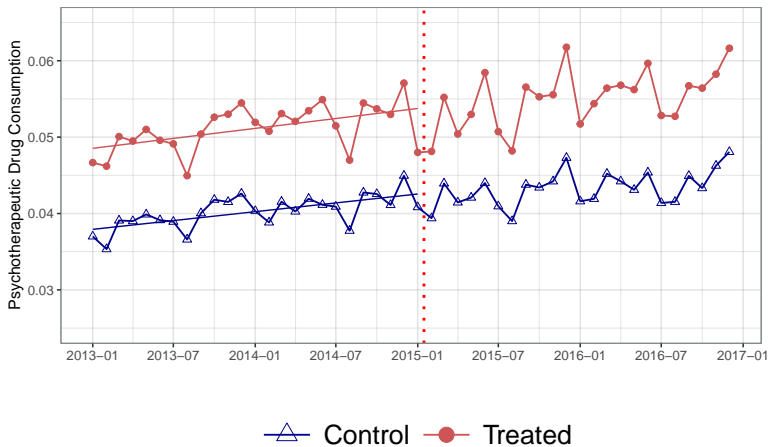
# Estimation Method

**Parallel trends: Psychotherapist visits**
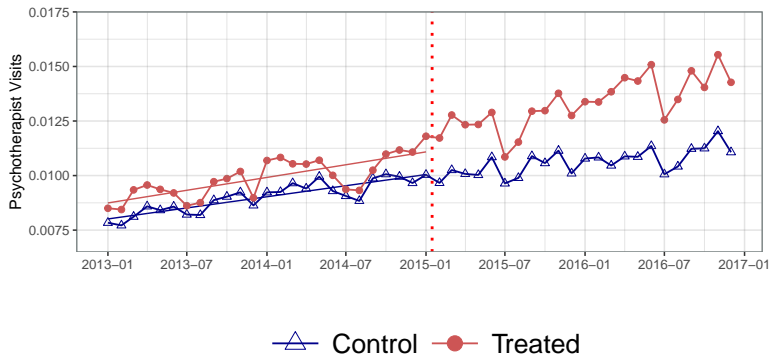
# Estimation Method

**Parallel trends: Psychotherapeutic drugs**

# Main Results

| Dependent variable: | Psychotherapist visits | | Psychotherapeutic drugs | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Treatment × Post | 0.0018 | 0.0012 | 0.0008 | 0.0008 |
| | (0.0003) | (0.0003) | (0.0003) | (0.0003) |
| | | | | |
| Baseline | 0.0099 | 0.0099 | 0.0511 | 0.0511 |
| Effect in Percentages | 18.18% | 12.12% | 1.57% | 1.57% |
| | | | | |
| Observations | 16,214,352 | 15,844,068 | 16,214,352 | 15,844,068 |
| $R^2$ | 0.44871 | 0.4558 | 0.42663 | 0.42666 |
| Individual FE | ✓ | ✓ | ✓ | ✓ |
| Month FE | ✓ | ✓ | ✓ | ✓ |
| Canton FE | ✓ | ✓ | ✓ | ✓ |
| Individual Controls | ✓ | ✓ | ✓ | ✓ |
| Supply Control | | ✓ | | ✓ |

# Mechanisms

1. **Worker:** Labor market mechanism (competition with foreign workers for Swiss wages, goods market competition)
   - Currency shock $\Rightarrow$ labor input costs in Switzerland $\uparrow$ $\Rightarrow$ job insecurity & unemployment risk $\uparrow$ $\Rightarrow$ mental health $\downarrow$ $\Rightarrow$ psychotherapists visits/psychotherapeutic drug consumption $\uparrow$

2. **Consumer:** Consumption mechanism (relative prices, cross-border shopping)
   - Currency shock $\Rightarrow$ real income in Switzerland $\uparrow$ $\Rightarrow$ mental health $\uparrow$ $\Rightarrow$ psychotherapists visits/psychotherapeutic drug consumption $\downarrow$

# 1. Labor Market Mechanism

**Job security decreased after currency shock**
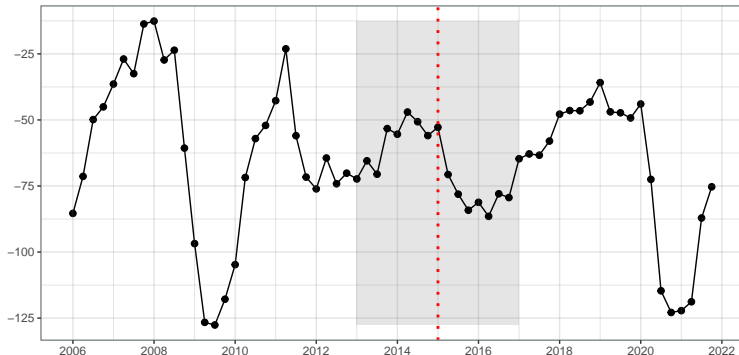


Source: SECO (2022)

▸ Expected unemployment

# 1. Labor Market Mechanism

**Currency shock had a very small impact on labor market competition**

| Dependent variable: | Unemployed | Cross-border workers | Temporary residents |
|---|---|---|---|
| | (1) | (2) | (3) |
| Treatment × Post | -0.0004 | 0.0028 | 0.0002 |
| | (0.0000) | (0.0001) | (0.0000) |
| | | | |
| Baseline | 0.0192 | 0.1170 | 0.0904 |
| Effect in Percentages | -2.08% | 2.39% | 0.22% |
| | | | |
| Observations | 5,707,562 | 5,460,765 | 5,744,193 |
| $R^2$ | 0.90175 | 0.97426 | 0.96512 |
| 0.81427 | | | |
| Individual FE | ✓ | ✓ | ✓ |
| Canton FE | ✓ | ✓ | ✓ |

# 1. Labor Market Mechanism

**No impact on psychotherapists visits, and lower impact on psychotherapeutic drug consumption in retirement age**

| Dependent variable: | Psychotherapist visits | | Psychotherapeutic drugs | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Treatment $\times$ Post | 0.0003 | 0.0002 | 0.0016 | 0.0018 |
| | (0.0002) | (0.0002) | (0.0006) | (0.0006) |
| | | | | |
| Baseline | 0.0032 | 0.0032 | 0.1230 | 0.1230 |
| Effect in Percentages | 9.38% | 6.25% | 1.30% | 1.46% |
| | | | | |
| Observations | 8,546,016 | 8,536,212 | 8,546,016 | 8,536,212 |
| $R^2$ | 0.38514 | 0.38382 | 0.44627 | 0.44606 |
| Individual FE | ✓ | ✓ | ✓ | ✓ |
| Month FE | ✓ | ✓ | ✓ | ✓ |
| Canton FE | ✓ | ✓ | ✓ | ✓ |
| Individual Controls | ✓ | ✓ | ✓ | ✓ |
| Supply Control | | ✓ | | ✓ |

# 2. Consumption Mechanism

**Expected financial situation of own household continued slight downward trend**
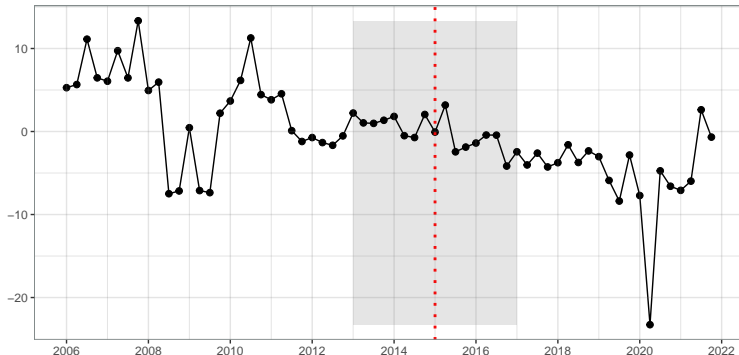


Source: SECO (2022)

Expected general economic situation

# Conclusion

▶ Main contribution: impact of economic perceptions on mental health care consumption
▶ Deteriorating economic perceptions lead to an increase in
  ▶ Psychotherapist visits
  ▶ Prescribed psychotherapeutic drugs
▶ Mechanisms: Worker perspective, consumer perspective

Thank you.

# Introduction

**Literature strand 3:**
**General economic conditions → mental health**

- ▶ Economic downturns (worry of job loss and income reductions) (Avdic et al., 2021, *EER*)

- ▶ Stock market crash increases depression and drug use (McInerney et al., 2013, *JHE*); and excess suicide rates (Chang et al., 2013, *BMJ*)

**Literature strand 4:**
**Currency shocks → economic outcomes**

- ▶ Effects on prices (Auer, Burstein, and Lein, 2021, *AER*), employment and hours worked (Nucci and Pozzolo, 2010, *JIE*); heterogeneity in skill-levels (Kaiser and Siegenthaler, 2016, *EJ*)
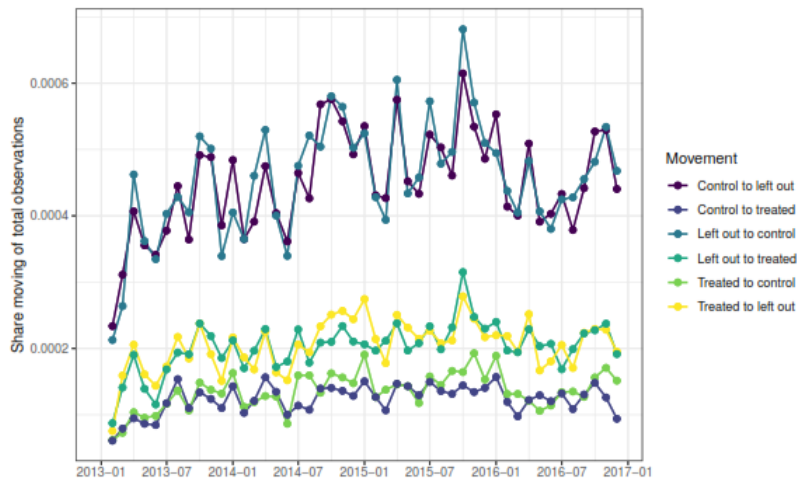
# Implications of a Currency Shock in Switzerland
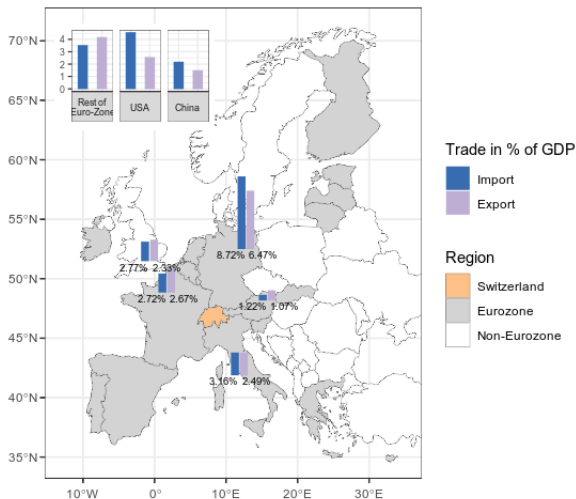


Total exports amount to 39.43% of GDP, total imports to 35.70% of GDP.
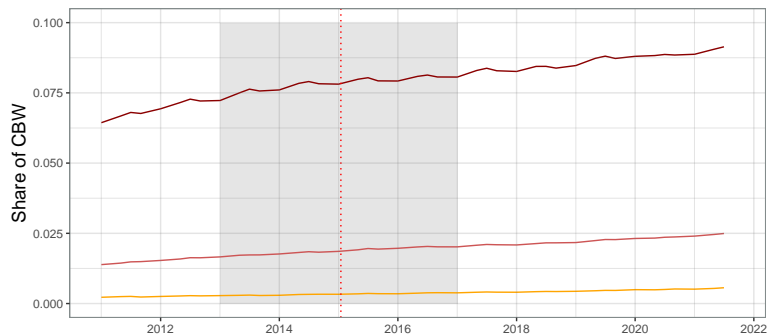
# Treatment: IV Validity
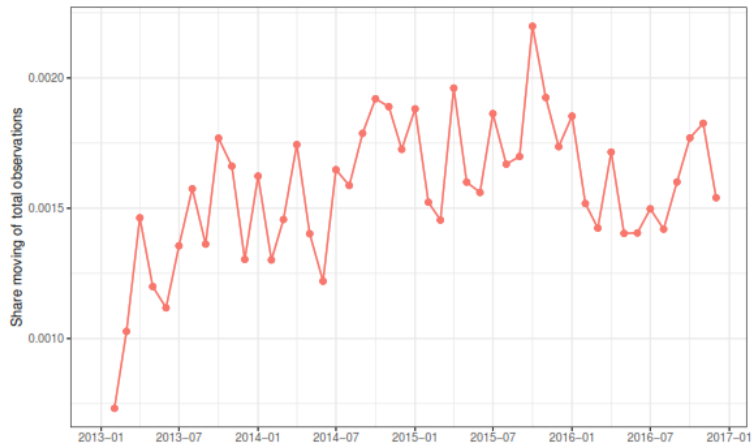
# Treatment: IV Validity

# Estimation Method

## Cross-border Workers
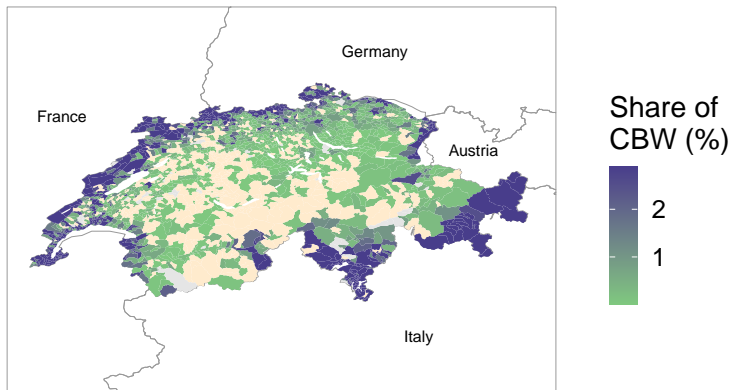


Distance of municipality to next border crossing

——— 0–15 minutes  ——— >15–30 minutes  ——— >30 minutes

# Estimation Method

## Cross-border Workers

# Robustness tests

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **(A): Psychotherapist visits** | | | | | | |
| Treatment $\times$ Post | 0.0012 | 1.97e-5 | 0.0008 | 0.0006 | 0.0008 | 0.0012 |
| | (0.0003) | (5.23e-6) | (0.0003) | (0.0003) | (0.0003) | (0.0003) |
| Observations | 15,844,068 | 15,844,068 | 15,342,695 | 11,148,451 | 15,728,028 | 15,795,750 |
| $R^2$ | 0.4558 | 0.44894 | 0.45042 | 0.44925 | 0.0.44880 | 0.44924 |
| **(B): Psychotherapeutic drug consumption** | | | | | | |
| Treatment $\times$ Post | 0.0009 | 1.72e-5 | 0.0015 | 0.0011 | -0.0007 | 0.0009 |
| | (0.0004) | (6.39e-6) | (0.0003) | (0.0004) | (0.0004) | (0.0003) |
| Observations | 15,844,068 | 15,844,068 | 15,342,695 | 11,148,451 | 15,728,028 | 15,795,750 |
| $R^2$ | 0.42666 | 0.42666 | 0.42868 | 0.43408 | 0.42663 | 0.42669 |
| Individual FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Month FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Canton FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Individual Controls | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Supply Control | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

# 1. Labor Market Mechanism

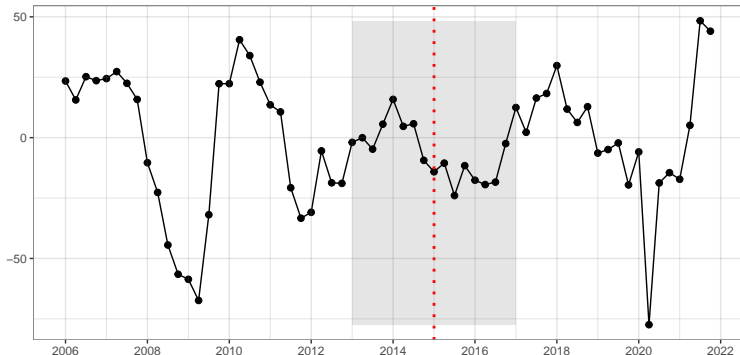**Expected unemployment continued upward trend after currency shock**
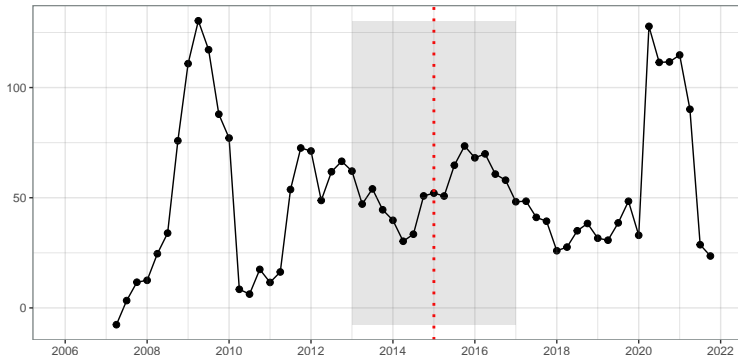


Source: SECO (2022)

# 2. Consumption Mechanism

**Expected general economic situation continued downward trend**



Source: SECO (2022)