

# Monetary Policy Report December 2017

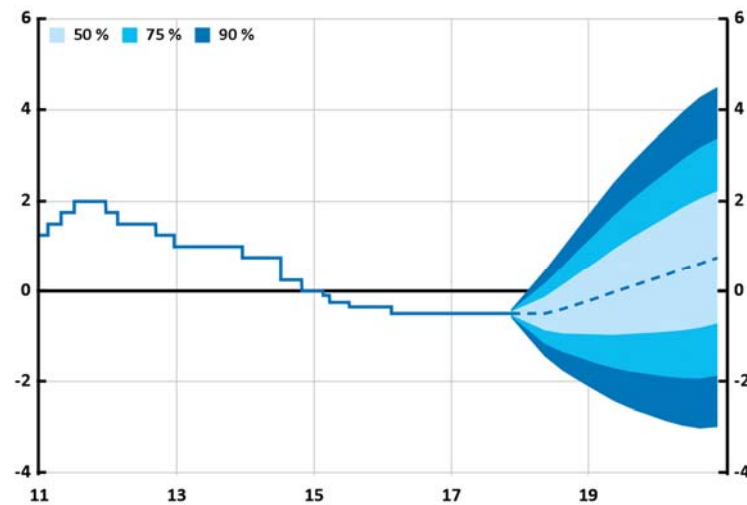
S V E R I G E S   R I K S B A N K

## Chapter 1

S V E R I G E S   R I K S B A N K

## Figure 1.1. Repo rate with uncertainty bands

Per cent

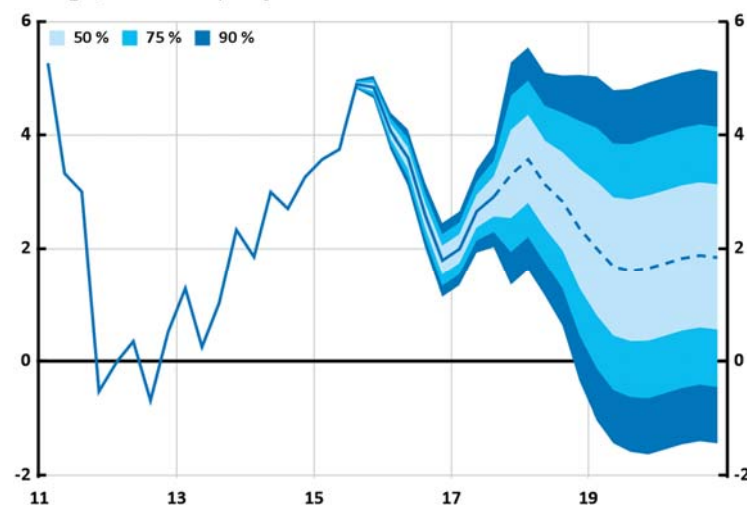


Note. The uncertainty bands for the repo rate are based on the Riksbank's historical forecasting errors and the ability of risk-premium adjusted forward rates to forecast the future repo rate for the period 1999 up to the point when the Riksbank started to publish forecasts for the repo rate during 2007. The uncertainty bands do not take into account the fact that there may be a lower bound for the repo rate. Outcomes are daily rates and forecasts refer to quarterly averages.

Source: The Riksbank

## Figure 1.2. GDP with uncertainty bands

Annual percentage change, seasonally-adjusted data

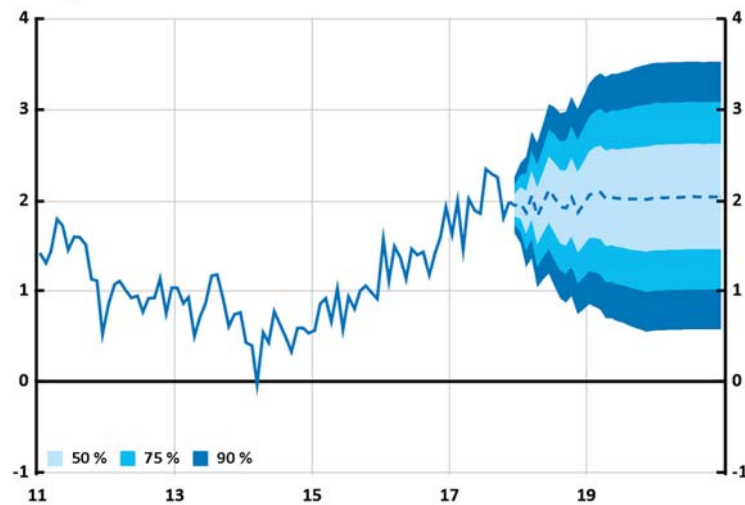


Note. The uncertainty bands are based on the Riksbank's historical forecasting errors. There is also uncertainty for the outcomes for GDP, as the figures in the National Accounts are revised several years after the preliminary publication.

Sources: Statistics Sweden and the Riksbank

## Figure 1.3. CPIF with uncertainty bands

Annual percentage change

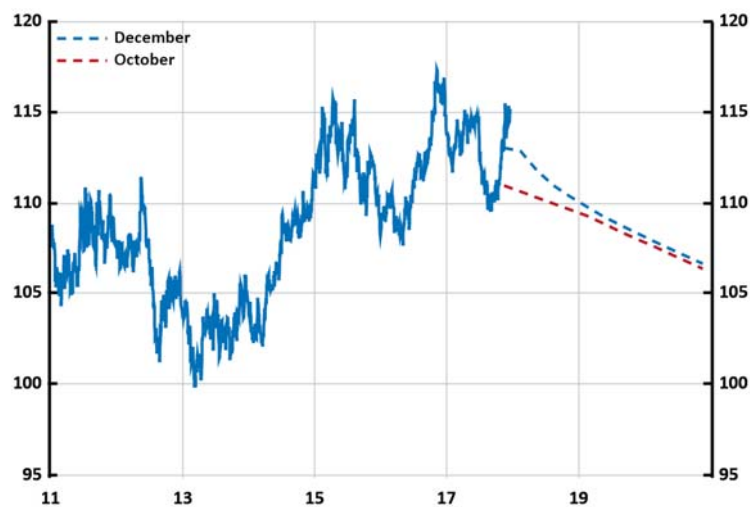


Note. The uncertainty bands are based on the Riksbank's historical forecasting errors.

Sources: Statistics Sweden and the Riksbank

## Figure 1.4. KIX-weighted nominal exchange rate

Index, 1992-11-18 = 100

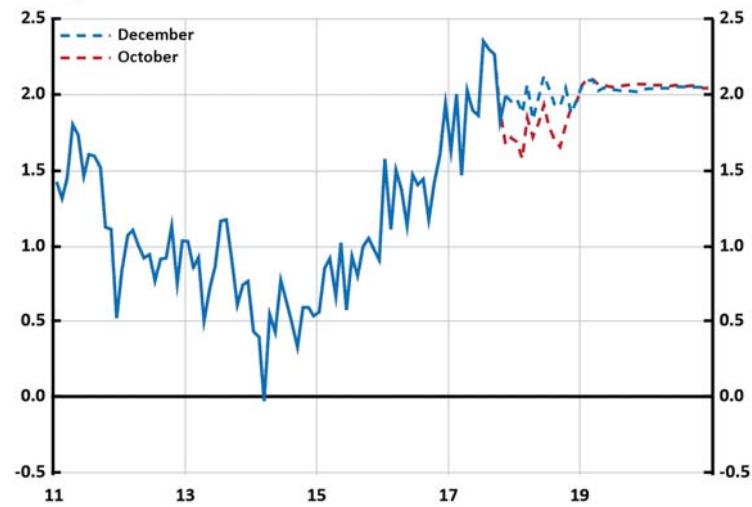


Note. Outcomes are daily rates and forecasts refer to quarterly averages. KIX refers to an aggregate of countries that are important for Sweden's international transactions.

Sources: National sources and the Riksbank

## Figure 1.5. CPIF

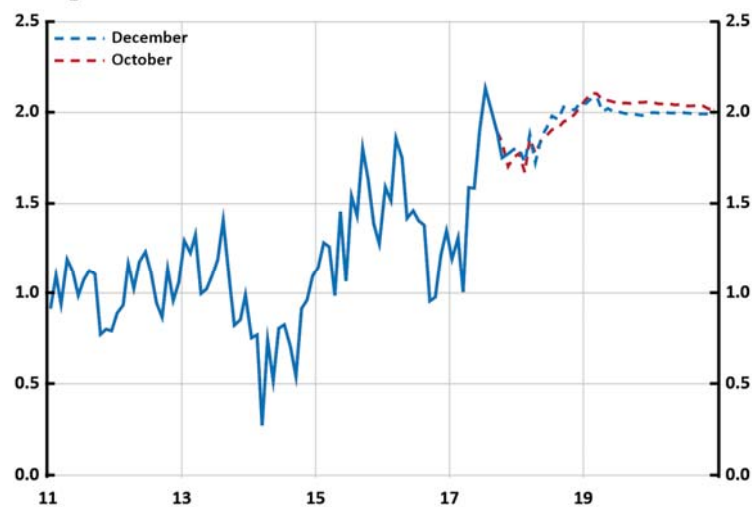
Annual percentage change



Sources: Statistics Sweden and the Riksbank

## Figure 1.6. CPIF excluding energy

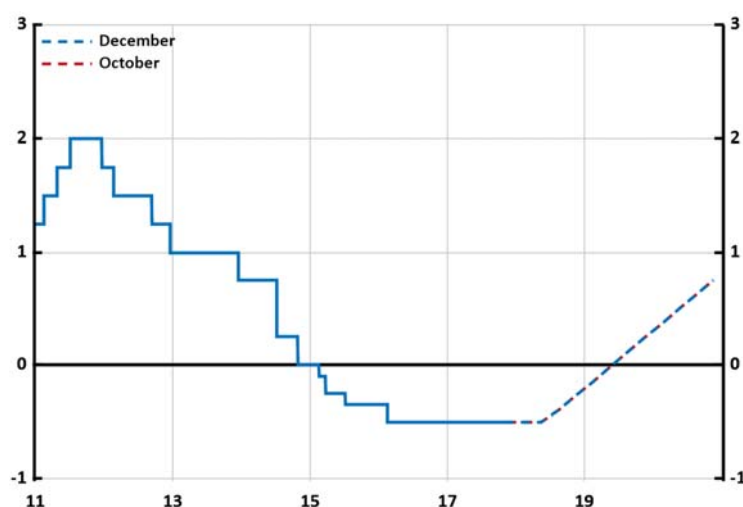
Annual percentage change



Sources: Statistics Sweden and the Riksbank

## Figure 1.7. Repo rate

Per cent

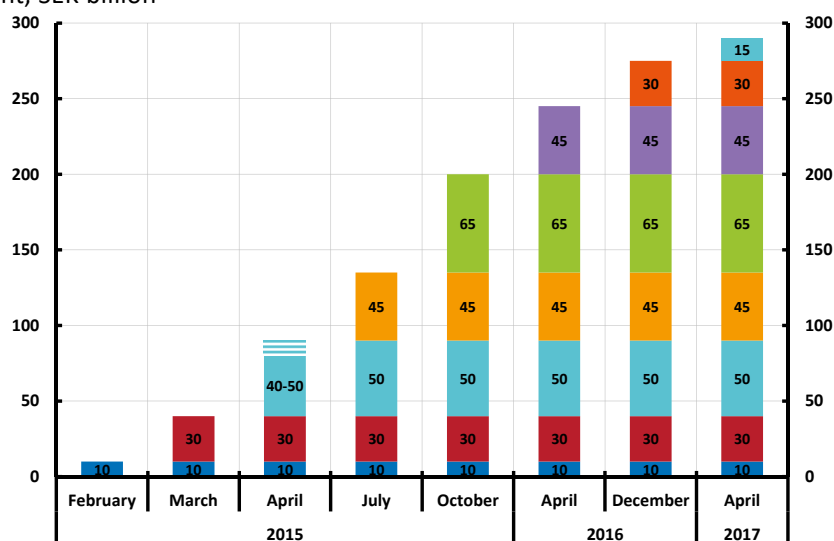


Note. Outcomes are daily data and the forecasts refer to quarterly averages.

Source: The Riksbank

## Figure 1.8. Purchases of government bonds decided by the Riksbank

Nominal amount, SEK billion

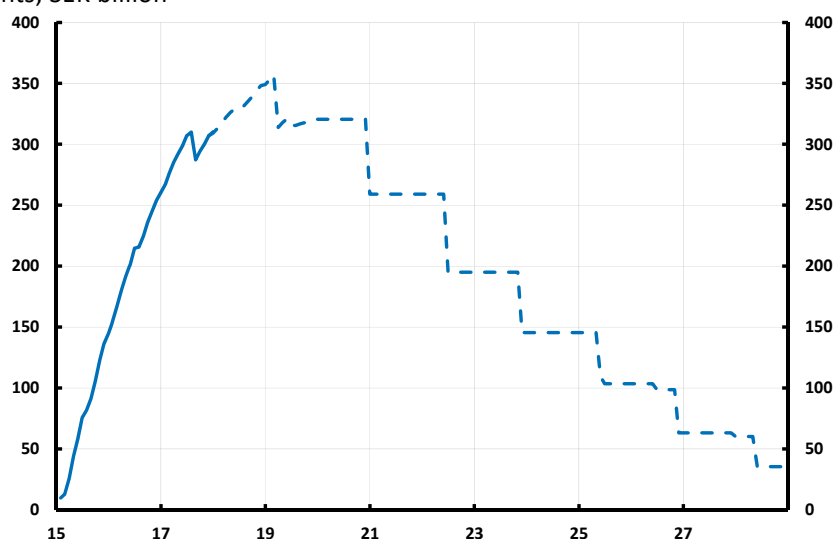


Note. Purchases of nominal and real government bonds, excluding reinvestments.

Source: The Riksbank

## Figure 1.9. The Riksbank's holdings of government bonds

Nominal amounts, SEK billion

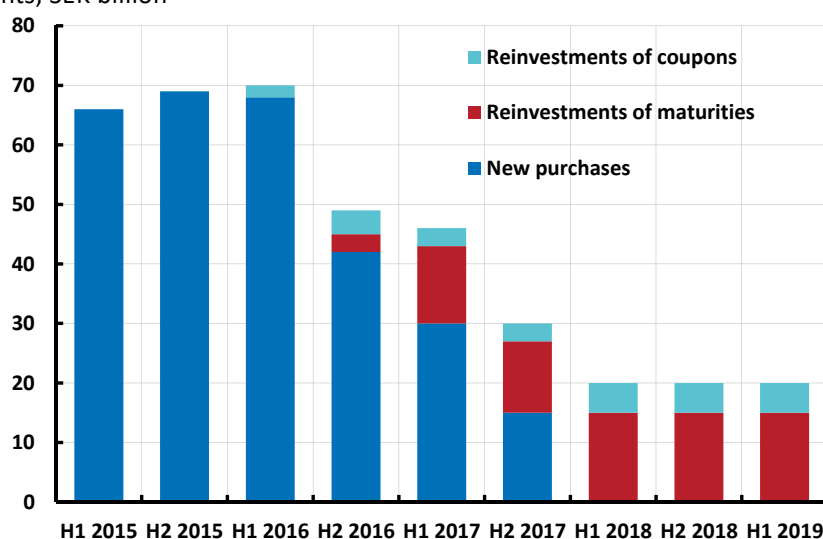


Note. The forecast is based on an assumption that reinvestments will continue to the end of 2019.

Source: The Riksbank

## Figure 1.10. The Riksbank's purchases and reinvestments

Nominal amounts, SEK billion

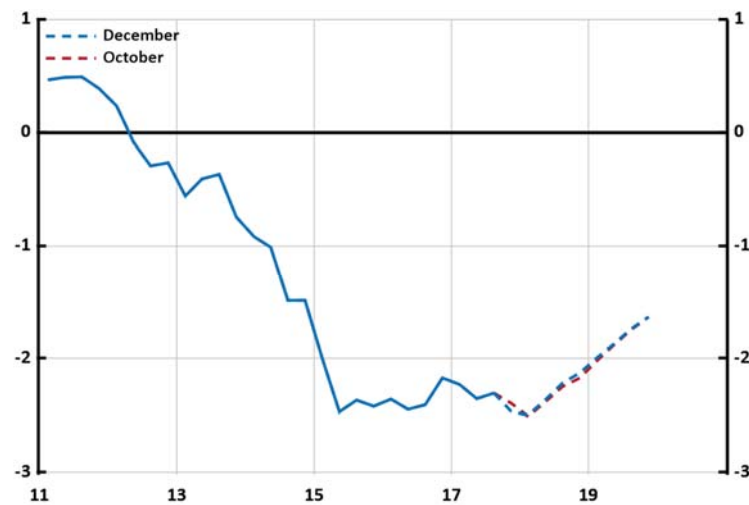


Note. The development for holdings and reinvestments from 2018 is a forecast and refers to nominal amounts. The final amounts will depend on current market prices.

Source: The Riksbank

## Figure 1.11. Real repo rate

Per cent, quarterly averages

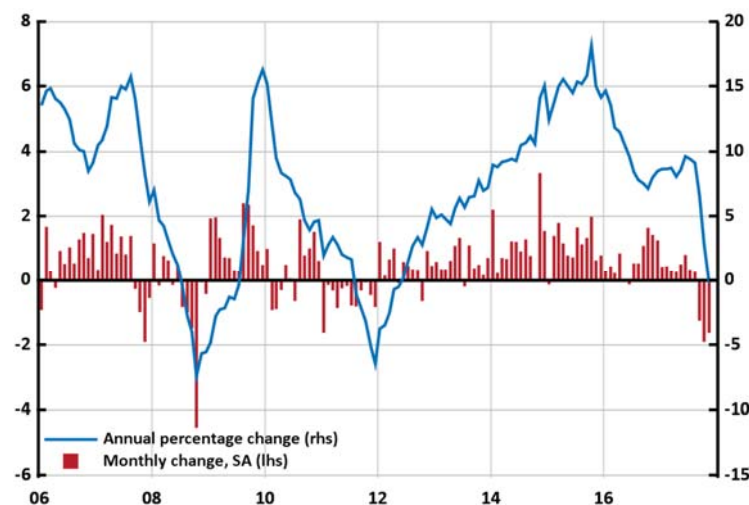


Note. The real repo rate is a mean value of the Riksbank's repo rate forecast for the year ahead minus the inflation forecast (CPIF) for the corresponding period.

Sources: Statistics Sweden and the Riksbank

## Figure 1.12. House price developments according to HOX Sweden

Percentage change

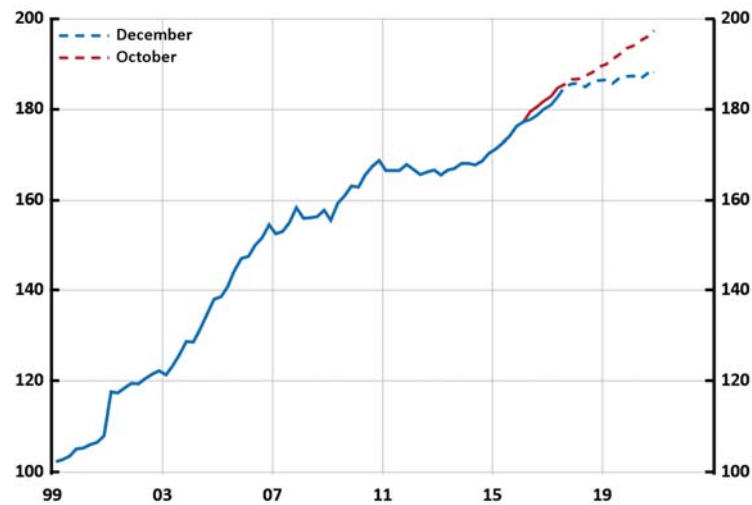


Sources: Valueguard and the Riksbank



## Figure 1.13. Household debt

Per cent of yearly disposable income



Note. Households' total debts as a share of their disposable incomes totalled over the past four quarters.

Sources: Statistics Sweden and the Riksbank

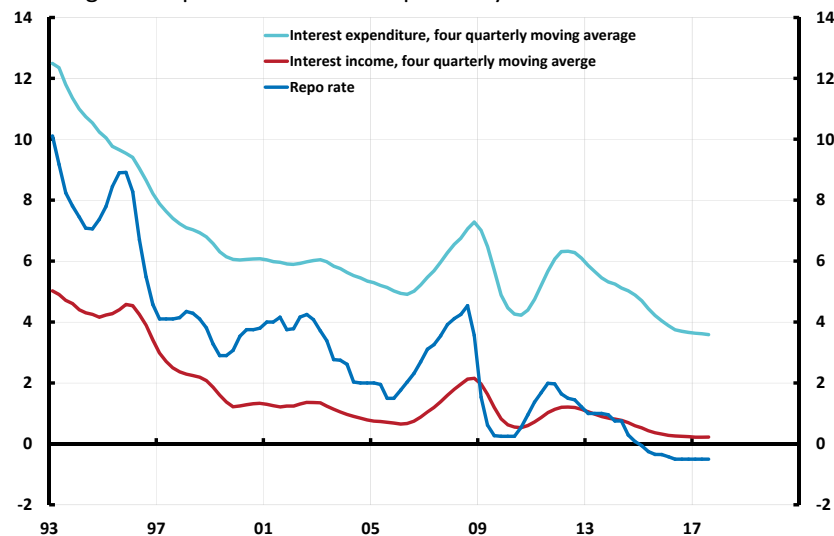
**Article – How are households affected by rising interest rates?**

S V E R I G E S R I K S B A N K



## Figure 1.14. The repo rate, households' interest expenditure and interest income

Per cent and percentage of disposable income respectively

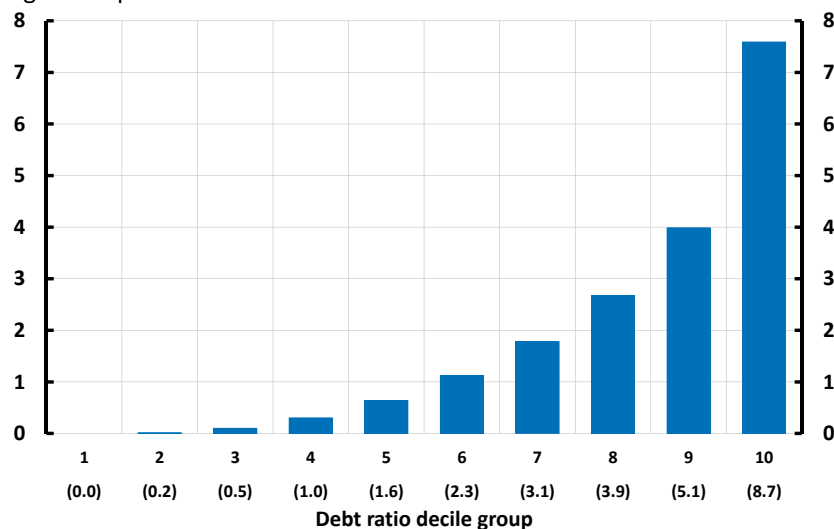


Note. Interest income and expenditures are calculated before taxes and are not corrected for FISIM.

Sources: Statistics Sweden and the Riksbank

## Figure 1.15. Cashflow effect for groups of households with different debt-to-income ratios when the rate rises by 1.25 percentage points

Percentage change in disposable income



Note. The cashflow effect refers to the average for the respective decile group. The average debt-to-income ratio is stated in brackets.

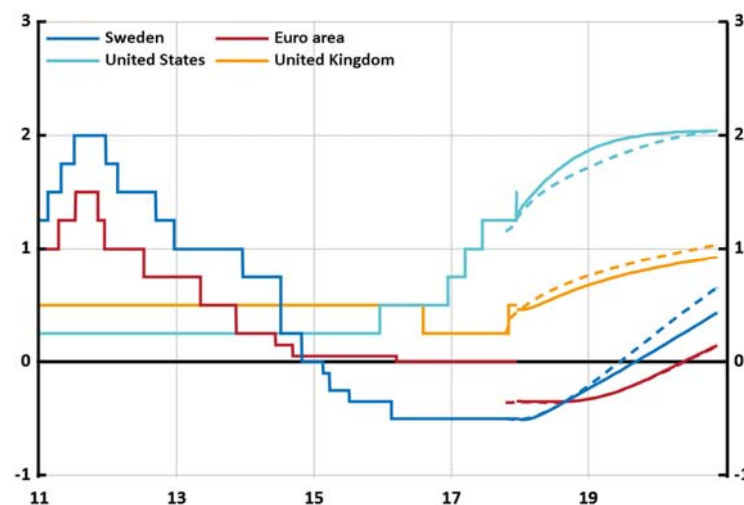
Source: The Riksbank

## Chapter 2



### Figure 2.1. Policy rates and rate expectations according to forward rates

Per cent

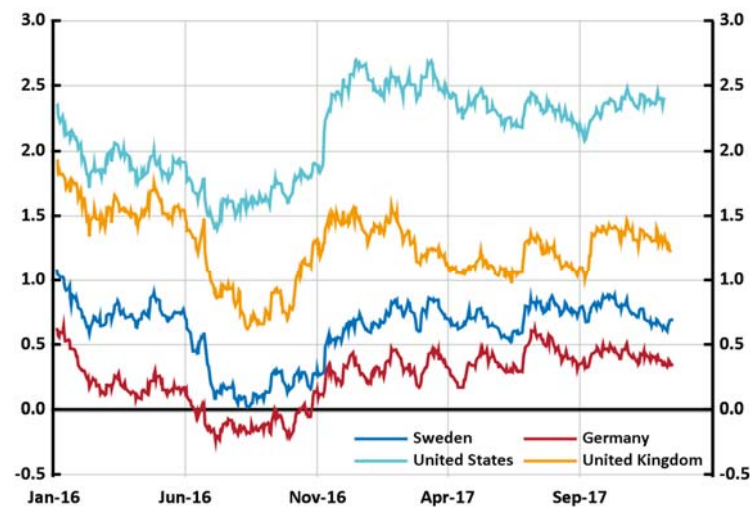


Note. Forward rates describe the expected overnight rate, which does not always correspond to the policy rate (the main refinancing rate for the euro area). There is no published overnight rate in Sweden, but it normally follows the repo rate closely. Unbroken lines are estimated on 18 December 2017, broken lines are estimated on 26 October 2017.

Sources: The national central banks, Thomson Reuters and the Riksbank

## Figure 2.2. Government bond rates with 10 years left to maturity

Per cent

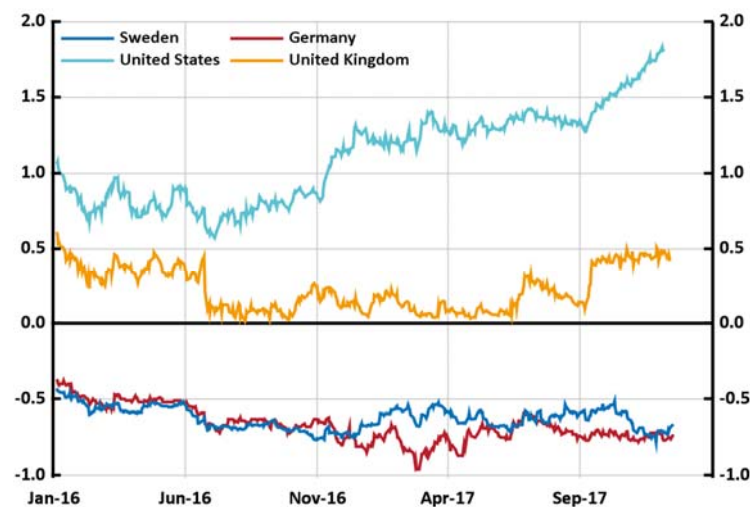


Note. Implied zero-coupon yields from government bonds.

Sources: The national central banks and the Riksbank

## Figure 2.3. Government bond rates with 2 years left to maturity

Per cent



Note. Implied zero-coupon yields from government bonds.

Sources: The national central banks and the Riksbank

## Figure 2.4. Stock market movements in local currency

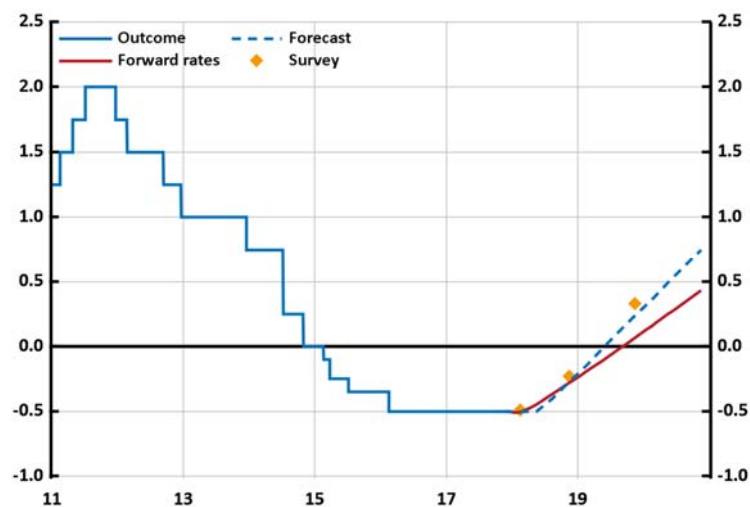
Index, 4 January 2016 = 100



Sources: Macrobond and Thomson Reuters

## Figure 2.5. Repo rate and market expectations

Per cent, average



Note. The forward rates are estimated as of 18 December 2017 and measure the expected repo rate. The survey responses show the average for money market participants on 13 December 2017.

Sources: Macrobond, TNS Sifo Prospera and the Riksbank

## Figure 2.6. Yield differential between housing bonds and government bonds

Per cent

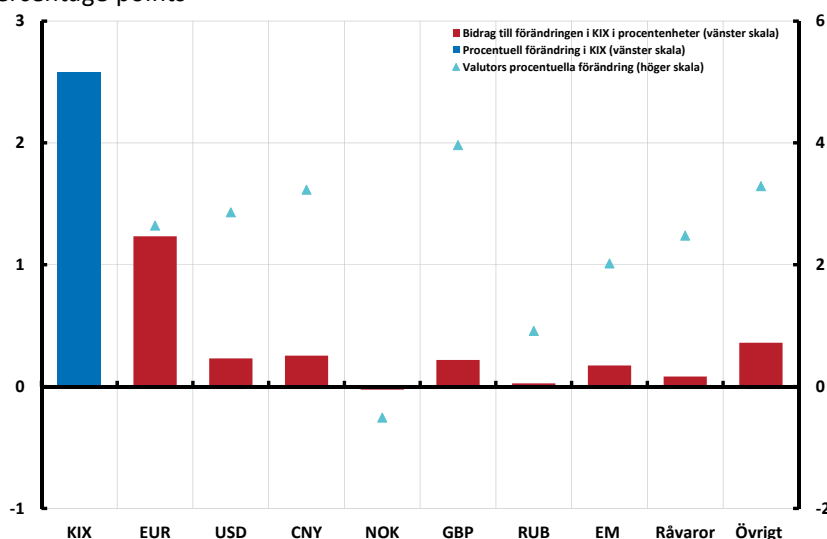


Note. Zero-coupon rates interpolated from bond prices using the Nelson-Siegel method.

Sources: Macrobond and the Riksbank

## Figure 2.7. Changes to KIX and exchange rate

Per cent and percentage points

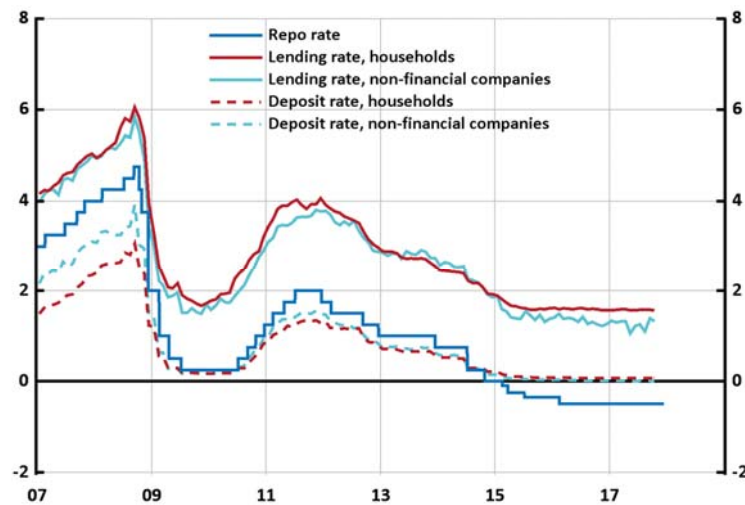


Note. The figure shows change in KIX and contributions from different currencies between 26 October and 18 December 2017. EM refers to Brazil, Hungary, India, Mexico, Poland and Turkey. Commodities refer to Australia, Canada and New Zealand. Other refers to Czech Republic, Denmark, Iceland, Japan, South Korea and Switzerland.

Source: Thomson Reuters and the Riksbank

## Figure 2.8. Repo rate together with the deposit and lending rate to households and companies, new contracts

Per cent



Note. MFIs' average deposit and lending rates for households and non-financial companies.

Sources: Statistics Sweden and the Riksbank

## Figure 2.9. Bank lending to households and companies

Annual percentage change



Note. MFIs' lending to households and non-financial companies according to financial market statistics adjusted for reclassifications and traded loans since 2006.

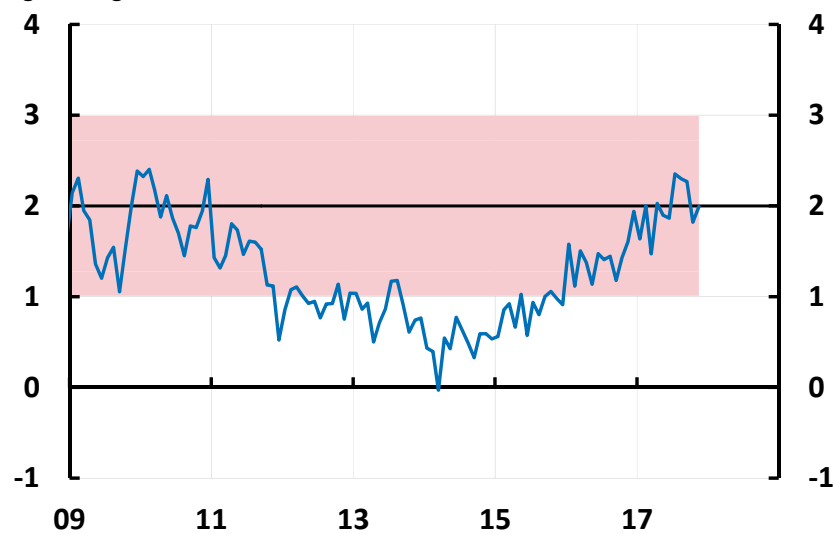
Source: Statistics Sweden





## Figure 3.1. CPIF and variation band

Annual percentage change

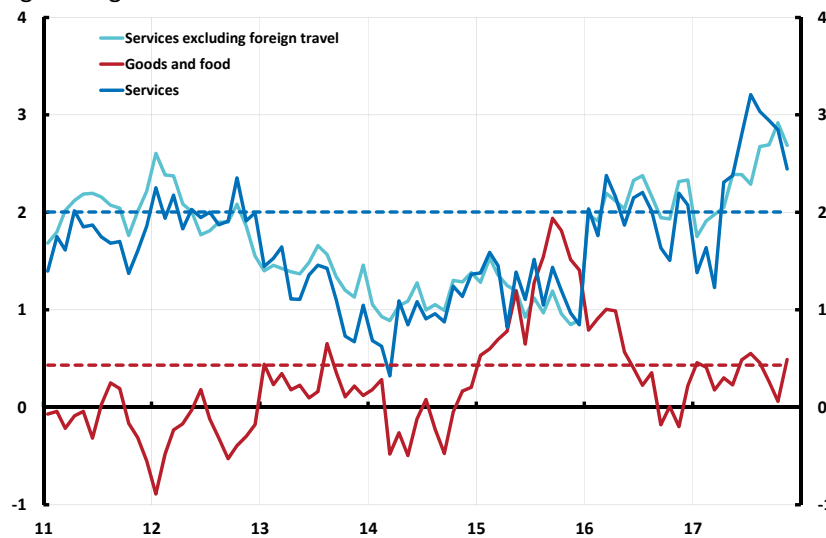


Note. The pink area shows the Riksbank's variation band and covers about three-quarters of outcomes since January 1995.

Sources: Statistics Sweden and the Riksbank

## Figure 3.2. Prices of goods and services in the CPI

Annual percentage change

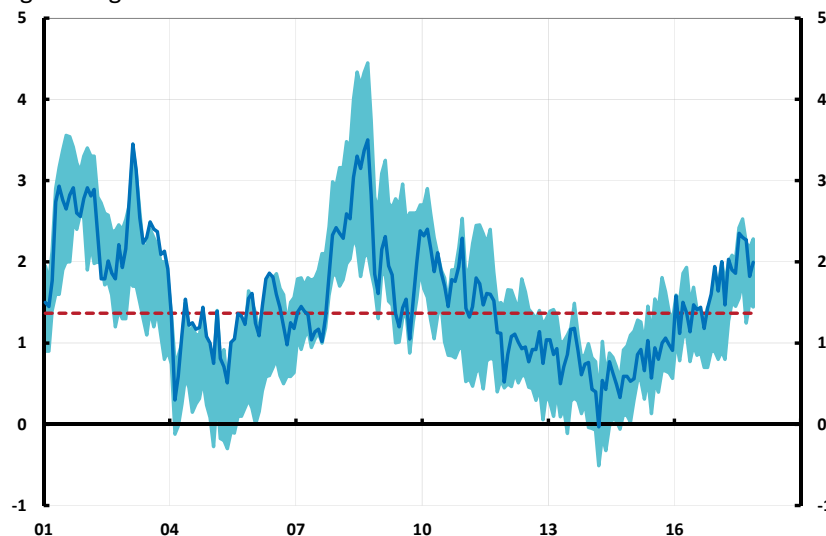


Note. Goods and foodstuffs is a combination of the aggregate goods and foodstuffs in the CPI. Together, these account for 45 per cent of the CPI. Service prices account for 45 per cent of the CPI. The broken lines represents the mean value since January 1995.

Sources: Statistics Sweden and the Riksbank

## Figure 3.3. The CPIF and different measures of underlying inflation

Annual percentage change

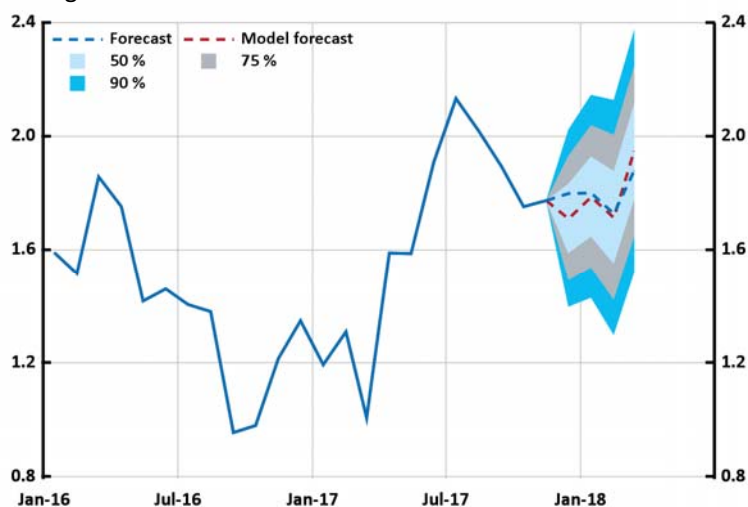


Note. The field shows the highest and lowest outcomes among different measures of underlying inflation. The measures included are the CPIF excluding energy, the CPIF with constant tax, UND24, Trim85, HICP excluding energy and non-refined foods, persistence-weighted inflation, factors from principal component analysis and weighted mean inflation. The broken line represents the mean value since January 2000 for all measures of underlying inflation.

Sources: Statistics Sweden and the Riksbank

## Figure 3.4. CPIF excluding energy, model forecast with uncertainty bands

Annual percentage change

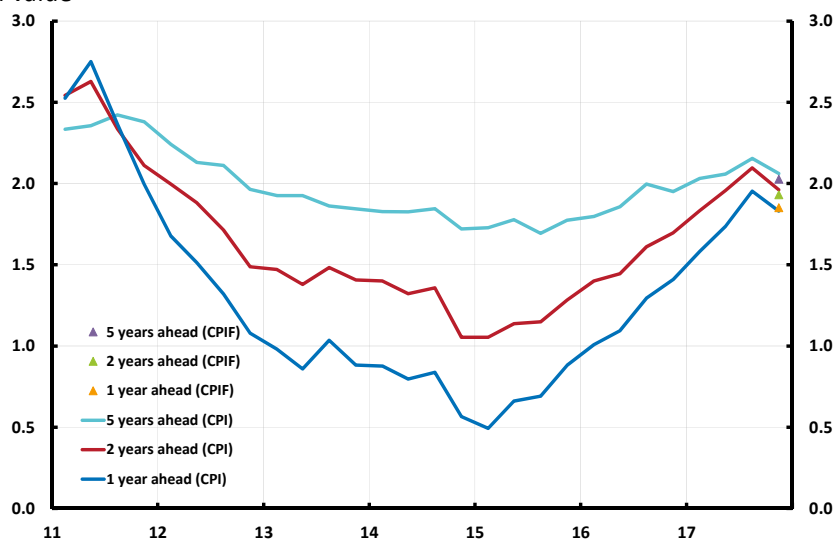


Note. The uncertainty bands are based on the models' historical forecast errors.

Sources: Statistics Sweden and the Riksbank

## Figure 3.5. Inflation expectations among all participants

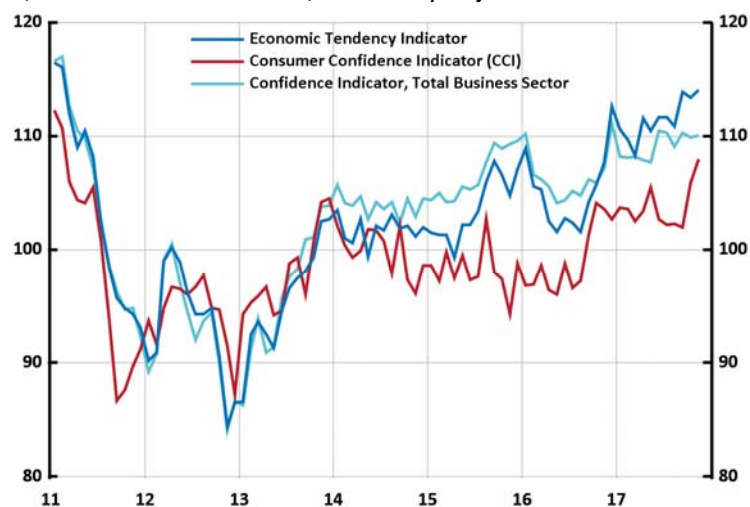
Per cent, mean value



Source: TNS Sifo Prospera

## Figure 3.6. Confidence indicators

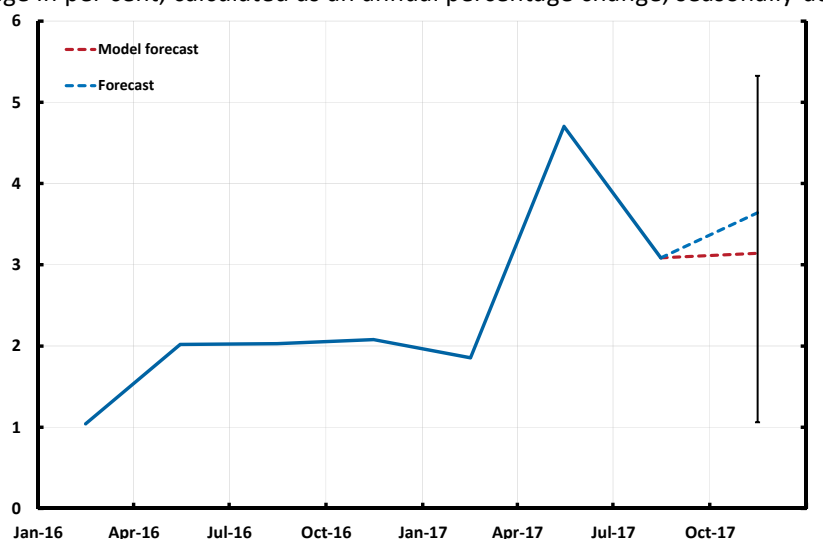
Index, average = 100, standard deviation = 10, seasonally-adjusted data



Source: National Institute of Economic Research

## Figure 3.7. Model forecast GDP with uncertainty bands

Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data

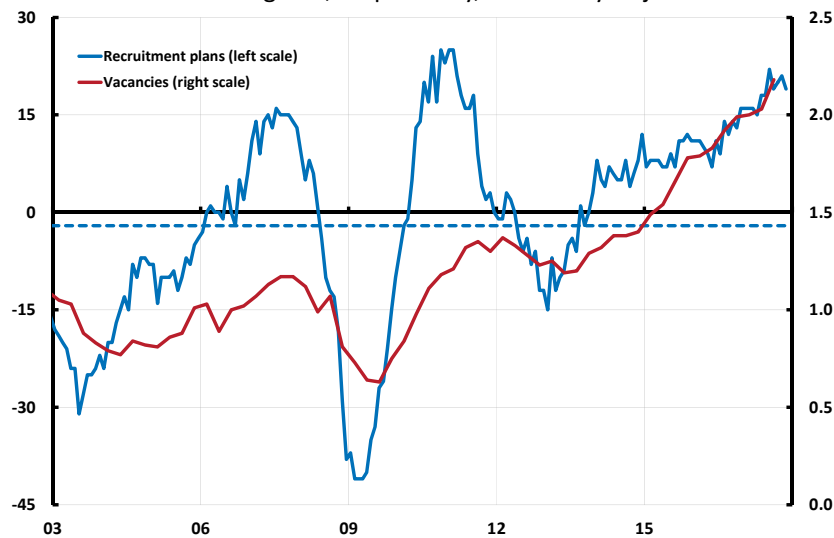


Note. The model forecast is a mean value of forecasts conducted using different statistical models. The vertical line refers to a 50-per cent uncertainty band. The uncertainty bands are based on the models' historical forecasting errors. One explanation for the breadth of the uncertainty band is the large variation in outcomes between various quarters.

Sources: Statistics Sweden and the Riksbank

## Figure 3.8. Vacancies and recruitment plans

Per cent of the labour force and net figures, respectively, seasonally-adjusted data

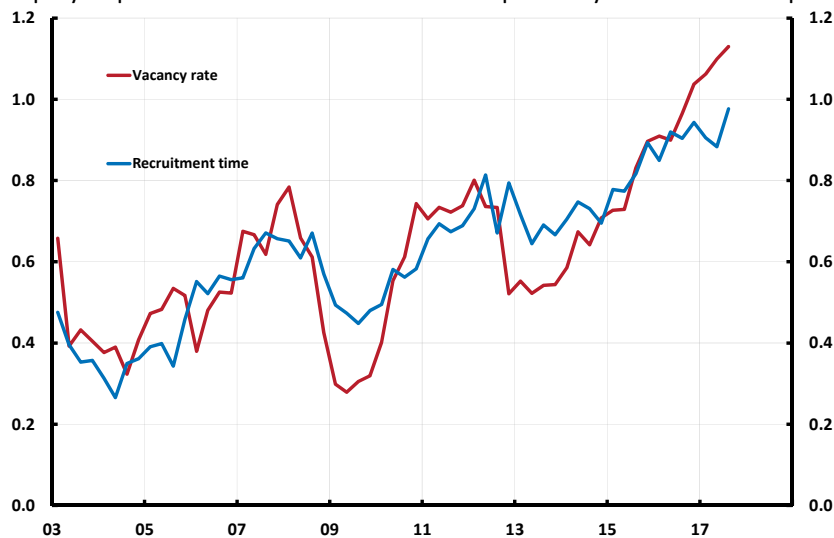


Note. Recruitment plans refer to expectations of the number of employed in the business sector three months ahead. The broken line represents the mean value since 2003.

Sources: The National Institute of Economic Research and Statistics Sweden

## Figure 3.9. Recruitment time and vacancy rate in the business sector

Percentage of employed persons in the business sector respectively and months respectively

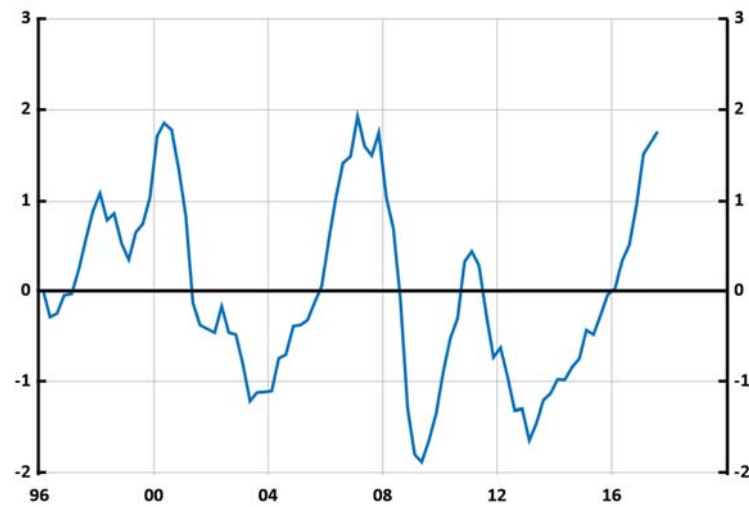


Note. The vacancy rate measures the percentage of unstaffed vacant positions that need to be filled immediately, in relation to the number of employees.

Sources: Statistics Sweden and the Riksbank

## Figure 3.10 RU indicator

Index, mean value=0, standard deviation=1



Source: The Riksbank

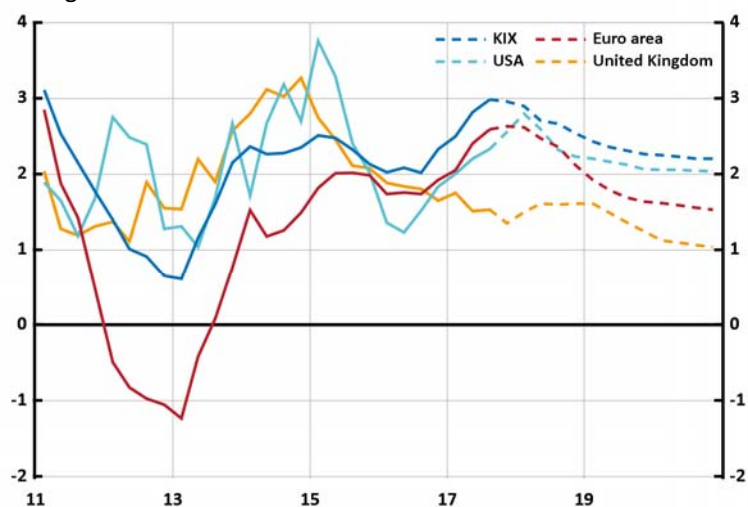
## Chapter 4

S V E R I G E S R I K S B A N K



## Figure 4.1. GDP in various countries and regions

Annual percentage change

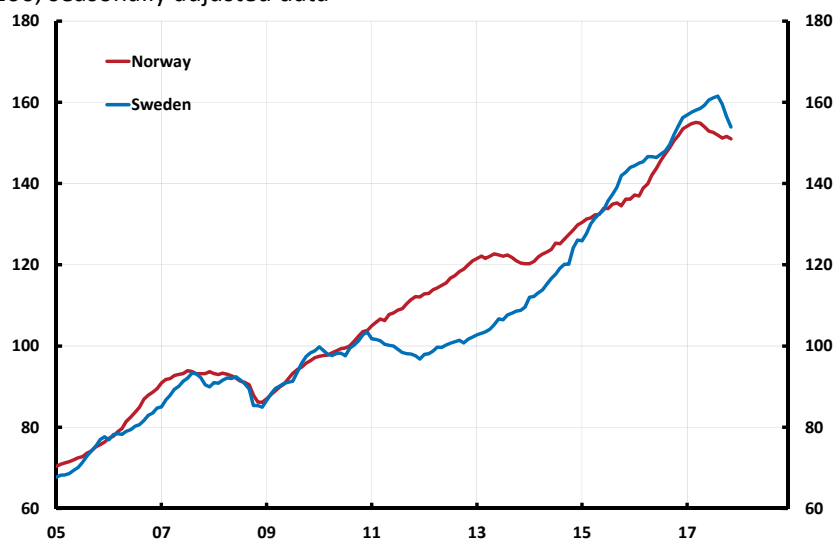


Note. KIX is an aggregate of the countries that are important to Sweden's international transactions.

Sources: Bureau of Economic Analysis, Eurostat, national sources, Office for National Statistics and the Riksbank

## House prices in Sweden and Norway

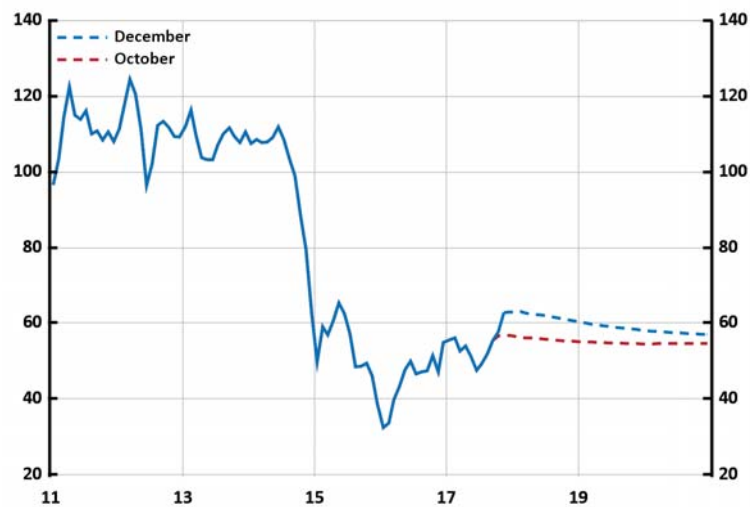
Index, 2010 = 100, seasonally adjusted data



Sources: Eigendom Norge, Valueguard and the Riksbank

## Figure 4.3. Price of crude oil

USD per barrel

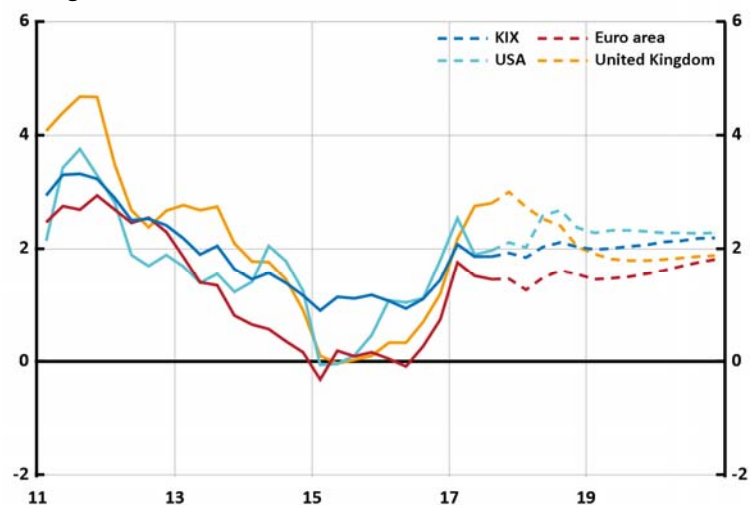


Note. Brent oil, forward rates are calculated as a 15-day average. The outcome refers to monthly averages of spot prices.

Sources: Macrobond and the Riksbank

## Figure 4.4. Inflation in various countries and regions

Annual percentage change

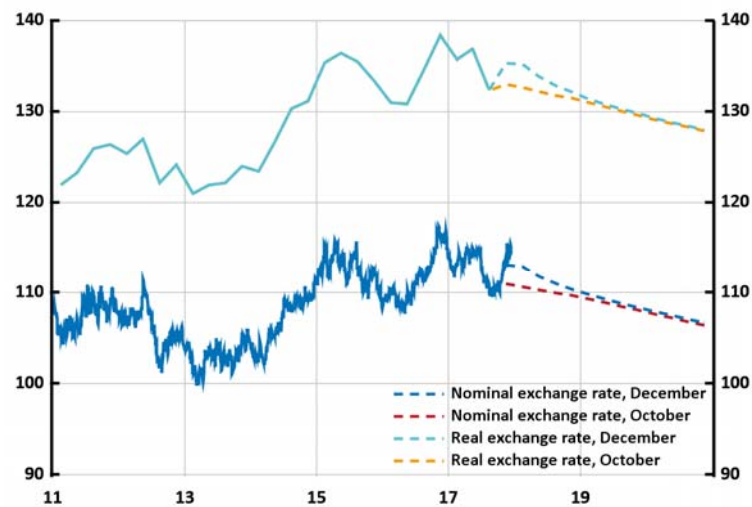


Note. KIX is an aggregate of the countries that are important to Sweden's international transactions.

Sources: The Bureau of Labor Statistics, Eurostat, national sources, Office for National Statistics and the Riksbank

## Figure 4.5. Real and nominal exchange rate, KIX

Index, 18 November 1992 = 100

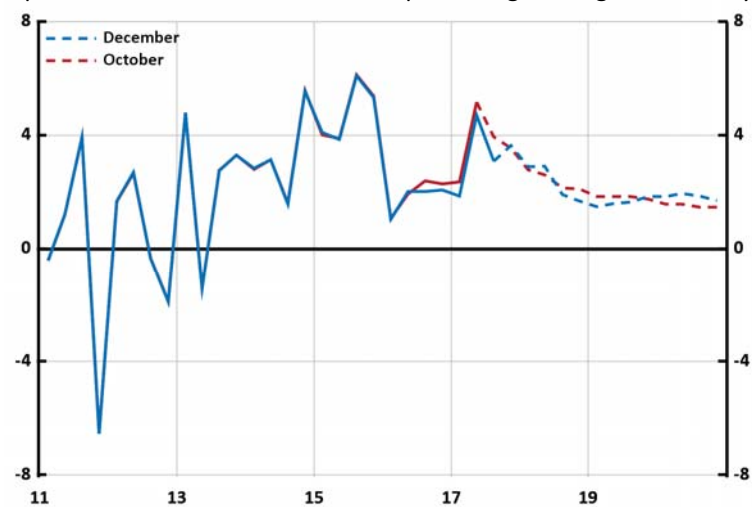


Note. The real exchange rate has been deflated with the CPI for Sweden and the CPI for the rest of the world. Outcomes are daily data for the nominal exchange rate, outcomes for the real exchange rate and forecasts refer to quarterly averages. The KIX is an aggregate of countries that are important for Sweden's international transactions.

Sources: National sources, Statistics Sweden and the Riksbank

## Figure 4.6. GDP in Sweden

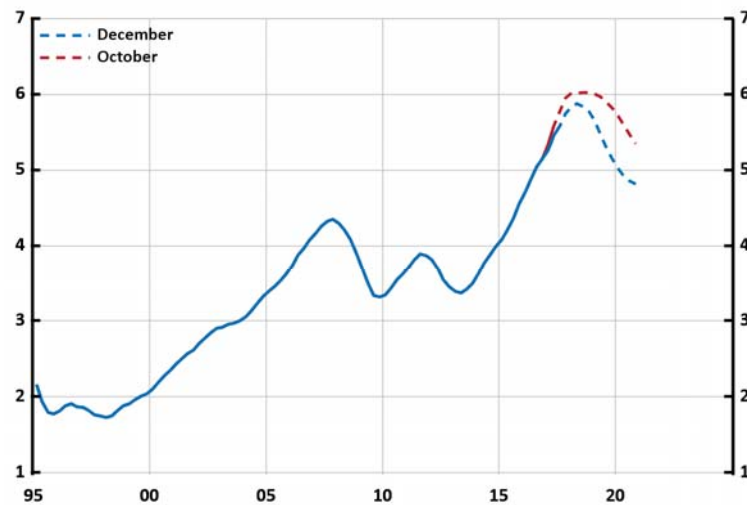
Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

## Figure 4.7. Housing investment

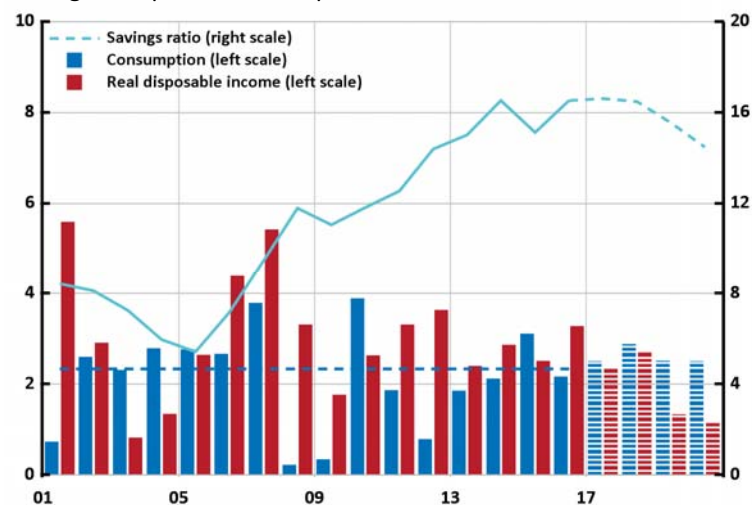
Per cent of GDP, current prices, four quarter moving average



Sources: Statistics Sweden and the Riksbank

## Figure 4.8. Households' real disposable income, consumption and savings ratio

Annual percentage change and per cent of disposable income

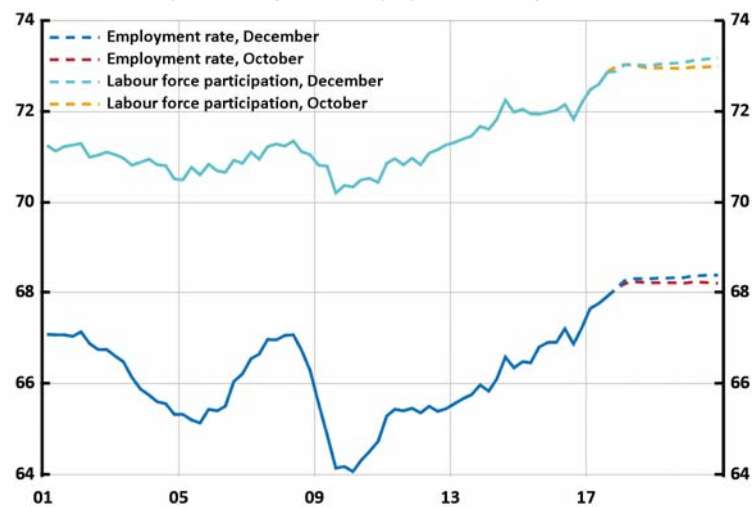


Note. Disposable income has been deflated using the household consumption deflator. Broken line is the average of growth in consumption 1994-2016.

Sources: Statistics Sweden and the Riksbank

## Figure 4.9. Employment rate and labour force participation

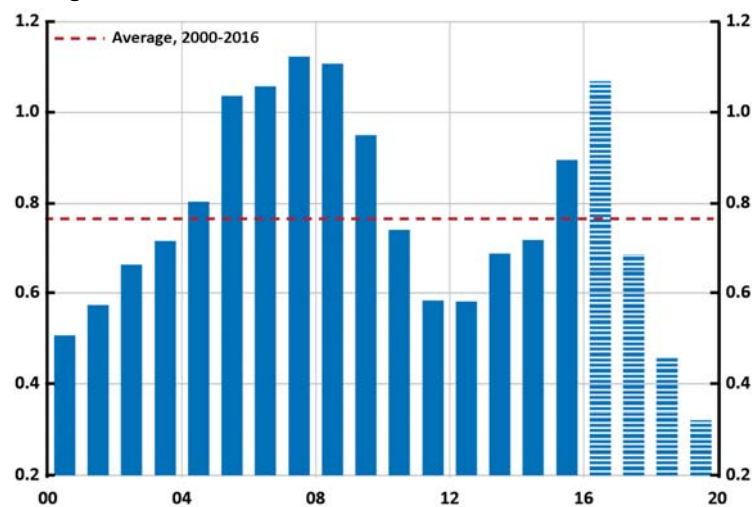
Employment and labour force as percentage of the population, aged 15–74, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

## Figure 4.10. Population growth, 15–74 years

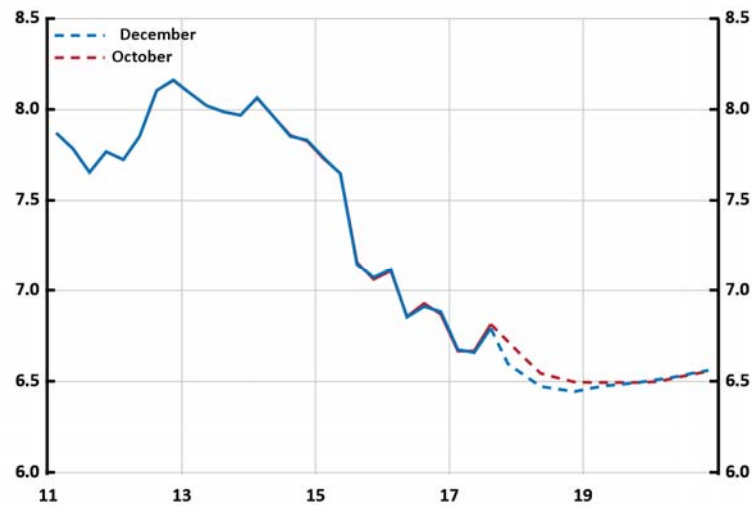
Annual percentage change



Sources: Statistics Sweden and the Riksbank

## Figure 4.11. Unemployment

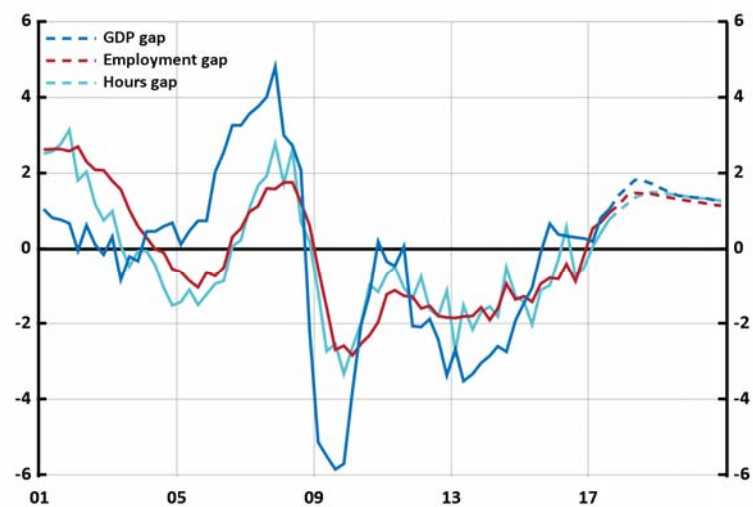
Per cent of the labour force, 15–74 years, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

## Figure 4.12. GDP gap, employment gap and hours gap

Per cent



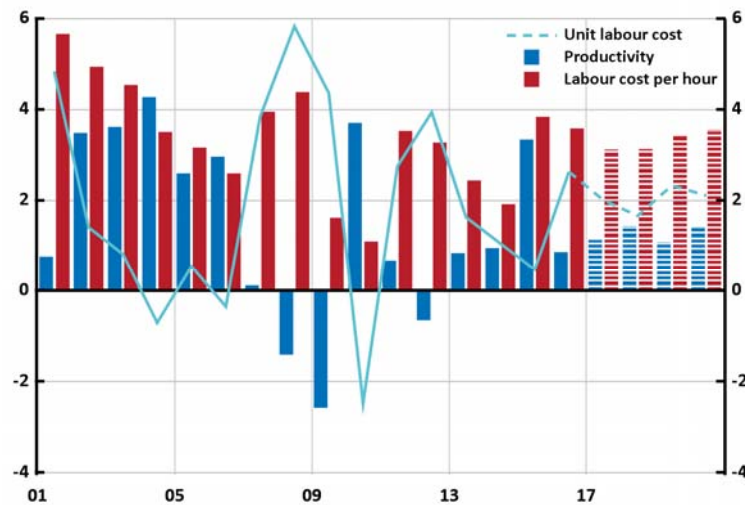
Note. The gaps refer to the deviation in GDP, the number of hours worked and the number of those employed from the Riksbank's assessed trends.

Sources: Statistics Sweden and the Riksbank



## Figure 4.13. Cost pressures in the economy as a whole

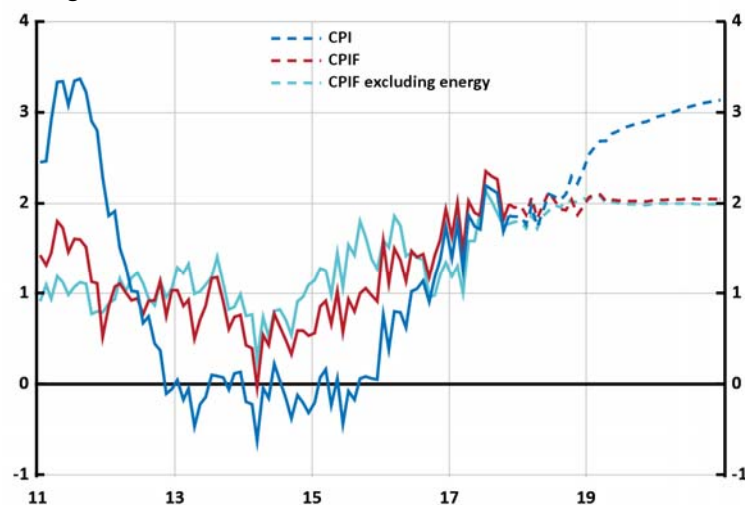
Annual percentage change



Sources: Statistics Sweden and the Riksbank

## Figure 4.14. CPI, CPIF and CPIF excluding energy

Annual percentage change



Sources: Statistics Sweden and the Riksbank

# Tables

S V E R I G E S   R I K S B A N K

**Table 1. Repo rate forecast**

Per cent, quarterly averages

	Q3 2017	Q4 2017	Q1 2018	Q4 2018	Q4 2019	Q4 2020
Repo rate	-0.5	-0.5 (-0.5)	-0.5 (-0.5)	-0.3 (-0.3)	0.2 (0.2)	0.8 (0.8)

Source: The Riksbank

**Table 2. Inflation**

Annual percentage change, annual average

	2016	2017	2018	2019	2020
CPIF	1.4	2.0 (1.9)	2.0 (1.8)	2.0 (2.1)	2.0 (2.1)
CPIF excl. energy	1.4	1.7 (1.7)	1.9 (1.9)	2.0 (2.1)	2.0 (2.0)
CPI	1.0	1.8 (1.8)	2.0 (1.9)	2.8 (2.8)	3.1 (3.1)
HICP	1.1	1.9 (1.8)	1.9 (1.7)	2.0 (1.9)	1.9 (1.9)

Note. The CPIF is the CPI with a fixed mortgage rate. HICP is an EU harmonised index of consumer prices.

Sources: Statistics Sweden and the Riksbank

**Table 3. Summary of financial forecasts**

Per cent, unless otherwise stated, annual average

	2016	2017	2018	2019	2020
Repo rate	-0.5	-0.5 (-0.5)	-0.4 (-0.4)	0.0 (0.0)	0.6 (0.6)
10-year rate	0.5	0.7 (0.8)	1.1 (1.3)	1.9 (2.0)	2.5 (2.6)
Exchange rate, KIX, 18 November 1992 = 100	111.7	112.9 (112.3)	111.5 (110.2)	109.1 (108.7)	107.3 (107.0)
General government net lending*	1.2	1.2 (1.2)	0.8 (0.9)	0.9 (1.0)	0.8 (0.9)

\* Per cent of GDP

Sources: Statistics Sweden and the Riksbank

**Table 4. International conditions**

Annual percentage change, unless otherwise stated

GDP	PPP-weights	KIX-weights	2016	2017	2018	2019	2020
Euro area	0.12	0.47	1.8	2.4 (2.2)	2.4 (2.1)	1.8 (1.7)	1.6 (1.5)
USA	0.15	0.08	1.5	2.3 (2.1)	2.5 (2.4)	2.1 (2.1)	2.0 (2.0)
Japan	0.04	0.02	0.9	1.8 (1.6)	1.3 (1.1)	0.8 (0.8)	0.3 (0.4)
China	0.18	0.08	6.7	6.8 (6.8)	6.2 (6.2)	6.1 (6.1)	6.1 (6.1)
KIX-weighted	0.75	1.00	2.1	2.8 (2.7)	2.7 (2.5)	2.3 (2.3)	2.2 (2.2)
World (PPP-weighted)	1.00	—	3.2	3.7 (3.6)	3.7 (3.7)	3.7 (3.7)	3.7 (3.7)

Note. Calendar-adjusted growth rates. The PPP-weights refer to the global purchasing-power adjusted GDP-weights, according to the IMF. The Riksbank updates the weights for the KIX krona index at the start of every year with a time lag of three years. The figures in the table are based on the new KIX weights for 2014 that are used for 2017, and on an assumption that the weights will develop according to the trend of the past five years in the coming forecast years.

CPI	2016	2017	2018	2019	2020
Euro area (HICP)	0.2	1.5 (1.5)	1.5 (1.3)	1.5 (1.6)	1.7 (1.8)
USA	1.3	2.1 (2.2)	2.4 (2.4)	2.3 (2.4)	2.3 (2.3)
Japan	-0.1	0.4 (0.5)	0.9 (1.0)	1.5 (1.5)	2.0 (1.9)
KIX-weighted	1.1	1.9 (1.9)	2.0 (1.9)	2.0 (2.1)	2.2 (2.2)

	2016	2017	2018	2019	2020
Policy rates in the rest of the world, per cent	-0.1	-0.1 (-0.1)	0.1 (0.0)	0.2 (0.3)	0.6 (0.6)
Crude oil price, USD/barrel Brent	45.1	54.7 (53.6)	61.8 (55.7)	59.1 (54.8)	57.4 (54.6)
Swedish export market	3.5	5.2 (5.4)	4.3 (3.9)	3.9 (3.9)	3.8 (3.8)

Note. Policy rates in the rest of the world refer to a weighted average of USA, the euro area, Norway and the United Kingdom.

Sources: Eurostat, IMF, Intercontinental Exchange, national sources, OECD and the Riksbank

**Table 5. GDP by expenditure**

Annual percentage change, unless otherwise stated

	2016	2017	2018	2019	2020
Private consumption	2.2	2.5 (2.5)	2.9 (3.0)	2.5 (2.6)	2.5 (2.2)
Public consumption	3.1	0.4 (0.4)	1.4 (1.5)	1.0 (0.9)	1.2 (1.1)
Gross fixed capital formation	5.6	7.3 (7.8)	4.7 (4.1)	0.7 (2.2)	2.0 (1.6)
Inventory investment*	0.0	-0.1 (0.0)	-0.1 (0.0)	0.0 (0.0)	0.0 (0.0)
Exports	3.3	3.5 (3.4)	4.8 (4.6)	3.8 (3.6)	4.0 (4.1)
Imports	3.4	5.1 (4.4)	5.0 (4.5)	3.8 (4.0)	4.1 (4.1)
GDP	3.2	2.5 (2.9)	2.9 (2.9)	1.7 (2.0)	2.1 (1.9)
GDP, calendar-adjusted	3.0	2.7 (3.1)	3.0 (3.1)	1.7 (2.0)	1.8 (1.6)
Final figure for domestic demand*	3.1	3.0 (3.1)	2.8 (2.7)	1.5 (1.9)	1.9 (1.7)
Net exports*	0.1	-0.4 (-0.2)	0.1 (0.2)	0.2 (0.0)	0.1 (0.2)
Current account (NA), per cent of GDP	5.1	4.6 (4.8)	4.3 (4.8)	4.3 (4.7)	4.2 (4.6)

\*Contribution to GDP growth, percentage points

Note. The figures show actual growth rates that have not been calendar-adjusted, unless otherwise stated. NA is the National Accounts.

Sources: Statistics Sweden and the Riksbank

**Table 6. Production and employment**

Annual percentage change, unless otherwise stated

	2016	2017	2018	2019	2020
Population, aged 15–74	0.9	1.1 (1.1)	0.7 (0.7)	0.5 (0.5)	0.3 (0.3)
Potential hours worked	0.9	0.8 (0.7)	0.7 (0.6)	0.6 (0.5)	0.5 (0.4)
GDP, calendar-adjusted	3.0	2.7 (3.1)	3.0 (3.1)	1.7 (2.0)	1.8 (1.6)
Number of hours worked, calendar-adjusted	2.1	1.6 (1.5)	1.5 (1.6)	0.7 (0.6)	0.4 (0.3)
Employed, aged 15–74	1.5	2.3 (2.3)	1.3 (1.2)	0.5 (0.5)	0.4 (0.3)
Labour force, aged 15–74	1.0	2.0 (2.0)	1.1 (1.0)	0.5 (0.4)	0.5 (0.4)
Unemployment, aged 15–74 *	6.9	6.7 (6.7)	6.5 (6.5)	6.5 (6.5)	6.5 (6.5)

\* Per cent of the labour force

Note. Potential hours refer to the long-term sustainable level for the number of hours worked according to the Riksbank's assessment.

Sources: Statistics Sweden and the Riksbank

**Table 7. Wages and labour costs for the economy as a whole**

Annual percentage change, calendar-adjusted data unless otherwise stated

	2016	2017	2018	2019	2020
Hourly wage, NMO	2.4	2.7 (2.7)	3.0 (3.1)	3.3 (3.3)	3.4 (3.4)
Hourly wage, NA	2.2	3.1 (3.2)	3.1 (3.2)	3.3 (3.4)	3.4 (3.5)
Employers' contribution*	0.7	0.0 (0.2)	0.0 (0.0)	0.1 (0.1)	0.1 (0.1)
Hourly labour cost, NA	3.0	3.1 (3.4)	3.1 (3.3)	3.4 (3.5)	3.6 (3.6)
Productivity	0.9	1.1 (1.6)	1.4 (1.5)	1.1 (1.4)	1.4 (1.3)
Unit labour cost	2.6	2.0 (1.9)	1.7 (1.8)	2.3 (2.1)	2.1 (2.3)

\* Contribution to the increase in labour costs, percentage points

Note. NMO is the National Mediation Office's short-term wage statistics and NA is the National Accounts. Labour cost per hour is defined as the sum of actual wages, social-security charges and wage taxes (labour cost sum) divided by the number of hours worked by employees. Unit labour cost is defined as labour cost sum divided by GDP in fixed prices.

Sources: National Mediation Office, Statistics Sweden and the Riksbank