

**BANKA
SLOVENIJE**
BANK OF SLOVENIA
EUROSYSTEM



MACROECONOMIC PROJECTIONS FOR SLOVENIA

JUNE 2018

Title: Macroeconomic Projections for Slovenia
Issue: June 2018

Published by: BANK OF SLOVENIA
Slovenska 35
1505 Ljubljana
Tel: +386 1 4719000
Fax: +386 1 2515516
email: bsi@bsi.si
<http://www.bsi.si/>

The Macroeconomic Projections for Slovenia are based on figures and information available on 31 May 2018.

The figures and text herein may only be used or published if the source is cited.

This publication is also available in Slovene.

ISSN 2463-9990

Table of contents

Executive Summary	5
1 International Environment and External Assumptions	9
2 Projections	11
2.1 Economic Activity	12
2.2 Labour Market	16
2.3 Inflation	17
3 Risks and Uncertainties	20
4 Comparison Between Institutions	22
4.1 Comparison of Projections Between Institutions	22
4.2 Comparison of Projection Accuracy Between Institutions	23

Figures, tables and boxes:

Figures:

Figure 1	Projection of expenditure contributions to GDP growth rate	12
Figure 2	Real private consumption, compensation per employee and savings dynamics projections	12
Figure 3	Projection of components' contributions to the growth of gross fixed capital formation	13
Figure 4	Government investment	13
Figure 5	Current account, real exports and imports projections	16
Figure 6	Revision of GDP projection by components	16
Figure 7	Employment and unemployment	17
Figure 8	Projection of compensation per employee growth	17
Figure 9	Projection of contributions to inflation by components	18
Figure 10	Revision of inflation projection by components	19
Figure 11	Risks to the projections	20
Figure 12	Comparison of GDP projections for Slovenia	22
Figure 13	Comparison of inflation projections for Slovenia	22

Tables:

Table 1	Macroeconomic projections for Slovenia, 2018–2020	7
Table 2	Assumptions for factors from the international environment	9
Table 3	Inflation projections	18
Table 4	Basic accuracy measures of GDP growth projections, based on first available data	24
Table 5	RMSE and SRMSE of GDP growth projections, based on first available data	25
Table 6	Basic accuracy measures of inflation projections, based on first available data	26
Table 7	RMSE and SRMSE of inflation projections, based on first available data	27

Boxes:

Box 1	Carry-over effect on annual average real GDP growth in 2018	14
-------	---	----

Executive Summary

Average annual economic growth is projected to be somewhat higher over the medium term than predicted in the previous projections, at 4.6% this year, 3.9% in 2019 and 3.4% in 2020. Domestic demand and the export sector are expected to strengthen further, while there is also an extremely strong carry-over effect from previous year in 2018. The projection for export growth is based on the good outlook of the international environment: economic growth projections for Slovenia's trading partners remain favourable for now, while investment will increase the export sector's production capacity. However, it is assessed that economic growth will more and more depend on domestic factors. Growth in private consumption will remain high, as employment growth is expected to be rapid, at least at the beginning of the projection horizon, while wage pressures will strengthen in line with the decline in unemployment. The private-sector investment cycle will continue, as conditions for investment will remain favourable both from the perspective of demand and from the perspective of the availability of financial resources. The government will also contribute more significantly to investment growth as the disbursement of EU funds picks up pace. The government will also increase its consumption, albeit at moderate rates, in part because employment growth in the government sector will slowdown. As a result of a stronger dynamic in the domestic market, the positive contribution made to GDP growth by net trade will decline sharply, while the current account surplus will also decline, which will also reflect a deterioration in the terms of trade, at least in the early part of the projection horizon.

The pace of economic growth will be somewhat slower compared with last year, as the economy moves into a more mature part of the business cycle. The positive impulse from the international environment will become moderate, and with it growth in the export sector. Growth in private consumption over the projection horizon will be at its highest this year, as employment growth remains high, while wage growth strengthens and the supply of consumer loans remains favourable. A moderate slowdown is expected afterwards: employment growth will slow as unemployment falls towards its natural rate. An increase in wage pressures is expected because of increasing structural imbalances on the labour market, although it is assessed that the negative effect of the slowdown in employment growth on private consumption will be stronger than the effect of higher wage growth. Although growth in aggregate demand will gradually slow, it will remain strong enough for the investment cycle to continue, thereby strengthening the country's potential output. Growth in total investment will peak this year due to somewhat higher government investment related to the local elections, but will subsequently slow in line with aggregate demand dynamics. Growth in imports will gradually slowdown in line with the dynamic in investment and private consumption, although it will outpace growth in exports over the entire projection horizon.

Inflation will be higher than projected in the previous projections. Over the medium term it will be slightly above the rate targeted by the ECB, and will increasingly be driven by domestic factors. This year it will reach 2%, with approximately equal contributions from external and domestic factors. The rise in inflation will primarily be the result of higher oil prices and services prices, and unexpectedly high growth in food prices. As economic activity remains robust and wage pressures increase, inflation factors from the domestic environment will later prevail, which will strengthen core inflation. This will rise as a result of the pass-through of higher energy prices into other categories of goods, rising labour costs, and the increase in final consumption and investment, and will be the principal factor in the rise in headline inflation to slightly above 2% towards the end of the projection horizon.

The downside risks to the economic growth projections are significantly larger than in previous projections. They primarily come from the international environment, which is becoming increasingly unpredictable. The increase in geopolitical tensions, sanctions, and the spread of protectionism are affecting the existing order in international trade, and are reducing confidence in the real sector. For now there is no sign of any stronger impact on economic activity, but these are factors that could strongly curb growth in foreign demand. The risks coming from the domestic environment are mostly on the upside, where the prevalent risks are those related to the strength of the government's (and government-linked firms') investment cycle. This could be stronger than anticipated as a result of the uneven disbursement of EU funds and the accelerated execution of major infrastructure projects. Growth in private consumption could also be higher, as the rapid reduction in the surplus labour supply is improving the negotiating position of employees, while the demonstrative effect of the expected rise in wages in the government sector on wage growth in the private sector could also be strong. In contrast to economic growth, the risks in connection with inflation are slightly on the upside, and mostly relate to growth in wages and oil prices.

Table 1: Macroeconomic projections for Slovenia, 2018–2020

	2011	2012	2013	2014	2015	2016	2017	Projections					
								2018		2019		2020	
								Jun.	Δ	Jun.	Δ	Jun.	Δ
Prices	<i>annual average % changes</i>												
HICP	2.1	2.8	1.9	0.4	-0.8	-0.2	1.6	2.0	0.6	2.2	0.2	2.3	0.1
HICP excluding energy	1.0	1.8	2.0	0.7	0.4	0.6	1.1	1.6	0.2	2.4	0.1	2.6	0.1
HICP energy	8.8	9.0	1.8	-1.4	-7.8	-5.2	4.7	4.9	3.3	0.2	0.5	-0.2	0.1
Economic activity	<i>y-o-y growth rates in % (unless stated otherwise)</i>												
GDP (real)	0.6	-2.7	-1.1	3.0	2.3	3.1	5.0	4.6	0.4	3.9	0.3	3.4	0.0
Private consumption	0.0	-2.4	-4.1	1.9	2.1	4.2	3.2	3.5	0.3	3.1	0.2	2.9	0.1
Government consumption	-0.7	-2.2	-2.1	-1.2	2.7	2.5	2.3	1.8	0.2	1.8	0.2	1.7	0.1
Gross fixed capital formation	-4.9	-8.8	3.2	1.1	-1.6	-3.6	10.3	10.8	0.6	9.5	1.3	7.7	0.4
Exports (goods and services)	6.9	0.6	3.1	5.7	5.0	6.4	10.6	7.6	1.4	7.2	1.1	6.5	0.6
Imports (goods and services)	5.0	-3.7	2.1	4.1	4.7	6.6	10.1	8.1	1.7	7.7	1.2	7.1	0.9
<i>Contributions to real GDP growth</i>	<i>in GDP percentage points</i>												
Domestic demand (excluding inventories)	-1.2	-3.6	-2.1	1.0	1.3	2.1	4.0	4.2	0.4	3.8	0.4	3.4	0.2
Net exports	1.3	2.8	0.8	1.4	0.6	0.4	1.2	0.3	-0.1	0.2	-0.1	0.1	-0.2
Changes in inventories	0.6	-2.0	0.2	0.5	0.3	0.7	-0.2	0.2	0.2	0.0	0.0	0.0	0.0
Labour market	<i>y-o-y growth rates in % (unless stated otherwise)</i>												
Unemployment growth (% of labour force)	8.2	8.9	10.1	9.8	9.0	8.0	6.6	5.3	-0.7	4.8	-0.7	4.5	-0.7
Total employment	-1.7	-0.9	-1.1	0.4	1.2	1.9	2.8	2.5	0.6	1.2	0.2	0.7	0.1
Compensation per employee	1.5	-1.0	0.5	1.3	1.4	2.8	2.8	4.0	0.5	4.7	0.7	4.7	0.3
... Productivity	2.4	-1.8	0.0	2.6	1.0	1.2	2.2	2.1	-0.2	2.7	0.1	2.8	0.0
... Unit labour costs (ULC)	-0.8	0.8	0.5	-1.2	0.4	1.6	0.6	1.9	0.7	1.9	0.5	1.8	0.3
Balance of payments	<i>y-o-y growth rates in % (unless stated otherwise)</i>												
Current account: in bn EUR	0.1	0.8	1.6	2.2	1.7	2.1	2.8	2.6	-0.2	2.6	-0.2	2.6	-0.3
in % GDP	0.2	2.1	4.4	5.8	4.4	5.2	6.4	5.6	-0.5	5.4	-0.5	5.0	-0.8
Terms of trade*	-1.4	-1.1	0.8	1.0	1.3	0.9	-0.5	-0.6	-0.3	-0.4	-0.1	-0.1	0.1

* Based on deflators from National Accounts data.

Δ: Difference between current projections and projections in Macroeconomic Projections for Slovenia, December 2017.

Source: Bank of Slovenia, Consensus Economics, Eurostat, JP Morgan, OECD Economic Outlook, SORS, ECB.

1 | International Environment and External Assumptions

Global economic growth projections remain encouraging, although the accompanying downside risks have increased in recent months. The economic outlook in the euro area is expected to remain solid, with growth rates projected at around 2%. The technical assumptions for this year include a somewhat stronger euro exchange rate and an increase in US dollar prices of Brent crude oil, and are based on information available by the cut-off date of 22 May 2018.

Global economic growth projections remain encouraging, although downside risks have increased. The risks, indicating a possible slowdown in global economic growth, are primarily related to the continued escalation of trade protectionism and geopolitical tensions. The ECB's latest projections envisage the maintenance of a solid economic climate in the euro area, with growth rates expected to be above potential. Nevertheless, by the end of the projection horizon, real GDP growth is expected to gradually slowdown and on average be around 2.0%. The assumption of growth in foreign demand for Slovenia

is encouraging, and supports the favourable projection of growth in Slovenian exports.

The technical assumptions for this year include a somewhat stronger euro exchange rate and an increase in US dollar prices of Brent crude oil, while a slight decline in both is indicated in 2019 and 2020. The assumptions with regard to primary commodity prices are determined on the basis of market expectations (average developments) on futures markets over a two-week period ending on the cut-off date.¹ The assumption is that the price of a barrel of Brent crude oil, which stood

Table 2: Assumptions for factors from the international environment

	2012	2013	2014	2015	2016	2017	Assumptions		
							2018	2019	2020
<i>growth rates, % (if not specified otherwise)</i>									
World (excluding euro area) real GDP*	4.0	3.9	3.8	3.5	3.3	3.8	4.0	3.9	3.7
Real GDP growth in Euro Area*	-0.8	-0.2	1.4	2.0	1.8	2.5	2.1	1.9	1.7
Foreign demand for Slovenia	0.7	1.8	2.8	2.2	3.4	5.9	4.6	4.6	4.0
Oil price (in USD/barrel)	112.0	108.8	98.9	52.4	44.0	54.4	74.5	73.5	68.7
Oil price (in EUR/barrel)	87.1	82.0	74.5	47.2	39.8	48.2	62.1	62.1	58.0
Oil price (in USD/barrel, annual percentage change)	0.9	-2.8	-9.1	-47.0	-15.9	23.5	36.9	-1.3	-6.6
Exchange rate (EUR/USD)	1.29	1.33	1.33	1.11	1.11	1.13	1.20	1.18	1.18
Non-energy commodity prices	-11.9	-6.9	-3.3	-16.5	-3.9	7.9	9.3	2.5	4.1

Source: ECB, European Commission, Bank of Slovenia.

¹ The technical assumptions are based on information available by the cut-off date of 22 May 2018. The assumptions for foreign demand in Slovenia and the external technical assumptions of medium-term projections of macroeconomic developments in Slovenia drawn up by the Bank of Slovenia within the framework of the ESCB are based on the harmonised projections assumptions within the framework of the ESCB. For more on the methodology, see the latest release of ESCB projections online (<https://www.ecb.europa.eu/pub/projections/html/index.en.html>), which is also available in Slovene.

at USD 54.4 in 2017, will rise to USD 74.4 in 2018, before falling to USD 73.5 in 2019 and USD 68.7 in 2020. Prices of other primary commodities will rise throughout the projection horizon, first on the basis of futures markets contracts until the middle of the next year, and then in line with global economic activity. The technical assumption for the euro exchange rate against the US dollar is that it will remain unchanged at the average levels prevailing in the two-week period ending on the cut-off date. This means that the exchange rate is assumed to average USD 1.20 to the euro in 2018, before falling to USD 1.18 to the euro in 2019 and 2020.

2 | Projections

After recording economic growth of 6% in the final quarter of last year, a gradual slowdown in the economic activity is expected over the projection horizon. Economic growth will average around 4.0%, and will increasingly depend on domestic demand. Growth in disposable income and bank lending will allow for the strengthening of private consumption, albeit at declining rates, as employment growth is expected to slow significantly. Final government consumption will increase more moderately over the projection horizon than in the two preceding years. This year the rate will be under the influence of a rise in employment, while growth in intermediate consumption is expected to have a larger influence in the years ahead. Private-sector investment will increase as a result of the anticipated solid growth in foreign demand, good corporate performance, and the continuing favourable terms of bank financing. Government investment will also strengthen, although it will remain relatively low as a proportion of GDP. The positive contribution made to GDP growth by net trade will decline, primarily as a result of high growth in components of domestic demand. Faster growth in imports over the entire projection horizon will lead to a reduction in the current account surplus.

Employment growth will begin to slow down during the projection horizon, while wage growth will increase. Employment growth will stand at 2.5% this year, but will fall to below 1% by the end of the projection horizon. The slowdown will be attributable to the anticipated impact of the population aging, and the increasing shortage of skilled labour. A decline in available labour will also be one of the factors in higher wage growth, which will also be attributable to productivity growth and rising inflation. Nominal wage growth is projected at 4% this year, and is expected to later strengthen, although the cost competitiveness of the economy will not deteriorate significantly.

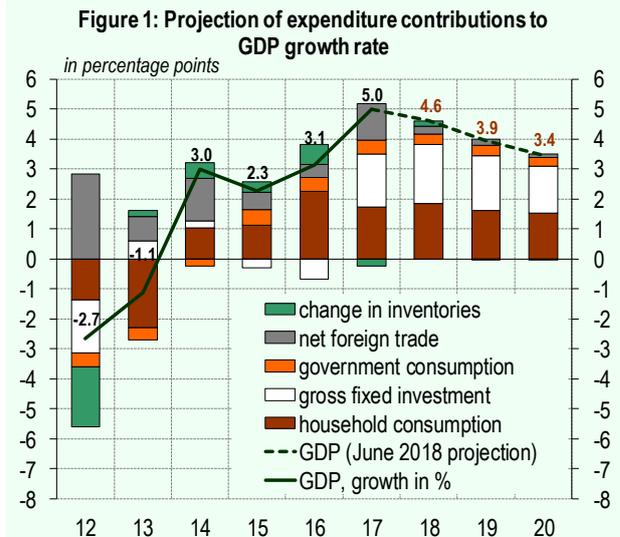
Inflation will exceed 2% over the medium term as domestic inflation pressures strengthen. Robust economic growth, strengthening private consumption and rising wage pressures will raise core inflation, which by the end of the projection horizon will be higher than headline inflation as measured by the HICP. Rising energy prices will be an even stronger factor in the latter this year, although their contribution will later be negligible in line with the assumed developments in global oil prices.

2.1 Economic activity

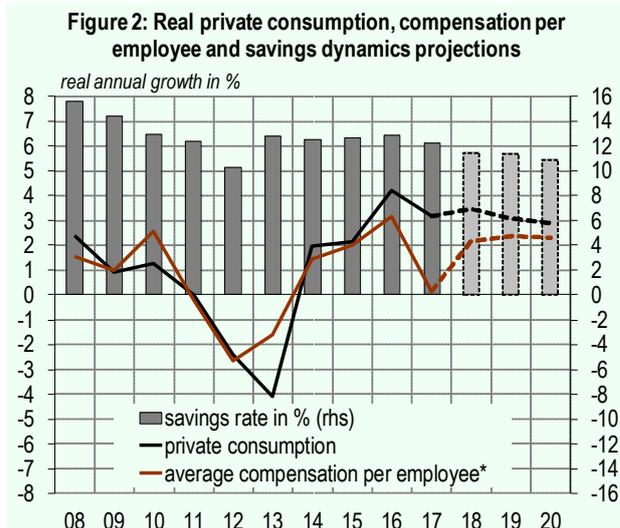
The economic activity in Slovenia is expected to gradually slowdown. A change in the structure of economic growth is expected this year: growth will increasingly be driven by components of domestic demand. The largest contributions to growth in domestic demand will come from higher growth in final household consumption and continuing encouraging growth in private-sector investment. In addition, due to positive impact of the electoral cycle, growth in government investment is expected to be more pronounced this year. The favourable assumption for growth in foreign demand will provide for solid growth in exports, although strengthening domestic demand means that growth in imports is expected to outpace it over almost the entire projection horizon. The positive contribution made to GDP growth by net trade will decline significantly this year, and will fluctuate around 0.2 percentage points in the following years. A gradual slowdown in growth in the majority of the components of real GDP is projected in 2019 and 2020, which will reduce economic growth to around 3.5% towards the end of the projection horizon.

Growth in private consumption is expected to be influenced by higher growth in real wages¹ and the ongoing growth in bank lending to households in this year, but is expected to gradually slow in the following years, primarily as a result of lower employment growth. Average real wages will rise by more than 2% this year, and will rise in both the public sector and the private sector. Similar rates of growth are expected until the end of the projection horizon. Employment will remain high this year, but is later expected to slow as a result of increasing structural imbalances on the labour market, and partly as a result of the demographic effects of the aging population. Growth in private consumption will therefore average around 3.0% in the coming years.

Government consumption will grow more moderately over the projection horizon than in the two preceding years. Real growth in government consumption is pro-



Note: Due to rounding, sums of components may differ from aggregate values.
Source: SORS, Bank of Slovenia projections.



Note: *Deflated with private consumption deflator.
Source: SORS, Bank of Slovenia projections.

jected at around 1.8%, having been around 0.5 percentage points higher in the last year and two years ago. The upward revision for this year is attributable to a rise in employment, while for the following years it is attributable to higher intermediate consumption. The high nominal growth in government consumption is primarily attributable to wages, as the government and the public sector unions still did not reach an agreement on future wage policy.² It is projected that the relaxation of the remaining austerity measures and the implementation of agree-

¹ The average wage in the projections is given by employee compensation per employee according to the national accounts.

² The main factors in this year's growth in the average wage are a rise in premiums for collective supplementary pension insurance to the full amount, an increase in leave allowance, last year's agreement to eliminate wage anomalies for employees up to and including the 26th wage grade, and employee promotions. Unless an agreement is reached between the government and the public sector unions, the restrictions on performance-related payments and payments for increased workload will be relaxed as of January next year, and promotions will be shifted from December to April. An agreement is also needed with regard to the elimination of anomalies in the valuation of positions above the 26th wage grade, and the wage grade placement of positions and titles that are comparable to those of physicians in terms of content, complexity or other circumstances.

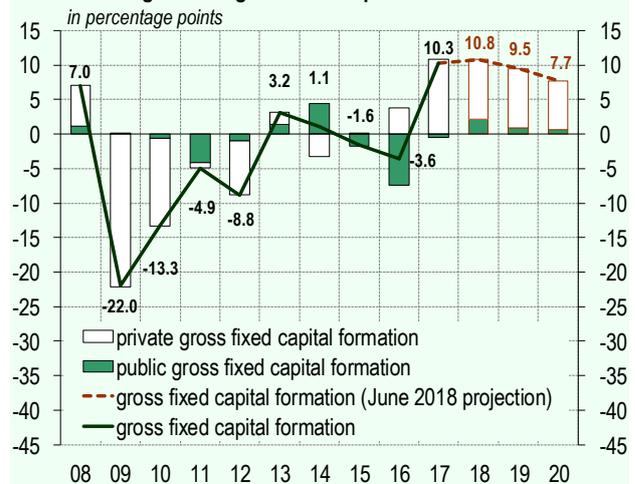
ments with the government will lead to relatively high average annual wage growth in the government sector of close to 5%. Employment in the government sector is also continuing to rise: year-on-year growth stood at 2% in the first quarter of this year. The rate is expected to slow over the projection horizon. In addition, the expenditures on intermediate consumption and on social transfers in kind are also expected to contribute to the overall growth in final government consumption.

Growth in private-sector investment will remain high over the entire projection horizon. It will average around 10%. Given the expected encouraging growth in domestic economic activity, the assumption of solid growth in foreign demand and the high capacity utilisation, investment in machinery and equipment is expected to increase further over the projection horizon. This growth will be additionally supported by high operating surpluses and the favourable terms of bank financing, and by the persistently high level of optimism in the economy. Growth in housing investment is also expected to continue, enabled by wage growth and bank lending to households.

Government investment will strengthen over the projection horizon, but as a proportion of GDP will nevertheless be just over 1 percentage point down on its average over the preceding ten years. After two years of nominal decline, growth in government investment is expected to increase this year. The growth will be the result of increased disbursement of EU funds,³ the execution of major infrastructure projects, and the electoral cycle in connection with local elections in this year. Government investment is projected to increase in real terms by an average of almost 8% during each year of the projection horizon, rising from 2.9% of GDP in 2017 to 3.3% of GDP in 2020. In April's stability programme the government is projecting even higher growth in government investment, particularly in 2018 and 2019.

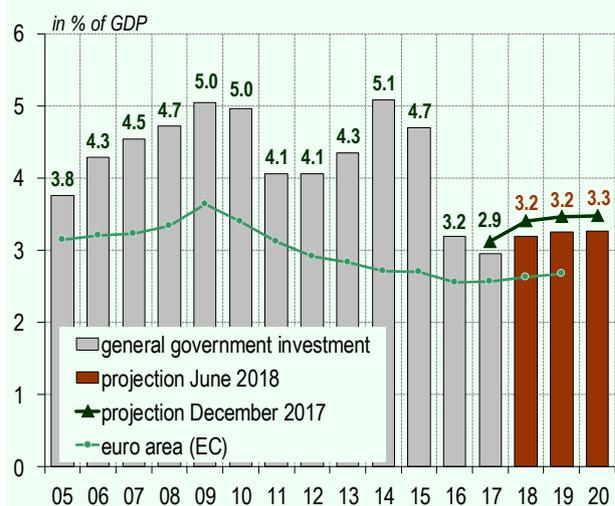
The positive contribution made to GDP growth by net trade will gradually decline throughout the projection horizon, primarily as a result of high growth in components of domestic demand. This year's high growth

Figure 3: Projection of components' contributions to the growth of gross fixed capital formation



Note: Due to rounding, sums of components may differ from aggregate values.
Source: SORS, Bank of Slovenia projections.

Figure 4: Government investment



Source: SORS, EC – Ameco database, Bank of Slovenia projections.

in imports will thus be related to continuing growth in investment and private consumption, while the rate is expected to gradually slow in the following years in line with the slowdown in economic growth. Growth in imports will nevertheless remain high over the projection horizon, averaging around 7.7%. By contrast, growth in exports will remain encouraging this year, at 7.6%, given the favourable assumption for growth in foreign demand, the relatively favourable competitive position of Slovenian exporters, and the diverse structure of Slovenia's exports. Until the end of the projection horizon, growth in exports is projected to hold around 7.0%, primarily as a result of a

³ EUR 1.8 billion, equivalent to 60% of the available funding from the financial framework, had been earmarked by the end of March. Source: Report on the Implementation of European Cohesion Policy 2014-2020 for the period of January 2014 to March 2018 (Targets of investment in jobs and growth), Government Office for Development and European Cohesion Policy (in Slovene: http://www.svrk.gov.si/fileadmin/svrk.gov.si/pageuploads/kako_crpamo/Porocilo_EKP_2014_2020_januar2014_marec2018_10_5_2018.pdf).

Box 1: Carry-over effect on annual average real GDP growth in 2018

The current projections were prepared in circumstances of numerous uncertainties in the external environment, which have also passed through into the domestic economy and have been reflected in slower growth in exports of goods and services compared with the final quarter of last year. Current quarterly economic growth thus slowed in the first quarter of this year, but the projections for this year's economic growth have nevertheless been revised upwards compared with previous projections.

A major factor in the improvement relative to the previous projections is the carry-over effect, which constitutes significant information when forecasting the average annual GDP growth rate.¹ In addition to the quarterly growth within the year, the average annual GDP growth is also determined by the growth in the previous year. In general, the carry-over effect reveals what the average annual growth in the observed year would be had quarterly growth rates within a year been zero.

The carry-over effect is calculated as the weighted sum of the quarterly growth rates in the previous year:²

$$c_t = \frac{3}{4}BDP_{Q4, t-1} + \frac{2}{4}BDP_{Q3, t-1} + \frac{1}{4}BDP_{Q2, t-1}$$

where c_t is the total carry-over effect from the previous year $t-1$ on growth in year t , and $BDP_{Q_i,t-1}$ is the current quarterly rate of growth in real GDP in the i^{th} quarter of year $t-1$.

Figure 1³ illustrates the quarterly level of real GDP in Slovenia in 2016 and 2017, and illustrates the concept of the carry-over effect. Line A illustrates the average quarterly level of real GDP in 2016, while line C illustrates it in 2017. Line B

illustrates the average quarterly level of real GDP in 2017 had all quarterly growth rates in 2017 been equal to zero (this means that all quarterly levels in 2017 would be same as the level recorded in the final quarter of 2016). The percentage difference between C and A thus represents the average annual GDP growth in 2017, which can be divided into the percentage difference between B and A (the carry-over effect) and the percentage difference between C and B (growth within the year).

Figures 2 to 4⁴ show the importance of the GDP growth rate dynamics in the previous year for growth in the current year. The hypothetical example illustrates three different dynamics (profiles) in GDP growth rates in the previous year, where the

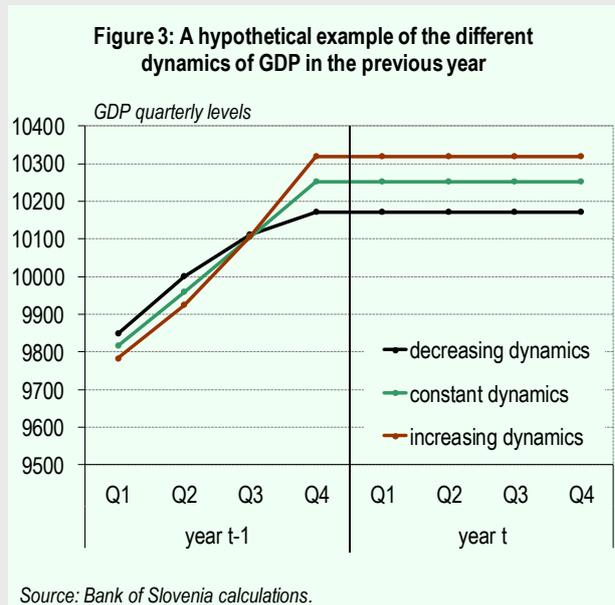
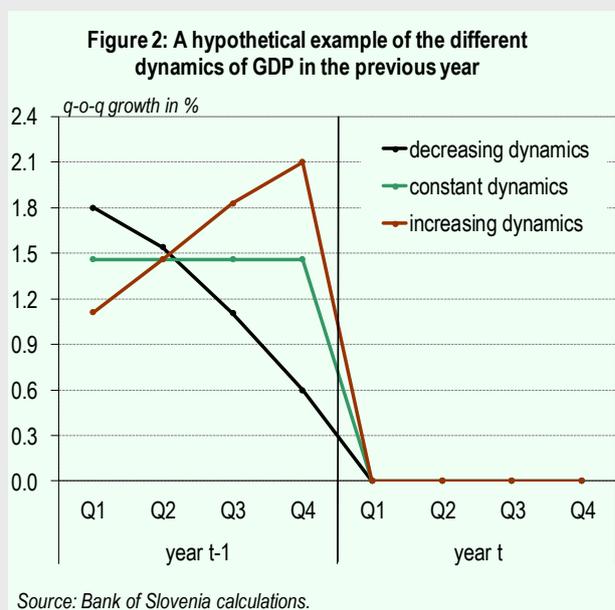
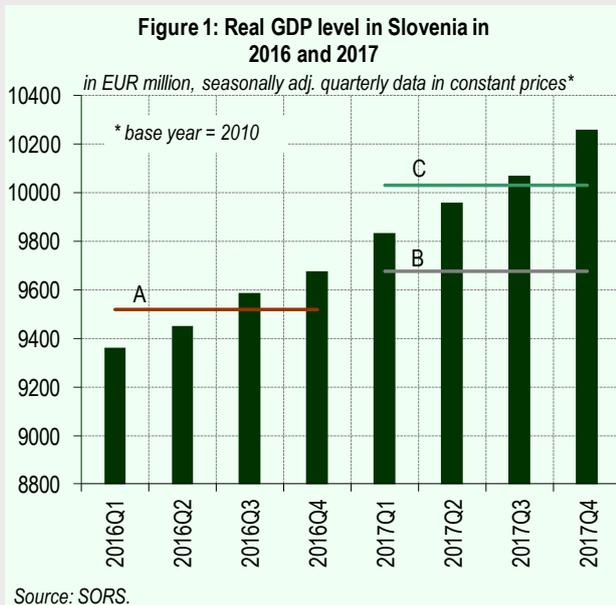
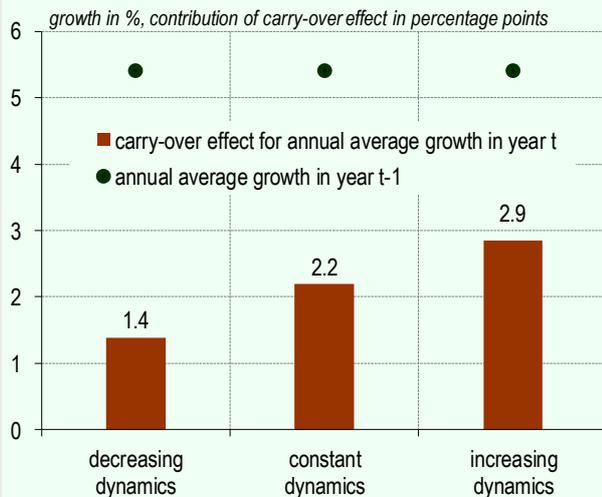
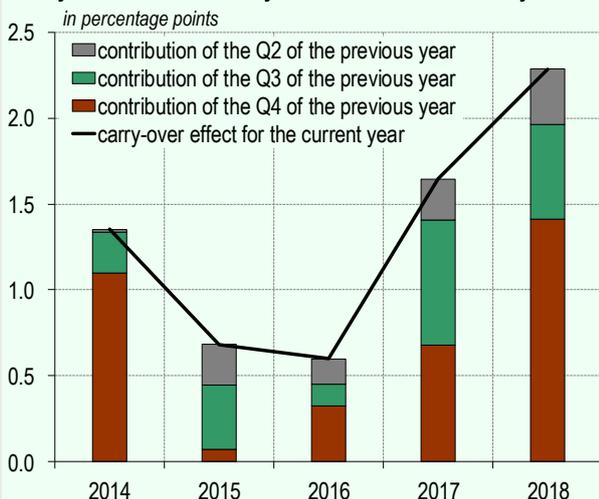


Figure 4: Implications of different dynamics of GDP in the previous year on the size of carry-over effect



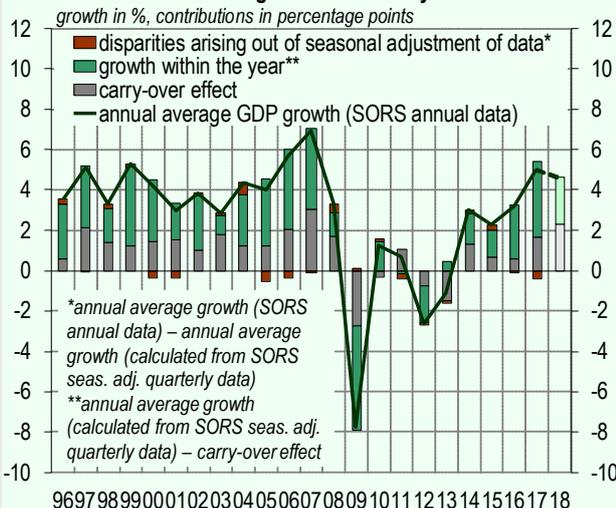
Source: Bank of Slovenia calculations.

Figure 5: Contributions of a specific quarter of the previous year to the overall carry-over effect for the current year



Source: SORS, Bank of Slovenia calculations.

Figure 6: Annual GDP growth in Slovenia, carry-over effect and growth within the year



Source: SORS, Bank of Slovenia calculations.

average annual GDP growth in the year remains unchanged (5.4% in this example). In the case of the falling dynamic, quarterly growth in economic activity decelerates in year $t-1$, in the second case quarterly growth remains unchanged, while in the third case it strengthens over the entire previous year. The main message of this example is that a stronger dynamic towards the end of the previous year increases the size of the carry-over effect for the GDP growth in the current year. Thus (given the same average annual growth in the previous year) the carry-over effect on growth in economic activity in the current year is merely 1.4 percentage points in the case of the falling dynamic in quarterly rates of GDP growth, but is significantly larger in the case of the rising dynamic, at 2.9 percentage points.

The acceleration in economic growth in Slovenia in the final quarter of last year thus accounts for 1.4 percentage points (Figure 5) of the total carry-over effect on average annual GDP growth in 2018. The total carry-over effect amounts to 2.3 percentage points, and is thus one of the largest carry-over effects on average annual economic growth seen to date in Slovenia (Figure 6). The slowdown in the first quarter of this year hindered an even larger upward revision of the economic growth for this year deriving from last year's dynamics. The current slowdown is particularly important when a comparison is made between the annual GDP growth projection for 2018 with the last year, as the decomposition significant moderation in quarterly growth rates within this year. The carry-over effect from 2018 on average GDP growth in 2019 is thus expected to be significantly smaller.

References:

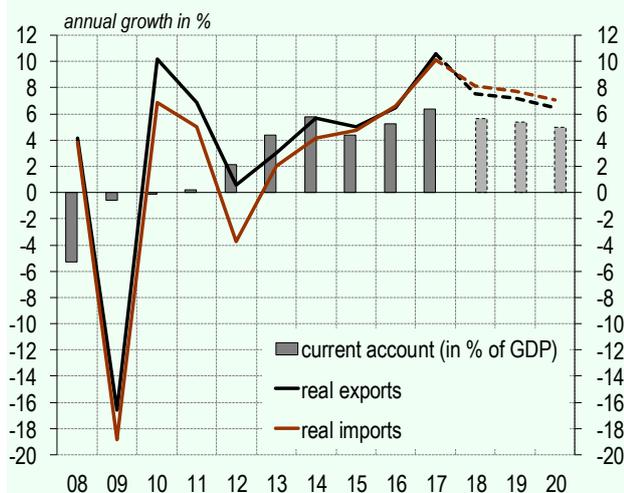
- Tödter, K.H.: How useful is the carry-over effect for short-term economic forecasting?, Discussion Paper Series 1: Economic Studies 2010, 21, Deutsche Bundesbank, Research Centre.
- ECB Monthly Bulletin, March 2010, Box 6, p 66, available at: <https://www.ecb.europa.eu/pub/pdf/mobu/mb201003en.pdf>.
- ECB Monthly Bulletin, December 2001, Box 6, p 47, available at: <https://www.ecb.europa.eu/pub/pdf/mobu/mb200112en.pdf>.

^{1,2} See Tödter (2010).

³ See Box 6, ECB Monthly Bulletin, March 2010.

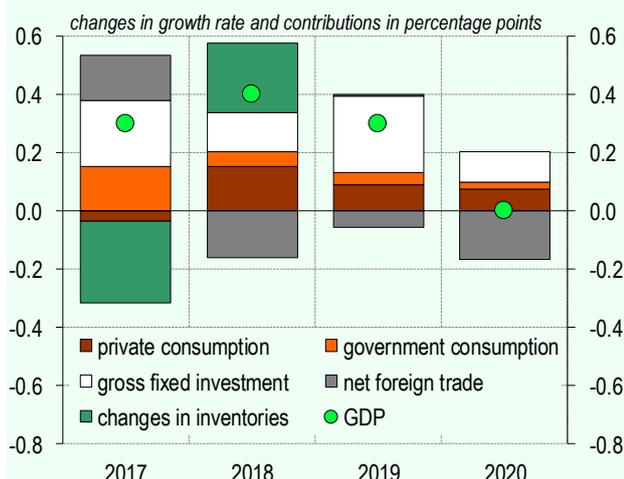
⁴ See Box 6, ECB Monthly Bulletin, December 2001.

Figure 5: Current account, real exports and imports projections



Source: SORS, Bank of Slovenia projections.

Figure 6: Revision of GDP projection by components



Note: Due to rounding, sums of components may differ from aggregate values.
Source: SORS, Bank of Slovenia projections.

slowdown in economic growth in the major trading partners. Faster growth in imports will therefore gradually reduce the current account surplus, which is projected to narrow from 5.6% of GDP this year to 5.0% of GDP in 2020. A deterioration in the terms of trade as a result of faster growth in US dollar oil prices and other primary commodity prices on the global market will also have a slightly larger impact on the anticipated narrowing of the surplus this year.

Compared with the December projections, there has been a notable change in the structure of economic growth, as the GDP growth projections for 2018 and 2019 have been revised upwards, while that for 2020

remains unchanged. The higher growth this year and next year will primarily be attributable to a slightly stronger increase in private consumption as a result of faster growth in the wage bill, and to higher growth in gross fixed capital formation. The latter will increase faster than previously projected, primarily as a result of higher growth in private-sector investment as firms respond to stronger aggregate demand. The contribution made by inventories is also expected to be higher this year, primarily as a result of the build-up of inventories of commodities and material in the first quarter. There will also be a strong carry-over effect, which is examined in detail in Box 1. On the other hand, the contribution made by net trade has been revised downwards, as components of domestic demand are expected to increase more strongly than growth in exports. The growth projection for 2020 remains unchanged.

2.2 Labour market

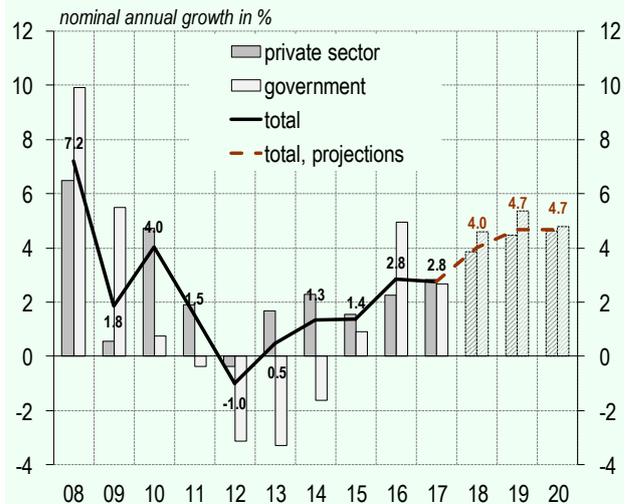
After peaking last year, employment growth will begin to slow down. Employment grew by 2.8% last year, the highest rate since 2007, and passed the one million mark in the final quarter. In parallel with the high growth in employment, there was also a rapid fall in unemployment, as the surveyed unemployment rate fell to 6.6%. The labour force participation rate increased sharply, although employers were increasingly hiring foreign nationals owing to the growing shortage of skilled workers. Employment growth will fall below 1% by the end of the projection horizon, and will be higher in the private sector than in the government sector throughout the projection horizon. The slowdown will be attributable to the anticipated impact of population aging, and the increasing shortage of skilled labour.⁴ The negative impact of domestic factors will be mitigated over the projection horizon by the continued hiring of foreign nationals, the latter having accounted for a total of 40% of the rise in the workforce in employment (excluding self-employed farmers) in the first quarter of this year according to employment registry figures. The upward revisions to growth in employment relative to December reflect the large carry-over effect for 2018, the high employment expectations

⁴ According to a survey by the Employment Service entitled Employment Preview 2018/I, some 41.2% of employers expect to face difficulties in recruiting workers in the second half of this year.

reported, the high employment growth in the first quarter of this year, and the measures taken to ease the hiring of foreign nationals.⁵

Wage growth will be relatively high over the projection horizon, but will not lead to a significant deterioration in the nominal cost competitiveness of the economy. Nominal wage growth remained moderate last year at 2.8%. It is expected to reach 4% this year, in the wake of high economic growth and a growing shortage of labour, before strengthening further, as wages rise more quickly in the government sector over the entire projection horizon. The increase in wage growth in the private sector will be underpinned this year by a rise of 4.7% in the gross minimum wage, sectoral and firm-level collective bargaining, and the anticipated high bonus payments in the wake of good business results. A stronger upward pressure on wage growth will come from the government sector, where despite the suspension of negotiations between the government and the trade unions, high wage growth is expected on account of certain measures already adopted.⁶ Wage growth will be driven over the entire projection horizon by high economic growth, rising inflation and productivity growth. As the available labour

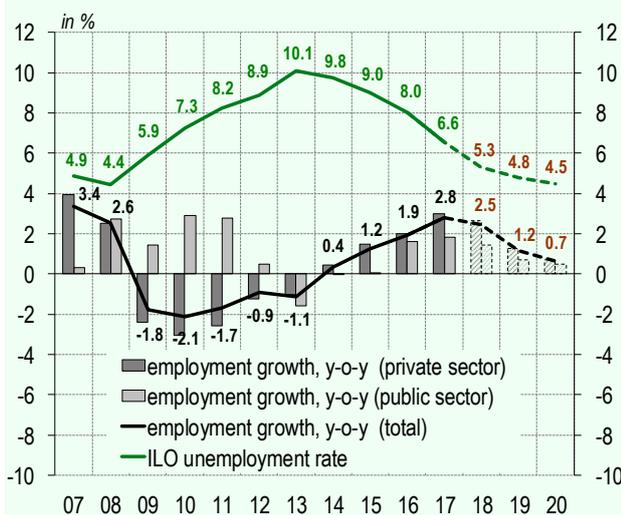
Figure 8: Projection of compensation per employee growth



Source: SORS, Bank of Slovenia projections.

supply diminishes, increasing pressure on wages will come from the improvement in workers' bargaining position. However, wage growth will be curbed by increased hiring in sectors with relatively low wages and a desire to maintain external competitiveness. The current wage growth projections have been revised upwards on the previous projections, partly as a result of a large carry-over effect this year in the wake of strong growth in the final quarter of last year.

Figure 7: Employment and unemployment



Source: SORS, Bank of Slovenia projections.

2.3 Inflation

Inflation will gradually rise over the projection horizon. This year the contribution made by external and domestic factors will be balanced, but in the next two years as economic activity is expected to remain robust and wage growth pressures increase, factors from the domestic environment will prevail. Year-on-year inflation as measured by the HICP will be higher than last year's, and will average 2.0% this year. This is attributable to higher global oil prices, which are having an impact on retail energy prices, and to stronger growth in services prices and food prices. A slightly higher inflation is expected in 2019 and 2020, in line with the anticipated

⁵ Certain measures that will ease the hiring of foreign nationals have already been adopted, for the purpose of ensuring the labour supply in the long term. They consist of a treaty signed between the Slovenian and Serbian governments in February 2018 on the hiring of Serbian citizens in Slovenia, the Act Amending the Treaty on the Hiring of Citizens of Bosnia and Herzegovina in Slovenia, which was ratified last year, and this year's Act Amending the Employment, Self-employment and Work of Foreigners Act. The last is shortening the process of recruiting highly skilled foreign experts at firms with high value-added or at innovative start-ups. However, the position of Croatian workers remains uncertain, as a bill currently under discussion envisages an extension of the restricted access to the Slovenian labour market for Croatian citizens by additional two years.

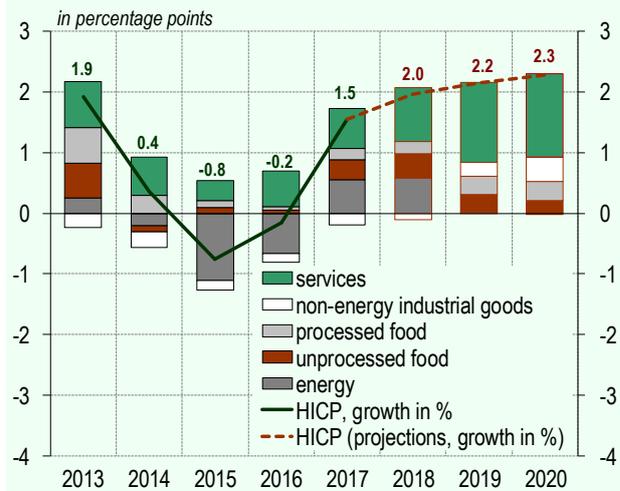
⁶ See Footnote 2 on page 12.

increase in pressures from the domestic environment, and also partly as a result of rises in global commodity prices.

This year's growth in energy prices will remain similar to last year's, and their positive contribution to headline inflation will remain strong this year, before gradually levelling off over the next two years. May's cut in excise duties on regulated fuel prices will however slightly mitigate the impact of the sharp rise in oil prices on growth in energy prices. Given the current assumptions for growth in oil prices, growth in energy prices will nevertheless average 4.9% this year. In line with the external assumptions, growth in energy prices is later expected to slow and reach an average of 0.2% in 2019 and -0.2% in 2020.

Core inflation will rise over the projection horizon in line with the robust economic growth and rising cost pressures. The rises in food prices will reflect in the broadest core inflation indicator, which excludes only energy prices, and will reach 1.6% this year and exceed 2% in 2019. The two other core inflation indicators will also strengthen in the following years – the narrowest one, which excludes energy, food, alcohol and tobacco prices, will reach 2.7% by the end of the projection horizon. The main underlying factors from the domestic environment are expected to be higher wage growth, and relatively high growth in private consumption. These developments will result in faster growth in services prices, which is the main driver of core inflation. Growth in ser-

Figure 9: Projection of contributions to inflation by components



Note: Due to rounding, sums of components may differ from aggregate values. Source: SORS, Bank of Slovenia projections.

vices prices will average 2.4% this year, and around 3.5% in the next two years. Prices of non-energy industrial goods are the only price category where this year's average growth has been revised downwards owing to low outcomes. However, we expect to witness a stronger pass-through of higher labour costs and rises in commodity prices in this price category over the next two years. Growth in prices of non-energy industrial goods will thus reach 0.8% in 2019, and 1.4% in 2020.

Compared with the previous ones, the inflation projections have been revised upwards for the entire projection horizon, with most notable revisions pertaining to this year. This year's inflation projection has been revised upwards by 0.6 percentage points com-

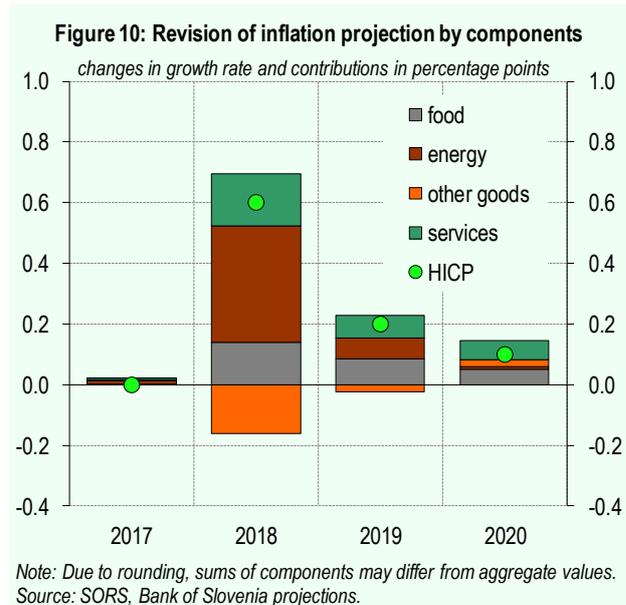
Table 3: Inflation projections

	2013	2014	2015	2016	2017	2018		2019		2020	
						Jun.	Δ	Jun.	Δ	Jun.	Δ
<i>average annual growth, %</i>											
Consumer prices (HICP)	1.9	0.4	-0.8	-0.2	1.6	2.0	0.6	2.2	0.2	2.3	0.1
food	4.9	0.8	0.9	0.5	2.2	2.6	0.6	2.5	0.3	2.3	0.2
energy	1.8	-1.4	-7.8	-5.2	4.7	4.9	3.3	0.2	0.5	-0.2	0.1
other goods	-0.8	-1.0	-0.6	-0.5	-0.7	-0.4	-0.6	0.8	-0.1	1.4	0.1
services	2.3	1.8	0.9	1.6	1.8	2.4	0.4	3.6	0.2	3.8	0.2
Core inflation indicators (HICP)											
excluding energy	2.0	0.7	0.4	0.6	1.1	1.6	0.2	2.4	0.1	2.6	0.1
excl. energy and unprocessed food	1.4	0.9	0.4	0.6	0.8	1.2	0.0	2.3	0.0	2.6	0.1
excl. energy, food, alcohol and tobacco	0.9	0.6	0.3	0.7	0.7	1.2	0.0	2.4	0.1	2.7	0.1

Δ: difference between current projections and projections in Macroeconomic Projections for Slovenia, December 2017.

Source: SORS, Bank of Slovenia.

pared with the previous projections. This is attributable to rises in global oil prices, the recent unexpected rise in prices of unprocessed food, and growth in services prices in the early part of the year that was higher than previously expected. The core inflation projections were also revised upwards, primarily as a result of the higher than previously expected growth in services prices, which offsets the previously overestimated growth in prices of non-energy industrial goods. In addition to higher inflation pressures from the domestic environment, the revision to the inflation projections for 2019 and 2020 in comparison to the previous projections reflects the slightly higher assumptions for developments in commodity prices on the global market.



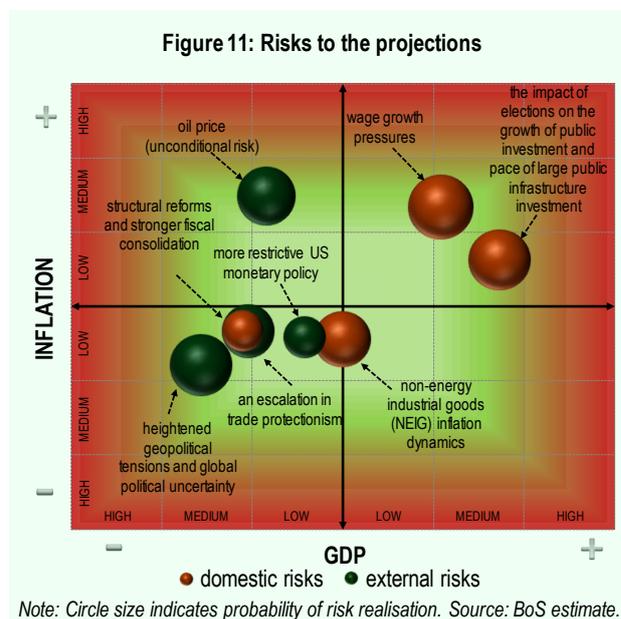
3 | Risks and Uncertainties

The risks surrounding the current projections of economic growth and inflation are more pronounced than last year. The uncertainties coming from the external environment, which primarily relate to the geopolitical situation and rising protectionism, could significantly reduce economic growth in a small, open economy such as Slovenia's, while simultaneously having an impact on developments in prices of oil and other commodities on global markets, which could be reflected in higher inflation in Slovenia. The domestic risks are mostly on the upside, and primarily relate to government investment activity and the situation on the labour market, where there are already signs of structural imbalances in the wake of the decline in unemployment. The latter could be reflected in greater upward pressure on wage growth, which could additionally increase domestic demand and stimulate higher inflation over the projection horizon.

The risks surrounding the GDP growth projections are slightly on the downside. The downside risks from the external environment have recently become more pronounced than in the past. The rise in protectionist measures, which is having a significant impact on the situation in global trade, and other geopolitical tensions in Europe (Brexit, EU-Russia relations) and elsewhere in the world (the situation in the Middle East) are being reflected in a decline in confidence indicators in Slovenia, and in its main trading partners. Despite the favourable projections, the situation in global trade could further deteriorate and curb growth in the European economy, into which the Slovenian export sector is firmly integrated. The risk of sharper tightening of monetary policy in the US, and thus a deterioration in global financing conditions should not be ignored either. In the domestic environment the upside risks are more pronounced, and primarily relate to developments in government investment, which are subject to the influence of autumn's local elections and the efficiency of the disbursement of EU funds. The new government will have the main impact on the pace of major infrastructure projects. It will also play a decisive role in adopting structural measures, which could slightly reduce economic growth in the second half of the projection horizon, at least in the short term. Government consumption could also be slightly curbed by the need for additional structural effort to balance the public finances.

The favourable situation on the labour market in recent years and the rapid fall in unemployment are facilitating an improved negotiating position for employees in the public sector and the private sector, which could result in stronger upward pressure on wages and increased household consumption.

The risks surrounding the inflation projections are slightly on the upside. The largest risk from the external environment is related to the dynamics in oil prices on global markets, which could be reflected in higher energy prices in Slovenia. By contrast, inflation could be held down to a lesser extent by uncertainties related to the



global geopolitical situation and a slowdown in growth in global trade. The most significant domestic risk that could have a significant impact in raising inflation is related to the situation on the labour market and the potential for faster wage growth, which could pass through into higher prices of services and products. By contrast, there remains great uncertainty in price growth in the category of non-energy industrial goods, which so far have not responded to the strengthened domestic demand and higher commodity prices. Moreover, prices of non-energy industrial goods in Slovenia have been falling on average for almost a decade now. This dynamic remains an important puzzle, which has been seen in an overestimation of price developments in this category in the last few rounds of projections. The risk therefore relates to the pass-through of cost pressures into the prices of these goods, where the timing and also the magnitude of the pass-through remain uncertain.

4 | Comparison Between Institutions

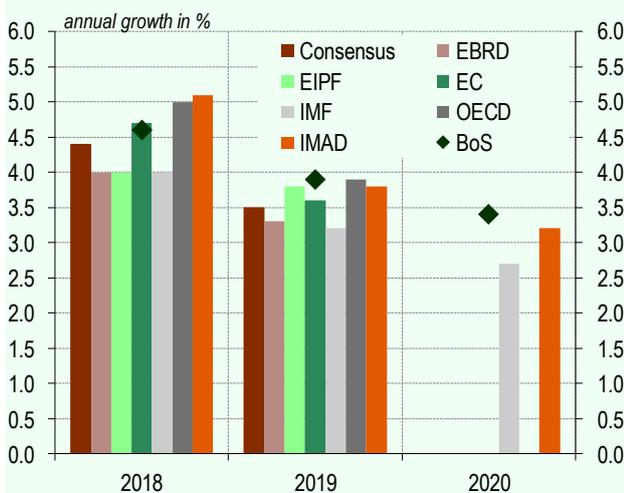
The latest economic growth projections for the 2018 to 2020 period show a gradual slowdown in the economic climate, with domestic institutions' growth projections being on average 0.4 percentage points higher than projections of foreign institutions. The average Bank of Slovenia projections over the observation period are 0.2 percentage points above the average of the projection range for the individual year. The majority of institutions (with the exception of the OECD) are projecting inflation of around 1.7% for 2018, while in the following years the inflation projections (again with the exception of the OECD) are around the ECB's medium-term objective. A comparison of projection accuracy between the institutions¹ reveals that in all of the observation periods (2001 to 2017, the entire period excluding 2008 and 2009, and 2009 to 2017) the Bank of Slovenia was among the most accurate in projecting real GDP growth and consumer price inflation.

4.1 Comparison of projections between institutions

The latest economic growth projections for the 2018 to 2020 period show a gradual slowdown in the economic climate, with domestic institutions projecting slightly higher growth on average than foreign institutions. According to the most recent projections available, the highest economic growth projection for 2018 is by the IMAD (5.1%), while the lowest is by the EBRD, the

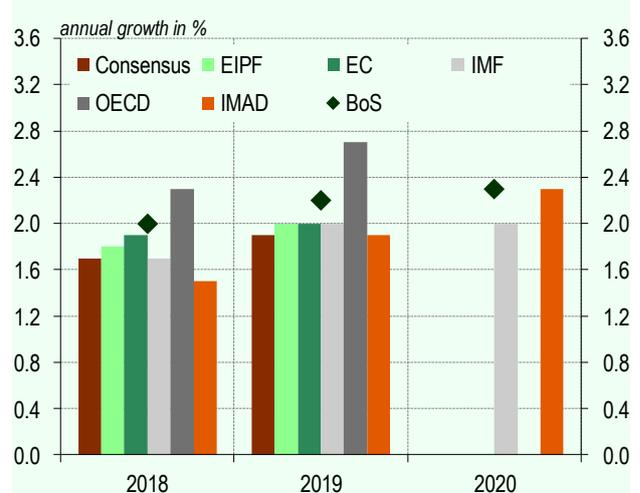
EIPF and the IMF (4.0%). The Bank of Slovenia projection is 0.1 percentage points above the average projection for the current year, at 4.6%. The highest economic growth projection for next year is 3.9% by the Bank of Slovenia and the OECD, which is 0.3 percentage points above the average projection for the year in question, followed by the EIPF and the IMAD, with 3.8%. The lowest projection for 2019 is that of the IMF, at 3.2%. Economic growth projections for 2020 are available from three institutions, the highest of which is by the Bank of

Figure 12: Comparison of GDP projections for Slovenia



Source: Consensus Economics, EBRD, EIPF, European Commission (EC), IMF, OECD, IMAD, Bank of Slovenia.

Figure 13: Comparison of inflation projections for Slovenia



Source: Consensus Economics, EIPF, European Commission (EC), IMF, OECD, IMAD, Bank of Slovenia.

¹ Eight institutions that produce macroeconomic projections for Slovenia are included in the comparative analysis of current projections of real GDP growth and consumer price inflation (seven institutions in the case of the latter): Consensus Economics, the European Bank for Reconstruction and Development (EBRD), the Economics Institute of the Faculty of Law (EIPF), the European Commission, the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the Institute of Macroeconomic Analysis and Development (IMAD) and the Bank of Slovenia.

Slovenia, at 3.4%, while the IMF has the lowest projection of just 2.7%.

The majority of institutions (with the exception of the OECD) are projecting inflation of around 1.7% for 2018, while in the following years the inflation projections (again with the exception of the OECD) are around the ECB's medium-term objective. The highest inflation rate in 2018 is expected by the OECD (2.3%), while the lowest is projected by the IMAD (1.5%). The Bank of Slovenia projection is slightly above the average projection for the current year, at 2.0%. The highest inflation projection for next year is again predicted by the OECD, followed by 2.2% by the Bank of Slovenia. The lowest inflation projections for 2019 are by Consensus and the IMAD, at 1.9%. Inflation projections for 2020 are also available from three institutions, and range slightly above the ECB's medium-term target.

4.2 Comparison of projection accuracy between institutions

The accuracy of the real GDP growth and consumer price inflation projections over the 2001 to 2017 period is measured by comparing the statistical estimate or the observed value with the projections for the variables obtained in past periods.² The calculations cover the mean error (ME), the mean absolute error (MAE), the standard deviation (STDEV), the root mean square error (RMSE) and the standardised RMSE (SRMSE).³ Only three of the institutions in question (the Bank of Slovenia, the European Commission and the IMF) released projections for the entire observation period. For the majority of the other institutions projections are only available from 2004 (from 2009 for the OECD, and from 2011 for the EBRD). Given the impact of the increased volatility during the crisis, the entire observation period excluding 2008 and 2009 and the period of 2009 to 2017 have been additionally included in the analysis.

In terms of the MAE and RMSE, the most accurate economic growth projections for the 2001 to 2017 period were from the European Commission, the IMAD and the Bank of Slovenia, while the most accurate inflation projections were provided by the Bank of Slovenia, the IMAD and the SKEP unit. In the economic growth projections, MAE ranged from 0.6 to 3.1 over the observation period, while RMSE ranged from 0.7 to 4.5.⁴ The institutions were slightly more accurate in projecting inflation: the aforementioned indicators had narrower ranges, namely 0.2 to 1.6 for MAE and 0.3 to 2.0 for RMSE.

The most accurate economic growth projections over the entire period excluding 2008 and 2009 were those of the Bank of Slovenia, the European Commission and the IMAD, while the best inflation projections were by the Bank of Slovenia, the IMAD and the SKEP unit. Compared with the entire observation period, the economic growth projections during the period in question were slightly more accurate, implying that the crisis-related volatility was largest between 2008 and 2009. In the economic growth projections, MAE ranged from 0.5 to 2.5 over the period in question, while RMSE ranged from 0.7 to 3.2. The accuracy of the inflation projections remained relatively unchanged: the two indicators ranged over intervals of 0.2 to 1.5 for MAE and 0.3 to 2.0 for RMSE.

The OECD and the European Commission produced the most accurate economic growth projections over the 2009 to 2017 period, while the Bank of Slovenia, the IMAD and the OECD produced the most accurate inflation projections. The accuracy of the economic growth projections improved in comparison to the entire observation period (2001 to 2017), as the intervals in MAE and RMSE narrowed markedly to range from 0.5 to 2.3 for MAE and 0.6 to 2.8 for RMSE. It was a similar case in the assessment of inflation projection accuracy: the intervals in the indicators were narrower than in the entire observation period, at 0.1 to 1.2 for MAE and 0.2 to 1.5 for RMSE.

² In the examination of projection accuracy between institutions in the 2001 to 2017 period and in the various sub-periods, the first observed values and projections of variables are compared, whereby the projections selected are those that correspond most closely to the Bank of Slovenia's spring and autumn projections.

³ For a detailed description of the statistical measures (in Slovene), see Cimperman and Savšek (2014): https://bankaslovenije.blob.core.windows.net/publication-files/PA_1_2014_Natančnost_napovedi_makroekonomskih_spremenljivk.pdf.

⁴ The spring and autumn projections of all the institutions for the current year and next year are taken into account in the values given.

Table 4: Basic accuracy measures of GDP growth projections, based on first available data

Real GDP	2001–2017			2001–2008			2009–2017			2008 and 2009			excl. 2008–2009			2004–2017		
	ME	MAE	STDEV	ME	MAE	STDEV	ME	MAE	STDEV	ME	MAE	STDEV	ME	MAE	STDEV	ME	MAE	STDEV
spring projections																		
current year																		
BS	0.0	1.3	1.9	0.4	0.9	1.1	-0.4	1.7	2.5	-3.4	3.4	3.8	0.4	1.0	1.2	0.1	1.5	2.1
Consensus	0.0	1.5	2.1	0.4	1.1	1.3	-0.4	1.8	2.6	-3.5	3.5	3.3	0.5	1.2	1.5	0.1	1.6	2.2
EBRD							0.8	1.5	1.7									
EIPF	-0.3	1.6	2.4	0.7	1.1	1.3	-0.9	1.8	2.7	-4.1	4.1	4.4	0.3	1.1	1.4	-0.3	1.6	2.4
EC	0.0	1.3	1.7	0.3	1.1	1.3	-0.2	1.5	2.1	-2.7	2.7	2.8	0.4	1.1	1.3	0.2	1.4	1.9
IMF	0.0	1.4	2.0	0.3	1.0	1.3	-0.2	1.8	2.5	-3.0	3.0	3.4	0.5	1.2	1.4	0.2	1.5	2.1
OECD							0.2	1.2	1.5									
SKEP	0.2	1.5	2.1	0.8	1.0	1.1	-0.1	1.8	2.5	-3.1	3.1	3.6	0.8	1.3	1.3	0.2	1.5	2.1
IMAD	0.0	1.3	1.6	0.2	1.0	1.2	-0.2	1.6	2.0	-2.5	2.5	2.3	0.3	1.1	1.3	0.1	1.4	1.8
next year																		
BS	-0.8	2.2	3.6	-1.2	2.5	4.6	-0.3	2.0	2.5	-6.3	6.3	8.1	0.0	1.7	2.1	-0.8	2.6	4.0
Consensus	-0.8	2.6	3.9	-1.4	2.9	5.1	-0.3	2.2	2.7	-6.0	6.6	9.3	0.0	1.9	2.4	-0.8	2.8	4.2
EBRD							0.7	2.1	2.8									
EIPF	-0.9	3.1	4.6	-1.1	4.4	7.1	-0.8	2.3	2.8	-6.5	6.5	8.6	0.1	2.5	3.3	-0.9	3.1	4.6
EC	-0.7	2.3	3.6	-1.4	2.6	4.5	-0.1	2.1	2.6	-5.6	6.3	8.9	0.0	1.7	2.2	-0.6	2.6	4.0
IMF	-0.8	2.2	3.5	-1.2	2.4	4.4	-0.3	2.0	2.6	-5.8	5.8	8.2	0.0	1.7	2.2	-0.8	2.5	3.9
OECD							0.0	2.0	2.6									
SKEP	-0.7	2.7	4.1	-1.7	3.6	6.1	-0.2	2.1	2.6	-6.3	6.3	8.6	0.3	2.0	2.4	-0.7	2.7	4.1
IMAD	-0.8	2.4	3.7	-1.4	2.6	4.6	-0.2	2.2	2.8	-5.9	6.3	8.9	-0.1	1.9	2.3	-0.8	2.7	4.1
autumn projections																		
current year																		
BS	0.1	0.7	0.9	0.2	0.6	0.7	0.0	0.8	1.0	-1.2	1.2	0.3	0.3	0.6	0.8	0.1	0.8	0.9
Consensus	0.0	0.8	1.0	0.0	0.7	0.9	0.0	0.9	1.2	-1.6	1.6	0.5	0.2	0.7	0.9	0.1	0.9	1.1
EBRD							0.6	0.9	1.0									
EIPF	-0.1	0.9	1.2	0.3	0.9	1.2	-0.3	0.9	1.3	-2.1	2.1	0.8	0.2	0.7	0.9	-0.1	0.9	1.2
EC	0.1	0.6	0.7	0.2	0.6	0.7	0.1	0.6	0.8	-0.8	0.8	0.1	0.3	0.5	0.7	0.2	0.6	0.7
IMF	0.1	1.0	1.3	0.2	0.8	1.0	-0.1	1.2	1.6	-2.1	2.1	1.8	0.4	0.9	1.0	0.1	1.1	1.4
OECD							0.2	0.5	0.6									
SKEP	0.3	0.9	1.0	0.0	0.8	1.0	0.4	0.9	1.1	-1.3	1.3	0.2	0.5	0.8	0.9	0.3	0.9	1.0
IMAD	0.0	0.6	0.8	0.0	0.6	0.8	0.1	0.7	0.9	-1.1	1.1	0.4	0.2	0.6	0.7	0.1	0.7	0.9
next year																		
BS	-0.4	2.2	3.5	-1.0	2.5	4.5	0.2	1.8	2.4	-5.9	5.9	8.1	0.4	1.6	2.0	-0.5	2.5	3.9
Consensus	-0.6	2.3	3.5	-1.3	2.6	4.4	0.2	2.0	2.4	-5.5	6.2	8.7	0.1	1.7	2.1	-0.5	2.5	3.9
EBRD							1.4	2.3	2.6									
EIPF	-0.8	2.6	4.1	-2.0	3.5	5.9	-0.1	2.1	2.6	-5.9	6.3	8.8	0.1	2.0	2.4	-0.8	2.6	4.1
EC	-0.3	2.1	3.4	-1.0	2.4	4.3	0.4	1.7	2.2	-5.5	5.6	7.8	0.4	1.6	1.9	-0.3	2.4	3.7
IMF	-0.4	2.3	3.7	-1.0	2.5	4.5	0.3	2.2	2.8	-5.5	6.3	8.9	0.4	1.8	2.3	-0.4	2.7	4.1
OECD							0.4	1.9	2.2									
SKEP	-0.2	2.4	3.8	-1.3	2.9	5.2	0.6	1.9	2.3	-5.4	6.1	8.6	0.7	1.7	2.0	-0.2	2.5	3.9
IMAD	-0.5	2.1	3.4	-1.1	2.4	4.3	0.1	1.9	2.5	-5.4	5.9	8.3	0.2	1.6	2.1	-0.5	2.4	3.8

Source: Bank of Slovenia, Consensus Economics, EIPF, EBRD, European Commission (EC), IMF, OECD, SKEP, IMAD.

Table 5: RMSE and SRMSE of GDP growth projections, based on first available data

<i>Real GDP</i>	RMSE						SRMSE					
	01-17	01-08	09-17	08 and 09	excl. 08-09	04-17	01-17	01-08	09-17	08 and 09	excl. 08-09	04-17
spring projections												
current year												
BS	1.9	1.1	2.4	4.3	1.2	2.1	0.5	0.7	0.6	0.5	0.5	0.5
Consensus	2.0	1.3	2.5	4.2	1.5	2.2	0.6	0.9	0.6	0.5	0.6	0.6
EBRD			1.7						0.4			
EIPF	2.3	1.3	2.7	5.1	1.4	2.3	0.7	0.9	0.7	0.6	0.6	0.6
EC	1.7	1.3	2.0	3.4	1.3	1.8	0.5	0.8	0.5	0.4	0.5	0.5
IMF	1.9	1.2	2.3	3.8	1.5	2.0	0.5	0.8	0.6	0.5	0.6	0.5
OECD			1.5						0.4			
SKEP	2.0	1.3	2.3	4.0	1.5	2.0	0.6	0.9	0.6	0.5	0.6	0.5
IMAD	1.6	1.1	1.9	3.0	1.3	1.7	0.5	0.8	0.5	0.4	0.5	0.4
next year												
BS	3.6	4.4	2.4	8.5	2.0	3.9	1.0	3.0	0.6	1.0	0.8	1.0
Consensus	3.9	5.0	2.6	8.8	2.3	4.1	1.1	3.3	0.7	1.1	0.9	1.1
EBRD			2.6						0.7			
EIPF	4.5	6.4	2.7	8.8	3.2	4.5	1.3	4.3	0.7	1.1	1.3	1.2
EC	3.6	4.4	2.4	8.4	2.1	3.9	1.0	3.0	0.6	1.0	0.9	1.0
IMF	3.5	4.3	2.4	8.2	2.1	3.9	1.0	2.9	0.6	1.0	0.8	1.0
OECD			2.4						0.6			
SKEP	4.0	5.7	2.4	8.7	2.3	4.0	1.1	3.8	0.6	1.1	0.9	1.0
IMAD	3.7	4.5	2.6	8.6	2.2	4.1	1.1	3.1	0.7	1.1	0.9	1.1
autumn projections												
current year												
BS	0.8	0.7	0.9	1.2	0.8	0.9	0.2	0.5	0.2	0.1	0.3	0.2
Consensus	1.0	0.8	1.1	1.6	0.9	1.0	0.3	0.6	0.3	0.2	0.4	0.3
EBRD			1.1						0.3			
EIPF	1.2	1.1	1.2	2.2	0.9	1.2	0.3	0.7	0.3	0.3	0.4	0.3
EC	0.7	0.6	0.8	0.8	0.7	0.7	0.2	0.4	0.2	0.1	0.3	0.2
IMF	1.3	1.0	1.5	2.5	1.1	1.4	0.4	0.7	0.4	0.3	0.4	0.4
OECD			0.6						0.2			
SKEP	1.0	0.9	1.1	1.3	1.0	1.0	0.3	0.6	0.3	0.2	0.4	0.3
IMAD	0.8	0.7	0.8	1.1	0.7	0.8	0.2	0.5	0.2	0.1	0.3	0.2
next year												
BS	3.4	4.3	2.3	8.2	2.0	3.8	1.0	2.9	0.6	1.0	0.8	1.0
Consensus	3.5	4.3	2.3	8.2	2.0	3.8	1.0	2.9	0.6	1.0	0.8	1.0
EBRD			2.8						0.7			
EIPF	4.0	5.6	2.5	8.6	2.3	4.0	1.1	3.8	0.6	1.0	0.9	1.0
EC	3.3	4.1	2.1	7.8	1.9	3.6	0.9	2.8	0.5	0.9	0.8	0.9
IMF	3.6	4.4	2.6	8.4	2.2	4.0	1.0	2.9	0.7	1.0	0.9	1.0
OECD			2.1						0.5			
SKEP	3.6	4.9	2.3	8.1	2.1	3.8	1.0	3.3	0.6	1.0	0.8	1.0
IMAD	3.4	4.2	2.3	7.9	2.0	3.7	1.0	2.8	0.6	1.0	0.8	1.0

Source: Bank of Slovenia, Consensus Economics EIPF, EBRD, European Commission (EC), IMF, OECD, SKEP, IMAD.

Table 6: Basic accuracy measures of inflation projections, based on first available data

HICP/CPI	2001–2017			2001–2008			2009–2017			2008 and 2009			excl. 2008–2009			2004–2017		
	ME	MAE	STDEV	ME	MAE	STDEV	ME	MAE	STDEV	ME	MAE	STDEV	ME	MAE	STDEV	ME	MAE	STDEV
spring projections																		
current year																		
BS	0.1	0.4	0.6	0.3	0.5	0.6	0.0	0.4	0.5	0.2	0.3	0.4	0.1	0.4	0.6	0.1	0.4	0.5
Consensus	-0.2	0.6	0.7	0.0	0.6	0.8	-0.3	0.6	0.7	-0.1	0.7	1.0	-0.2	0.6	0.7	-0.1	0.6	0.7
EIPF	0.1	0.7	0.9	0.4	0.5	0.6	-0.1	0.8	1.0	0.7	0.7	0.4	-0.1	0.7	0.9	0.1	0.7	0.9
EC	-0.1	0.4	0.5	0.0	0.4	0.7	-0.1	0.4	0.5	0.2	0.2	0.1	-0.1	0.4	0.6	0.0	0.3	0.5
IMF	0.2	0.5	0.7	0.4	0.7	0.9	0.0	0.4	0.5	1.0	1.0	0.8	0.1	0.5	0.7	0.3	0.5	0.7
OECD							-0.1	0.4	0.4									
SKEP	-0.1	0.4	0.6	0.2	0.5	0.6	-0.2	0.4	0.5	0.1	0.2	0.3	-0.1	0.5	0.6	-0.1	0.4	0.6
IMAD	0.1	0.5	0.6	0.1	0.6	0.8	0.1	0.4	0.5	0.4	0.4	0.1	0.1	0.5	0.7	0.3	0.4	0.5
next year																		
BS	0.1	1.1	1.5	0.5	1.4	1.8	-0.3	0.8	1.0	-1.2	1.5	2.1	0.3	1.0	1.4	-0.1	1.0	1.4
Consensus	-0.4	1.2	1.5	0.0	1.5	2.0	-0.8	1.0	1.1	-1.6	1.6	1.3	-0.3	1.1	1.5	-0.4	1.2	1.6
EIPF	-0.1	1.6	2.1	0.9	2.2	2.7	-0.7	1.2	1.4	-2.1	2.1	0.0	0.3	1.5	2.0	-0.1	1.6	2.1
EC	-0.4	1.1	1.4	-0.4	1.5	1.9	-0.5	0.8	1.0	-1.2	1.3	1.8	-0.3	1.1	1.4	-0.2	1.0	1.4
IMF	-0.1	1.1	1.5	0.3	1.5	1.8	-0.5	0.8	1.0	-0.5	1.1	1.5	0.0	1.2	1.5	-0.1	1.1	1.4
OECD							0.0	0.8	1.0									
SKEP	-0.3	1.0	1.5	0.2	1.5	2.0	-0.6	0.8	1.0	-1.2	1.5	2.1	-0.1	1.0	1.4	-0.3	1.0	1.5
IMAD	-0.1	1.0	1.3	0.2	1.2	1.6	-0.4	0.7	0.9	-0.9	1.4	2.0	0.0	0.9	1.2	-0.1	1.0	1.4
autumn projections																		
current year																		
BS	-0.2	0.2	0.3	-0.2	0.3	0.4	-0.1	0.2	0.1	-0.4	0.4	0.3	-0.1	0.2	0.3	-0.1	0.2	0.2
Consensus	-0.1	0.3	0.4	-0.2	0.4	0.5	0.0	0.2	0.3	-0.4	0.4	0.2	0.0	0.3	0.4	0.0	0.3	0.3
EIPF	-0.1	0.3	0.4	-0.1	0.3	0.5	0.0	0.3	0.3	-0.3	0.4	0.5	0.0	0.3	0.4	-0.1	0.3	0.4
EC	-0.2	0.3	0.4	-0.5	0.5	0.6	-0.1	0.1	0.2	-0.4	0.4	0.5	-0.2	0.3	0.4	-0.1	0.2	0.3
IMF	0.0	0.4	0.5	-0.1	0.5	0.6	0.1	0.3	0.4	0.0	0.4	0.6	0.0	0.4	0.5	0.1	0.3	0.4
OECD							0.0	0.1	0.2									
SKEP	-0.1	0.3	0.4	-0.2	0.3	0.4	0.0	0.3	0.3	-0.2	0.3	0.4	-0.1	0.3	0.4	0.0	0.2	0.3
IMAD	-0.2	0.3	0.4	-0.4	0.5	0.5	0.0	0.2	0.3	-0.4	0.4	0.4	-0.2	0.3	0.5	-0.1	0.2	0.3
next year																		
BS	-0.1	0.9	1.2	0.0	1.1	1.5	-0.3	0.8	1.0	-1.0	1.6	2.3	0.0	0.9	1.1	-0.2	1.0	1.3
Consensus	-0.4	1.1	1.5	-0.2	1.5	2.0	-0.5	0.8	1.0	-1.6	1.6	2.2	-0.2	1.0	1.3	-0.3	1.1	1.5
EIPF	0.1	1.3	1.7	0.3	1.7	2.4	0.0	1.0	1.2	-1.2	2.0	2.8	0.3	1.1	1.5	0.1	1.3	1.7
EC	-0.4	1.1	1.4	-0.4	1.4	1.8	-0.3	0.8	1.1	-1.2	1.6	2.3	-0.2	1.0	1.2	-0.2	1.0	1.3
IMF	-0.2	1.1	1.3	-0.1	1.3	1.6	-0.3	0.8	1.0	-0.9	1.5	2.1	0.0	1.0	1.2	-0.1	1.0	1.3
OECD							0.0	0.9	1.1									
SKEP	-0.4	1.1	1.4	-0.1	1.3	1.7	-0.6	1.0	1.2	-1.0	1.8	2.5	-0.3	1.0	1.3	-0.3	1.1	1.4
IMAD	-0.3	1.0	1.2	-0.2	1.2	1.6	-0.4	0.8	0.9	-1.2	1.8	2.5	-0.2	0.9	1.1	-0.3	1.0	1.3

Source: Bank of Slovenia, Consensus Economics, EIPF, European Commission (EC), IMF, OECD, SKEP, IMAD.

Table 7: RMSE and SRMSE of inflation projections, based on first available data

HICP/CPI	RMSE						SRMSE					
	01-17	01-08	09-17	08 and 09	excl. 08-09	04-17	01-17	01-08	09-17	08 and 09	excl. 08-09	04-17
spring projections												
current year												
BS	0.5	0.6	0.4	0.4	0.6	0.5	0.2	0.3	0.4	0.1	0.2	0.3
Consensus	0.7	0.7	0.7	0.7	0.7	0.7	0.3	0.4	0.6	0.2	0.3	0.4
EIPF	0.8	0.7	0.9	0.8	0.8	0.8	0.4	0.4	0.8	0.2	0.4	0.5
EC	0.5	0.6	0.4	0.2	0.6	0.5	0.2	0.3	0.4	0.0	0.2	0.3
IMF	0.7	1.0	0.4	1.1	0.7	0.7	0.3	0.5	0.4	0.3	0.3	0.5
OECD			0.4						0.4			
SKEP	0.5	0.6	0.5	0.2	0.6	0.5	0.2	0.3	0.4	0.1	0.2	0.3
IMAD	0.6	0.7	0.5	0.4	0.6	0.6	0.3	0.4	0.4	0.1	0.3	0.3
next year												
BS	1.4	1.8	0.9	1.9	1.3	1.4	0.6	0.9	0.8	0.6	0.6	0.8
Consensus	1.5	1.8	1.3	1.8	1.5	1.6	0.7	1.0	1.1	0.6	0.6	1.0
EIPF	2.0	2.6	1.5	2.1	2.0	2.0	0.9	1.4	1.2	0.6	0.9	1.2
EC	1.4	1.8	1.1	1.7	1.4	1.4	0.6	0.9	0.9	0.5	0.6	0.8
IMF	1.4	1.7	1.1	1.1	1.5	1.4	0.6	0.9	0.9	0.4	0.6	0.8
OECD			0.9						0.8			
SKEP	1.4	1.8	1.1	1.9	1.4	1.4	0.6	1.0	0.9	0.6	0.6	0.9
IMAD	1.3	1.5	0.9	1.7	1.2	1.4	0.5	0.8	0.8	0.5	0.5	0.8
autumn projections												
current year												
BS	0.3	0.4	0.2	0.4	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1
Consensus	0.4	0.5	0.2	0.4	0.4	0.3	0.2	0.3	0.2	0.1	0.2	0.2
EIPF	0.4	0.4	0.3	0.4	0.4	0.4	0.2	0.2	0.3	0.1	0.2	0.2
EC	0.5	0.7	0.2	0.5	0.5	0.3	0.2	0.4	0.1	0.2	0.2	0.2
IMF	0.5	0.6	0.4	0.4	0.5	0.4	0.2	0.3	0.3	0.1	0.2	0.2
OECD			0.2						0.1			
SKEP	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.2	0.3	0.1	0.2	0.2
IMAD	0.5	0.6	0.2	0.5	0.5	0.3	0.2	0.3	0.2	0.2	0.2	0.2
next year												
BS	1.2	1.4	1.0	1.9	1.0	1.2	0.5	0.7	0.8	0.6	0.5	0.8
Consensus	1.4	1.8	1.0	2.2	1.3	1.5	0.6	1.0	0.9	0.7	0.6	0.9
EIPF	1.6	2.1	1.2	2.3	1.4	1.6	0.7	1.1	1.0	0.7	0.6	1.0
EC	1.3	1.7	1.1	2.0	1.2	1.3	0.6	0.9	0.9	0.6	0.5	0.8
IMF	1.3	1.5	1.0	1.7	1.2	1.3	0.5	0.8	0.8	0.5	0.5	0.8
OECD			1.0						0.8			
SKEP	1.4	1.6	1.3	2.0	1.3	1.4	0.6	0.8	1.0	0.6	0.6	0.9
IMAD	1.2	1.5	0.9	2.2	1.0	1.3	0.5	0.8	0.8	0.7	0.4	0.8

Source: Bank of Slovenia, Consensus Economics, EIPF, European Commission (EC), IMF, OECD, SKEP, IMAD.