



REPUBLIC OF SLOVENIA
FISCAL COUNCIL

Public investment in Slovenia: trends, structure and challenges

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Summary

Public investment¹ is an important instrument of aggregate demand and can, in principle, make a positive contribution to economic growth and the strengthening of economic potential, and thus to developmental catch-up. The available fiscal plans and guidelines for the creation of the EU Next Generation Fund indicate that public investment should play a key role in ensuring a recovery from the current epidemic crisis while at the same time addressing key development challenges. At this point, it should be noted that public investment funds must be used efficiently with respect to the limited fiscal space as a result of the increase in public debt, given the frequent significant and unexpected shocks and long-term challenges to the sustainability of public finance.

Various studies show that the magnitude of the multiplier effects of increased public investment is uncertain and dependent on a number of factors, to a large extent on the effectiveness of the institutional framework. The analysis shows that Slovenia, in the absence of visible progress over a long period of time, lags behind the most successful EU Member States in terms of both the quality of the institutional framework and the efficiency of public investment. In light of the expected significant increase in public investment funds in the upcoming period, it would be advisable to, above all, implement the findings based on the IMF-based review of the performance of investment-related institutions to increase their efficiency.

By reviewing the trends and structure of public investment and quantitative and qualitative indicators of the state of the public infrastructure in Slovenia in the long run, we show that over the last two decades Slovenia has significantly reduced the lag in public capital behind the average of the old EU Member States but, nevertheless, it ranks in the bottom half of all EU Member States. The lag behind the most developed EU Member States is most noticeable in the areas identified as a priority under the EU Recovery and Resilience Fund. These are mainly the areas of digitisation and the green transition. Within the latter, in the field of sustainable mobility, the lag in the quality of railway infrastructure and in the volume of energy production from renewable sources stands out. Slovenia's lagging behind the best EU Member States can also be seen in the areas of health and education, where public investment in the years before the epidemic dropped below the long-term average.

Our analysis also shows that, in Slovenia, fiscal consolidation in the years prior to the epidemiological crisis, which was among the most intense in the EU, took place to a lesser extent through a reduction in public investment than in most other EU Member States. In the absence of credible medium-term planning and spending, the movement of public investment was mainly influenced by the dynamic of the use of European funds, namely to a greater extent than the average of the new EU Member States. In order to increase the efficiency of public investment, it would be advisable to strengthen the medium-term fiscal framework, which would help improve investment planning and planning coherence between different levels of government, and better coordinate the national and sectoral development strategies and integrate them more fully into the budget planning process.

The analysis consists of two parts. The first part presents an overview of the movement and structure of public investment in Slovenia and an overview of the volume of public capital and basic indicators of the volume and quality of infrastructure. In the second part, we present the impact of various factors on the size of potential multiplier effects of increasing public investment and give a comparative assessment of the quality of the institutional framework and the efficiency of public investment in Slovenia compared to EU countries.

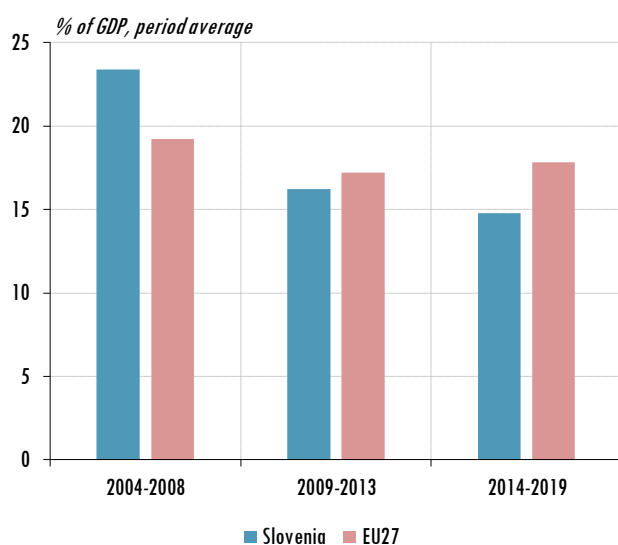
¹ The term public investment is used for gross fixed capital formation of the general government sector. Both terms are used interchangeably in the analysis.

1.1 Trends in public investments

In contrast to the EU average, the share of total gross fixed capital formation in GDP in Slovenia visibly decreased after the global financial crisis, which was predominantly due to a decrease in the share of private investment. On average in the EU, the share of total investments in the entire 2004–2019 period was around 20% of GDP, while in Slovenia it experienced much more fluctuation. In the period from its accession to the EU to the onset of the global financial crisis, the share of total investments in GDP in Slovenia was much higher than the EU average and amounted to around 28%. Such trends are associated with the catching-up process, since countries with a lower level of development tend to invest more, at the government sector level, among other things, due to the lag in the level of infrastructure. In the recovery period between 2014 and 2019, this share in Slovenia amounted to slightly less than 20% of GDP and was slightly below the EU average. The key reason for such developments in total investment is the decline in the share of private sector investment, which fell by more than a third compared to the period before the global financial crisis and thus lagged behind the EU average. Given the ratio between the size of investment in the general government and the private sector, which has been around 1:4 in recent years, even a significant increase in the former would not compensate for the loss of the latter.

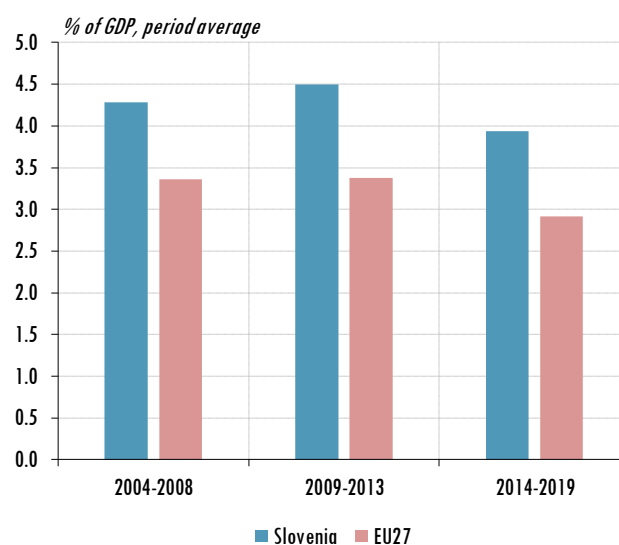
The share of gross investment in the general government sector in Slovenia in the entire analysed period was higher than the EU average. It averaged 4.2% of GDP over the 2004–2019 period, which is at the level of the new EU Member States average and one percentage point higher than the EU average. In this period, the share fluctuated considerably with two peaks before the financial crisis and after the banking system rescue, which were followed by relevant drops. These trends were also largely due to the movement of GDP during the double-bottom recession. The movement of the share of investments in GDP in individual Member States is quite heterogeneous, which is mainly due to the movement of GDP, public finance in each country or the need for consolidation and availability or use of European funds.² With respect to the EU average after the debt crisis, the share of general government investment in GDP fell below the long-term average. Slovenia also ranks among the countries where this share was slightly lower than the long-term average, especially after a significant decline in 2016 in recent years.

Figure 1.1: Gross fixed capital formation - private sector



Source: Eurostat, FC calculations.

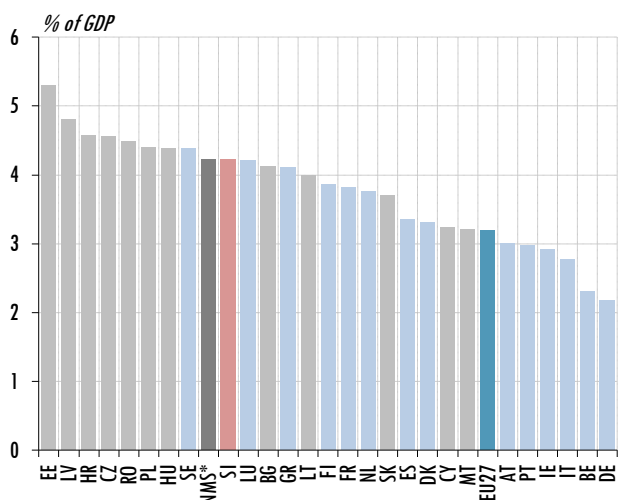
Figure 1.2: Gross fixed capital formation - general government



Source: Eurostat, FC calculations.

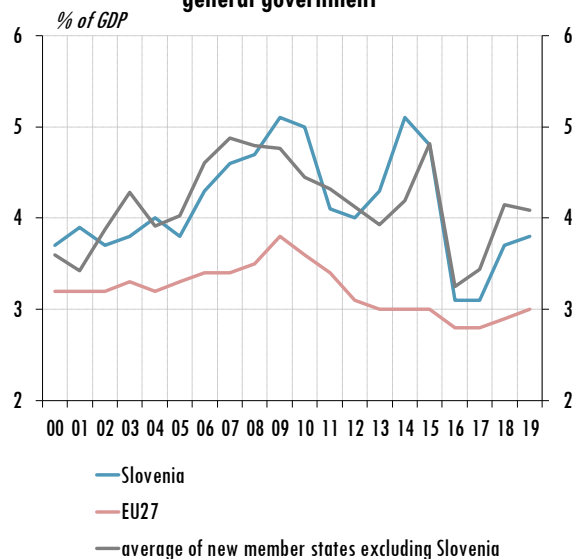
² For example, see Figure 1, Box 2.4, Fiscal Council (2020).

Figure 1.3: Gross fixed capital formation - general government, 2004-2019 average



Source: Eurostat, FC calculations. Note: * Average of new member states excluding Slovenia.

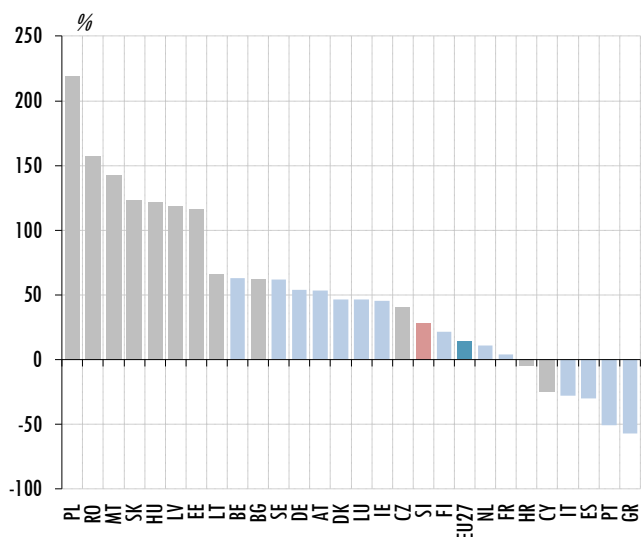
Figure 1.4: Gross fixed capital formation - general government



Source: Eurostat, FC calculations.

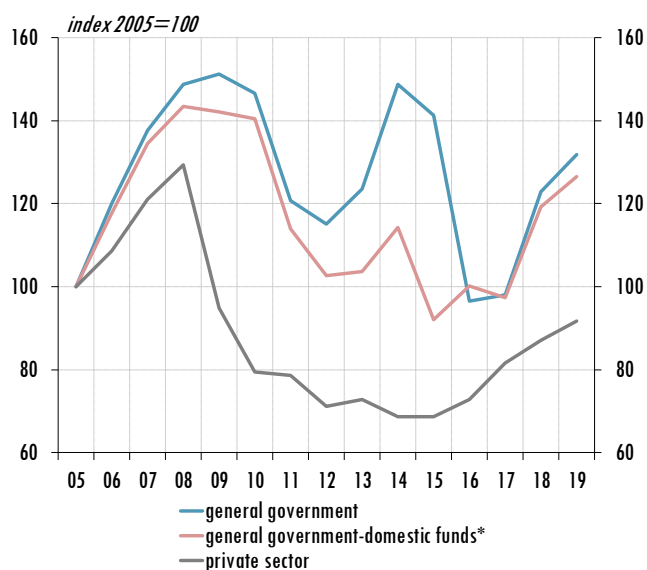
Real³ increase in general government investment in Slovenia in the 2004–2019 period was double that of the EU average, but much lower than the average of new members. Investments in the general government sector in Slovenia increased cumulatively by around 28% in this period, while private sector investments in 2019 were lower in real terms than in 2004, mainly due to a significant decline at the onset of the global financial crisis. The cumulative increase in general government investment was once as high as the EU average, but the latter was significantly affected by a significant decline in the countries most affected by the debt crisis (Italy, Spain, Portugal, Greece). It is worth noting that the cumulative real increase, for example, in Austria and Germany, was larger than in Slovenia. With regard to the new Member States’ average, the cumulative increase was even larger

Figure 1.5: Cumulative real change in gross fixed capital formation - general government, 2004-2019



Source: Eurostat, FC calculations.

Figure 1.6: Real indices of gross fixed capital formation



Source: Eurostat, FC calculations. Note: *Excluding EU budget capital transfers.

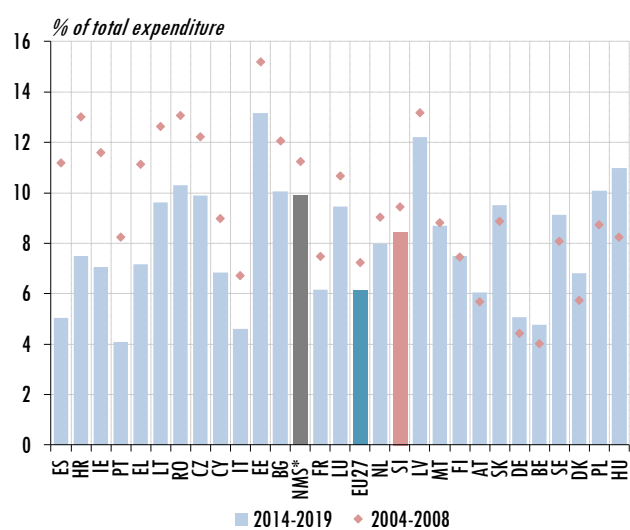
³To calculate real investments in the general government sector, we used the deflator of total investments in fixed assets according to national accounts statistics. For Slovenia, data on the deflator of investments in the general government sector are also available, which does not differ significantly from the total deflator of gross fixed capital formation. Due to the consistency of the comparison with other countries, we used the total investment deflator.

(around 100%). This can be partly linked to the lower level of development of these countries at the beginning of this period and thus the need for greater public investment.

The decline in the share of general government investment in recent years is attributed mainly to the consolidation of public finance,⁴ although it mainly results from the growth of other expenditures which reduced the space for public investment due to the constraints on the fiscal framework. Given that the share of general government investment in GDP was affected by the intensity of the crisis and the subsequent recovery, it makes more sense to compare the share of investment in total general government expenditure to assess the extent to which government sector investment has been affected by consolidation (ECB, 2016). In this comparison, too, the share in Slovenia on average in the period 2004–2019 was higher than the EU average, but after the debt crisis in 2014–2019, it decreased to a similar extent as the EU average. The most obvious was the decline in the share of investment in total general government expenditure in countries that had major problems with fiscal sustainability after the previous crisis and which, as a rule, carried out the most intensive consolidation of public finances (Greece, Ireland, Spain, Portugal, Italy, Croatia). In some of these countries, the share of investment in total expenditure halved with respect to the period preceding the global financial crisis. Consolidation of public finance in Slovenia was among the most intensive in the EU in this period, even more than in some of the previously mentioned countries, but the decrease in the share of investments compared to the pre-crisis period was among the less pronounced. It follows that consolidation in Slovenia was based on the decline of investments to a lesser extent than in some other countries. It should be noted that some countries have simultaneously improved their public finance situation and increased the share of investment in total expenditure. In this context, Denmark stands out, and to a lesser extent Sweden and Poland.

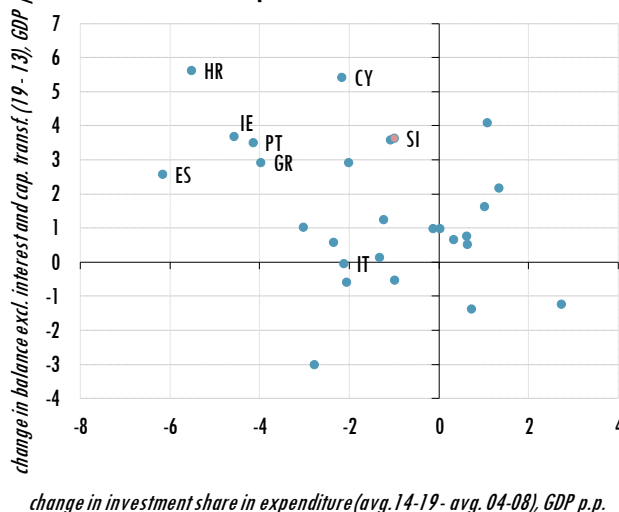
The movement of general government investment in the new Member States, including Slovenia, fluctuated considerably in the analysed period, which is also a consequence of the dynamic of the use of European funds. European funds used for investment⁵ constitute an important part of the total investment funds of the general government sector, especially in the new Member States. On average,

Figure 1.7: Gross fixed capital formation - general government



Source: Eurostat, FC calculations. Note: *Average of new member states excluding Slovenia.

Figure 1.8: Change in investment share in general government expenditure and change in balance excluding interest and capital transfers

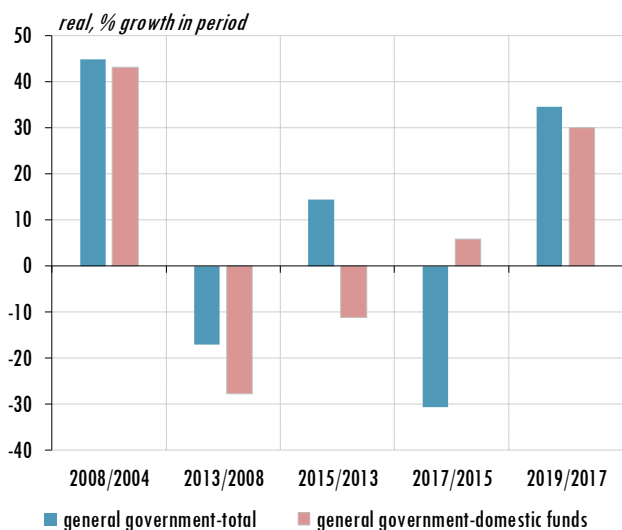


Source: Eurostat, FC calculations.

⁴ EFB (2019); Darvas (2018).

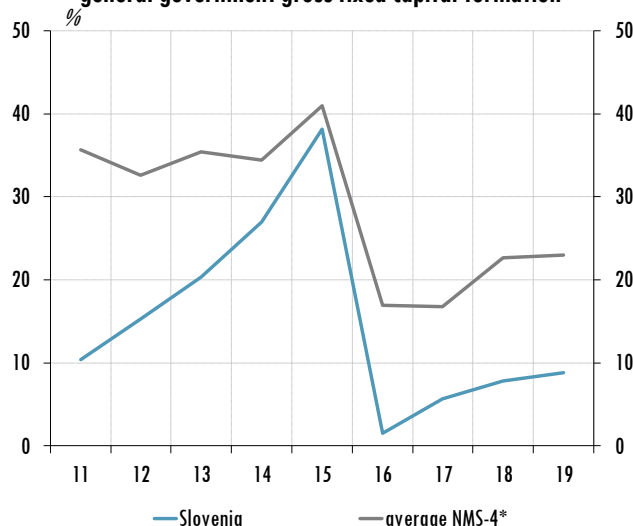
⁵ These are "capital transfers from the EU budget". The data are available at: <https://sdw.ecb.europa.eu/browse.do?node=9693771>.

Figure 1.9: General government gross fixed capital formation trends - total and excl. European investment funds



Source: Eurostat, ECB, FC calculations.

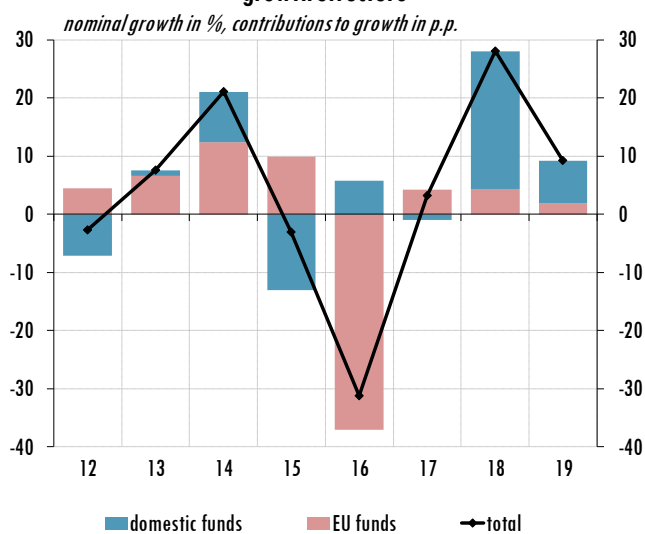
Figure 1.10: European funds share for investment in total general government gross fixed capital formation



Source: ECB, Eurostat, FC calculations. Note: *CZ, HU, PL, SK.

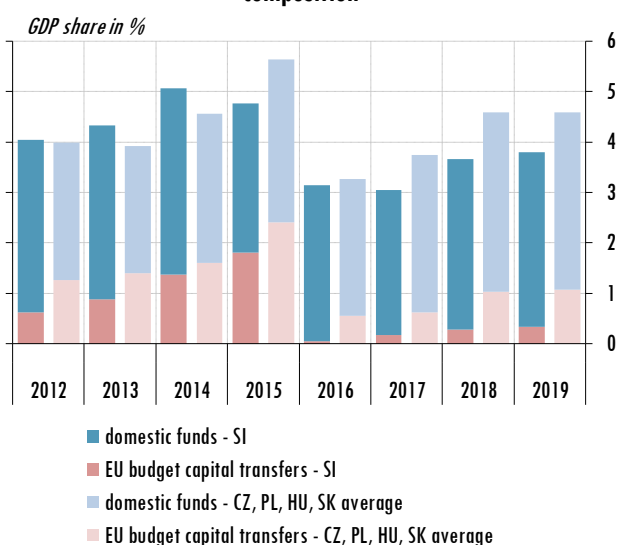
since 2004 or since the year of the country's accession to the EU, this share has accounted for about a fifth of all investment assets in the general government sector. The impact of European funds on the overall dynamic of general government investments was particularly pronounced in 2013–2015, when at the end of the previous multiannual financial framework their share in total general government investment reached almost two fifths, but in 2016 at the start of the new multiannual financial framework it more than halved. The importance of European investment funds in Slovenia is much lower than the average of the new Member States, as their share in the total funds for investments in the general government sector on average since 2004 amounted to more than a tenth or about half less than the average of the new Member States. Nevertheless, their impact on the dynamic of total investment in the general government sector was more significant than elsewhere. In particular, the impact of the complete stagnation of these funds during the transition to the new multiannual financial framework in 2016, which was the most significant among all the new Member States, was very pronounced. This

Figure 1.11: General government gross fixed capital production growth structure



Source: SURS, FC calculations.

Figure 1.12: General government gross fixed capital formation composition



Source: Eurostat, ECB, FC calculations

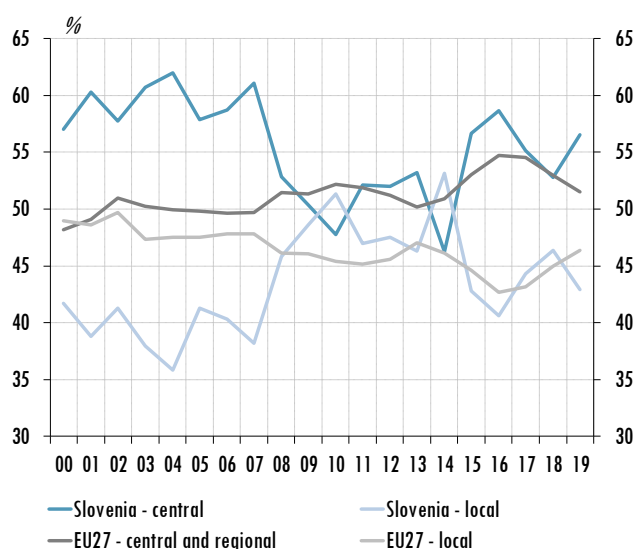
indicates a lack of consistent planning and spending of European funds, which can have significant consequences for the country's investment activity as well as for economic trends in general.

1.2. Structure of public investments

Most investments in the general government sector are realised at the level of the central government, but the share of investments at the local level is increasing. In the period preceding the global financial crisis, the ratio of investment spending was around 60% at the central government level and 40% at the local government level. From the onset of the previous crisis until 2015, the distribution was approximately even, and since then the share of funds at the central government level has increased slightly again. The share of social security fund investments is almost negligible. On average in the EU, trends are slightly different, with significant differences between countries depending on administrative system. Despite these differences, the EU has seen a slight downward trend in the share of investments at the local level over the past two decades, but in 2019 it was still higher than in Slovenia.

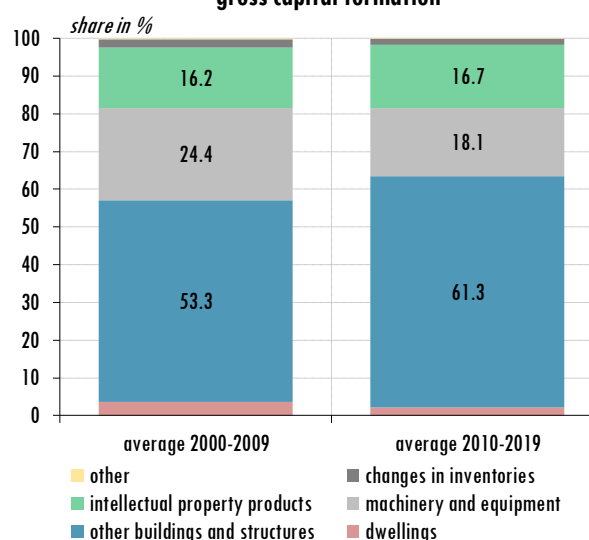
The major part of government investment is intended for other buildings and structures and is on the increase, while the share of investment in intellectual property products is less than one-fifth and does not change significantly.⁶ The share of investment funds for buildings and structures represents more than half of total funds. It has increased over the last ten years and is approaching two-thirds. During the whole period since 2000, investments in intellectual property, consisting of investments in computer software and databases and in research and development, have stagnated at around 16%. The share of investment in equipment and machinery declined from about a quarter in the previous decade to less than a fifth due to a smaller share of investment in information and communication equipment as well as other equipment and machinery. The share of investment in housing is small and has halved to 2% on average over the last decade.

Figure 1.13: Share of total general government investment



Source: Eurostat, FC calculations.

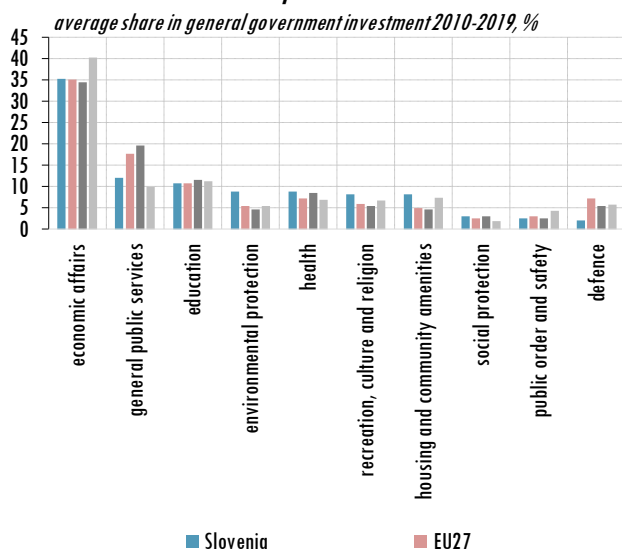
Figure 1.14: Structure of general government gross capital formation



Source: SORS, FC calculations.

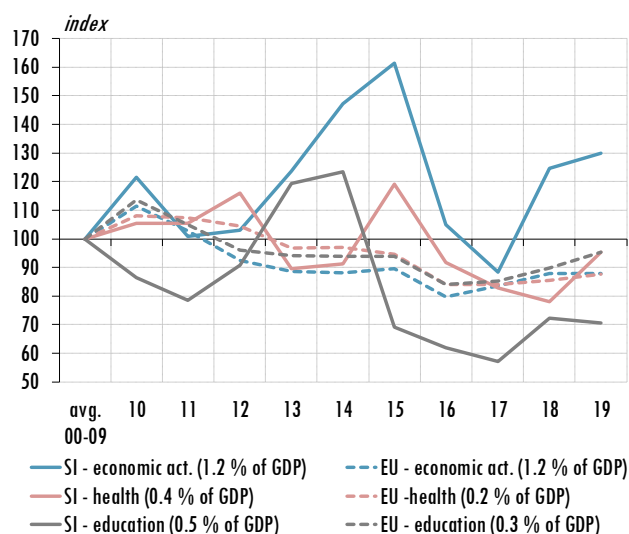
⁶ For comparison, investment in machinery and equipment represented about half of gross fixed capital formation of non-financial corporations in the 2010–2019 period, which is even a little bit more than in the 2000–2009 period. Investment in buildings and structures represented about 30 %, which is a lot less than in the previous 10 years. The share of investment in intellectual property products represented a little less than 20% of all gross fixed capital formation of non-financial corporations in the average of the 2010–2019 period. This is quite a lot more than in the previous ten years and is mainly due to the share of investment in research and development almost doubling.

Figure 1.15: Structure of general government investment by function



Source: Eurostat, FC calculations.

Figure 1.16: General government investment as share in GDP



Source: Eurostat, FC calculations. Index=100 denotes average share of investment in GDP in the 2000-2009 period. This share is presented in brackets.

According to the classification by purpose (COFOG), most of the investment funds of the general government sector in Slovenia and on average in the EU are spent on economic activities. In the 2010–2019 period, as much as a third of investment funds in Slovenia and the EU average went to economic activity,⁷ within which the predominant part was invested in transport. On average, the new Member States earmark even more government investment for economic activities (around 40%). On average, Slovenia allocated about a tenth of its investment funds to public administration, education, environmental protection, healthcare, recreation, culture and religion, as well as housing and management of the environment. Deviations from the EU average are the largest in defence investments and in public administration; in Slovenia, the average share of investments in these areas of the total investment funds of the general government sector in the 2010–2019 period was around 5 percentage points lower. On the other hand, Slovenia allocated a larger share of investment funds (around 3 percentage points) to environmental protection, healthcare, housing and environmental management, as well as recreation, culture and religion. In these areas, the share of investments in water supply and wastewater management increased in 2014 and 2015 at the end of the previous EU multiannual financial framework, while the higher average share of investments in recreation, culture and religion than in the EU is mainly a result of a significant jump in 2010 related to the completion of major sports facilities in Ljubljana.

In the last decade, compared to the period before the previous crisis, investment funds for economic activity have increased as a share of GDP, while investments in healthcare and especially education have declined. In terms of the share in GDP, general government investment in economic activity in 2019 was about a third higher than the average of the decade prior to the global financial crisis, mainly due to higher investment in transport. In our opinion, their marked fluctuations in the last ten years are mainly related to the dynamic of the use of European funds, as their share in GDP increased more significantly in 2014 and 2015. This also applies to investments in the field of environmental protection and housing and environmental management, which in 2019, as a share of GDP,

⁷ The predominant part of this is investment in transport. In addition, general economic, trade and employment-related matters, agriculture, forestry, fishing and hunting, fuel and energy extraction and distribution, mining, manufacturing and construction, communications, other activities and research and development are included in this area in the field of economic activities.

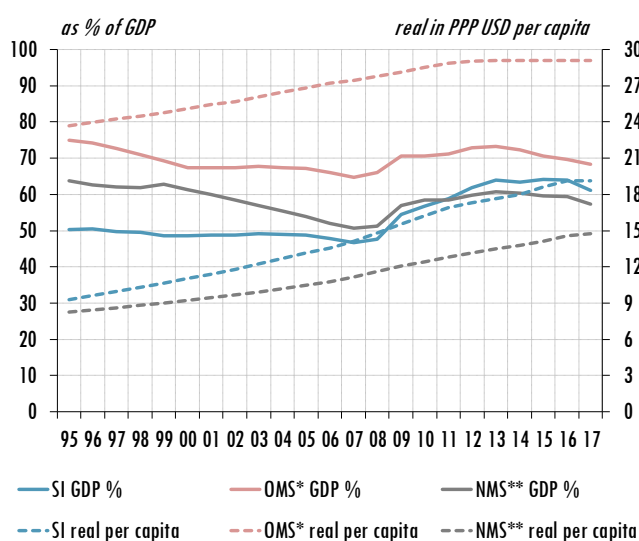
were at a lower or the same level as the average for the period 2000–2009. Investment in healthcare has remained at about the same level for most of the past decade as it was on average ten years before the global financial crisis, but has declined in recent years. In recent years, the decline in investment in education has been even greater, which as a share of GDP since 2015 is lower than the average of the period prior to the previous crisis. From a development point of view, it is also worth mentioning investments in research and development, which in the period from 2016 are at a similar level as the average of the period prior to the previous crisis and represent only about 0.3% of GDP.

1.3 Public capital stock and infrastructure indicators

A comparative overview of the volume of public capital and basic indicators of the state of infrastructure provides insight into which areas, both quantitatively and qualitatively, lag behind the most developed European countries, and as such should be the basis for drawing up investment plans. The volume of public capital and infrastructure indicators are closely linked, as an important part of public capital is infrastructure, which is usually provided by the government. Nevertheless, there are differences between the two, as the volume of public capital does not necessarily include only infrastructure, while the private sector can also provide infrastructure. Internationally comparable data on the volume of public capital are available from the IMF⁸, and basic infrastructure indicators were prepared on the basis of similar analyses⁹ using Eurostat data. Physical indicators of the economic and social infrastructure provide insight into the state and actual result of public investments, but do not provide insight into the quality of infrastructure. Thus, following the example of the IMF study (IMF, 2015), we combined these indicators with various WEF and IMD indicators, which illustrate the perception of quality by users. The disadvantage of the latter is that they are survey data influenced by the subjective perception of the participants, but are the only available source for qualitative assessment of the infrastructure and thus the efficiency of public investment.

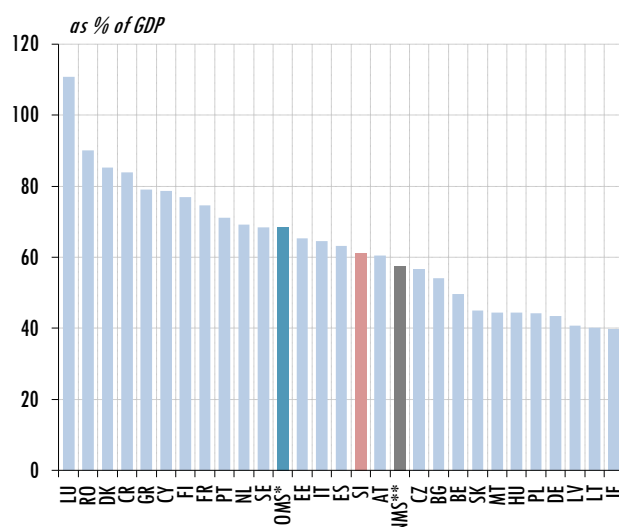
In the last two decades, Slovenia has significantly reduced the gap in the volume of public capital behind the average of the old EU Member States. The gap in both the share of GDP and the volume

Figure 1.17: Public capital stock



Source: IMF, Eurostat, FC calculations. Note: *Average of old EU member states, **Average of new EU member states excluding Slovenia.

Figure 1.18: Public capital stock (2017)



Source: IMF, Eurostat, FC calculations. Note: * average of old EU Member States, **average of new EU Member States excluding Slovenia.

⁸ IMF, 2019a with data up to and including 2017 on the basis of IMF, 2019b.

⁹ IMF, 2020b.

of public capital per capita more than halved from 2000 to 2017. According to the latest available data, in 2017 the gap in comparison with the average of the old EU Member States in terms of capital as a share of GDP was around 7%, and in real terms per capita around 5%. Despite the gap reduction, Slovenia still ranks in the bottom half of all EU Member States in both comparisons, but at the same time higher than most of the new Member States. Data on the volume of public capital from the point of view of catching-up suggest the need for further faster growth of general government investment than the average of the old Member States.

An overview of the state of the infrastructure was made on the basis of quantitative and qualitative indicators and their connections. The review of infrastructure indicators in the field of economic infrastructure is focused on transport, energy and digitisation, and in the field of social infrastructure on health, long-term care and education. The set of quantitative indicators was based on the IMF study (IMF, 2020b), while the qualitative set was based on available and, as far as possible, related WEF and IMD indicators enabling both international and temporal comparison. The combination of quantitative and qualitative indicators is roughly based on the orientation used by the IMF in the development of the public investment efficiency indicator, the calculation of which is unfortunately not available for Slovenia.¹⁰

As a rule, the review of basic infrastructure indicators shows Slovenia lagging relatively less behind the old Member States in quantitative indicators of economic and social infrastructure than in qualitative indicators with significant differences in individual areas. In terms of transport infrastructure, Slovenia has a more extensive infrastructure in the field of road and rail transport than the average of the old EU Member States¹¹. According to the quality assessment, we lag behind the average of the old Member States, which is especially true for the railway infrastructure, where we also lag behind the average of the new members. The latter also applies to air transport infrastructure, where we rank at the tail end of all EU Member States in terms of both quantitative and qualitative indicators. The overview of energy infrastructure is based on the quantity of electricity produced per capita, where we rank in the upper half of the EU Member States and lag behind the average of the old Member States by about a quarter. Slovenia also ranks in the middle of all Member States in the production of electricity from renewable sources, but the lag behind the average of the old Member States is larger than in total production and is still increasing despite the increase in production over the last decade. The lag is smaller mainly due to the relatively high share of hydropower production, while in the old Member States the production from solar and wind energy is on the increase. Unlike transport infrastructure, the quality assessment of electricity supply has improved over the last decade and is higher than the average of the old EU Member States. Regarding digitisation, in terms of the basic indicator, the share of the population with internet access, after a significant increase over the last fifteen years, Slovenia ranks in the middle of all Member States, but is still slightly behind the average of the old Member States. The movement of communication technology adequacy assessment is similar. However, the gap in the use of the internet is larger, where the share of individuals who do business with the state via the internet has stagnated in recent years, and we are in the bottom half of the Member States with a significant lag, especially behind the countries with the highest share. In the area of healthcare and long-term care, Slovenia exceeds the average of the old Member States in terms of quantitative indicators, such as the number of hospital beds per capita and the number of beds in old people's homes with respect to the elderly population, but lags far behind in terms of

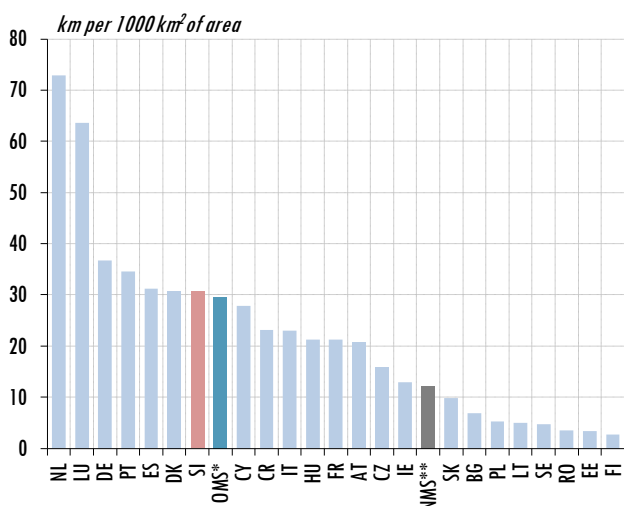
¹⁰ For more on the indicator see IMF, 2015.

¹¹ The extent of physical transport infrastructure depends to a large extent on the geographical features of each country. The need for transport infrastructure depends mainly on population density and international transport connections.

qualitative indicators such as key technological equipment. This is typical of many new Member States (IMF, 2020b). In the field of education regarding basic quantitative indicators, such as the number of professional staff in secondary and tertiary education, Slovenia lags behind the average of the old EU Member States and is ranked in the bottom half of all countries. The situation is similar with the qualitative indicator regarding availability of qualified engineers, where there has been no progress in the last decade, while the opposite is true for the availability assessment of staff with digital and technological skills, where Slovenia ranks close to the average of the EU Member States.

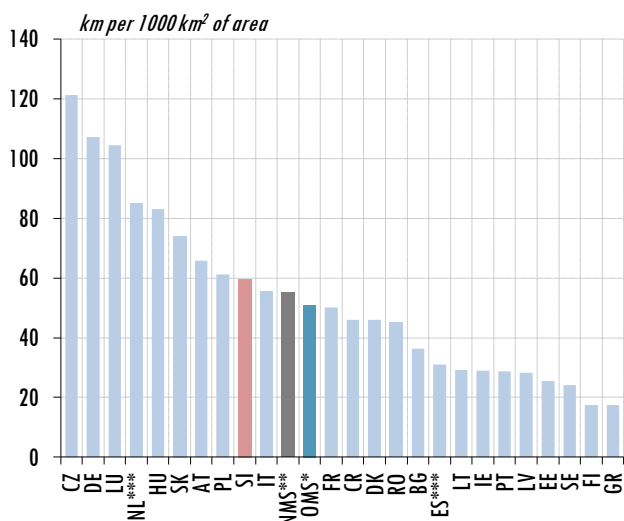
The structure of investments and trends over recent years indicate unfavourable trends in areas that have been identified as a priority within the EU Recovery and Resilience Fund. The allocation of funds in the National Recovery and Resilience plans is to some extent determined, so that 37% of the funds must be earmarked for investment and reform in the areas of climate change mitigation and 20% for digital transformation. In Slovenia, the poor quality of the railway infrastructure stands out in the field of sustainable mobility, while in the field of energy this applies to low production from renewable energy sources, where many old Member States have significantly increased production over the

Figure 1.19: Motorways (2018)



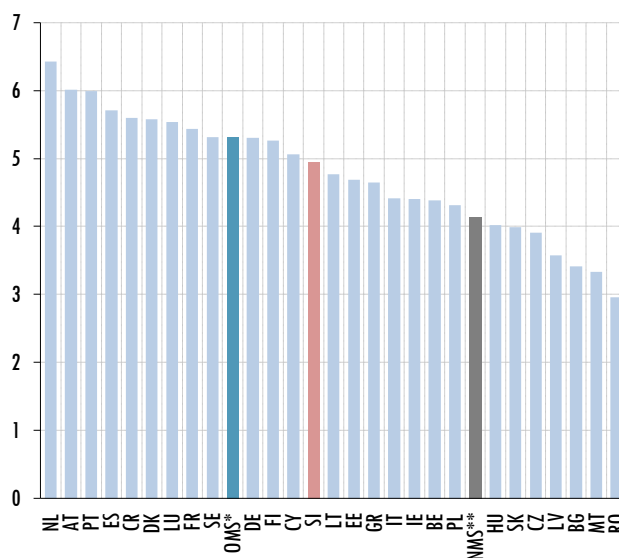
Source: Eurostat, FC calculations. Note: *average of old EU member states with available data, **average of new EU member states (excl. Slovenia) with available data.

Figure 1.21: Railway transport - length of lines (2018)



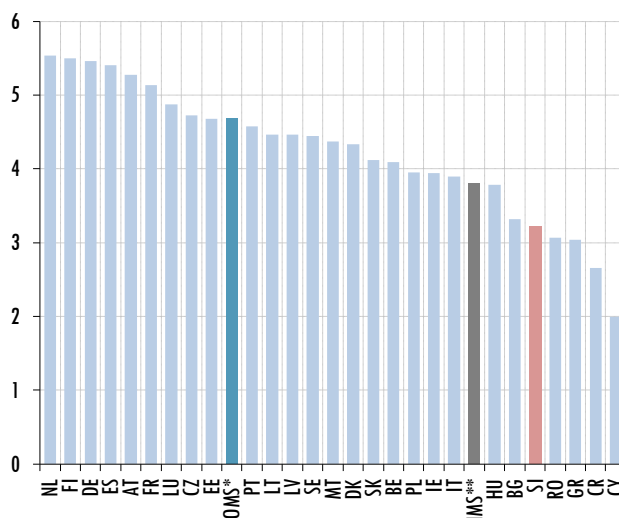
Source: Eurostat, FC calculations. Notes: *average of old EU member states with available data, **average of new EU member states (excl. Slovenia) with available data, *** data for 2017.

Figure 1.20: WEF quality of roads (2019)



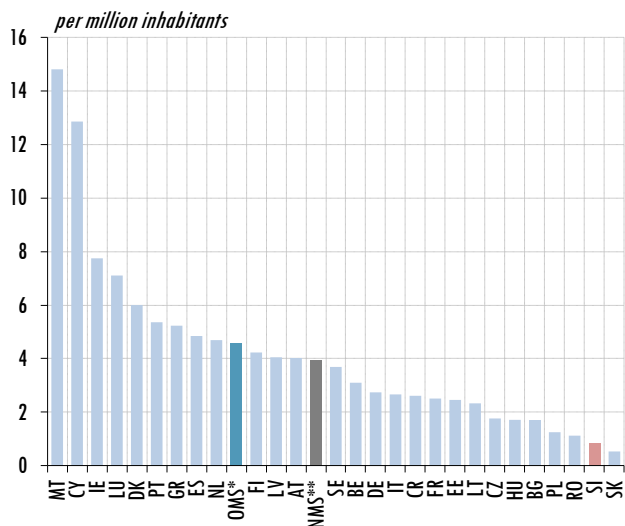
Source: WEF, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.22: WEF quality of railroad infrastructure (2019)



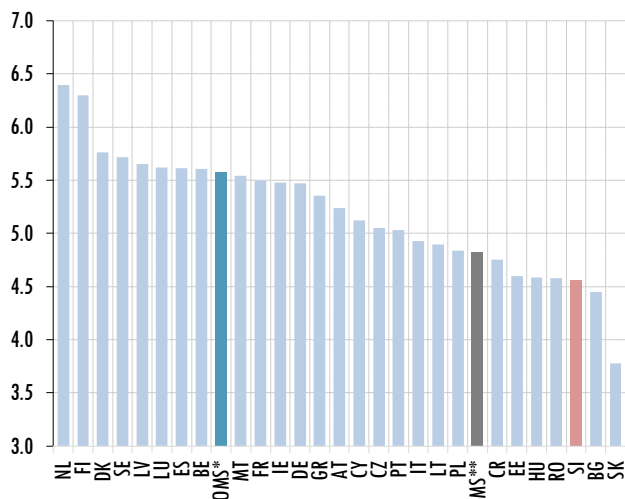
Source: WEF, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.23: Air transport - passengers carried (2019)



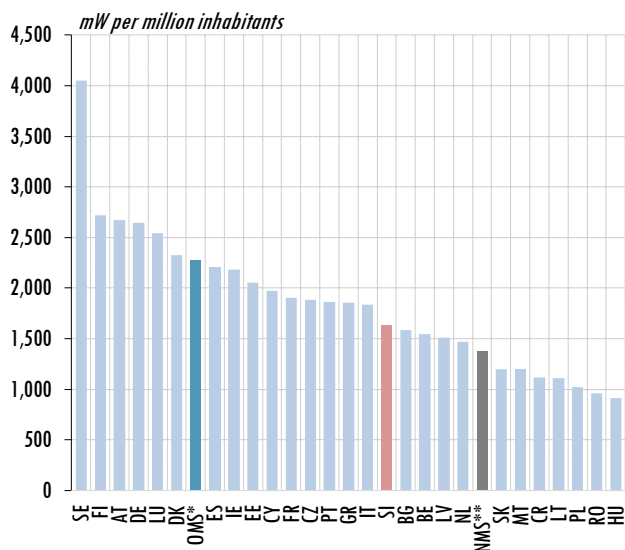
Source: Eurostat, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.24: WEF quality of air transport infrastructure (2019)



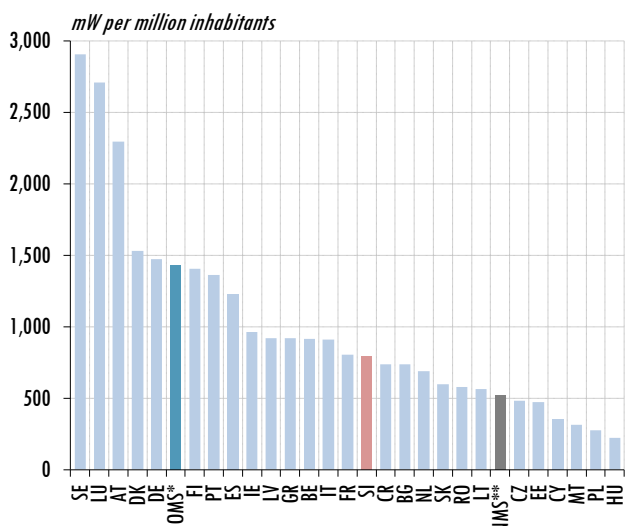
Source: WEF, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.25: Electricity production (2019)



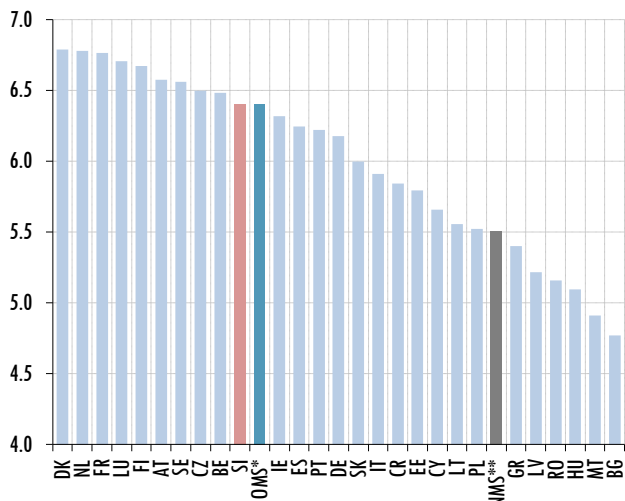
Source: Eurostat, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.26: Electricity production from renewables (2019)



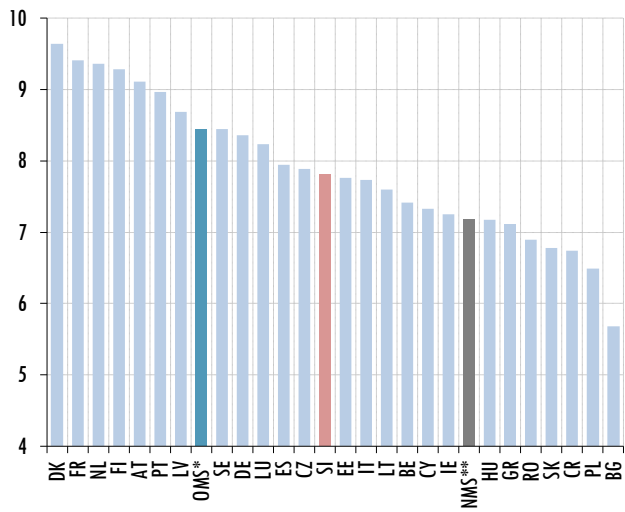
Source: Eurostat, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.27: WEF quality of electricity supply (2017)



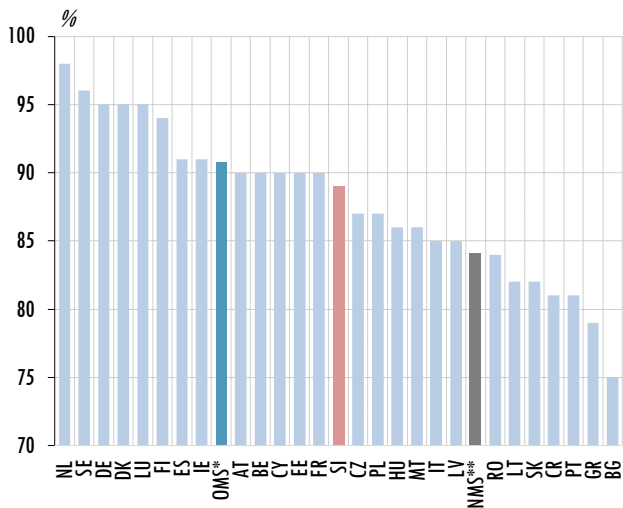
Source: WEF, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.28: IMD quality of energy infrastructure (2020)



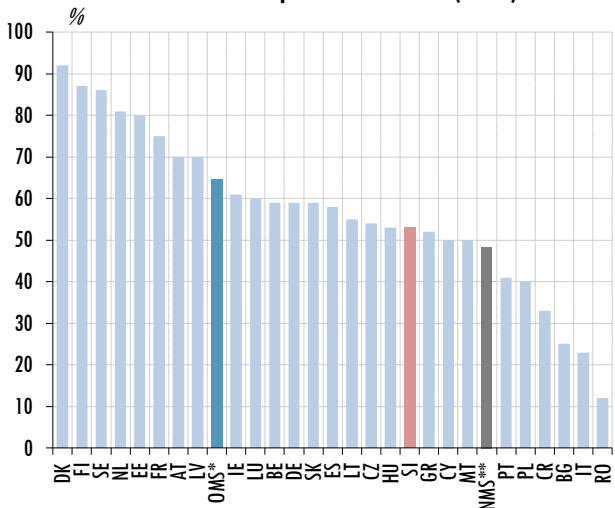
Source: IMD, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia) with available data.

Figure 1.29: Percentage of households with internet access (2019)



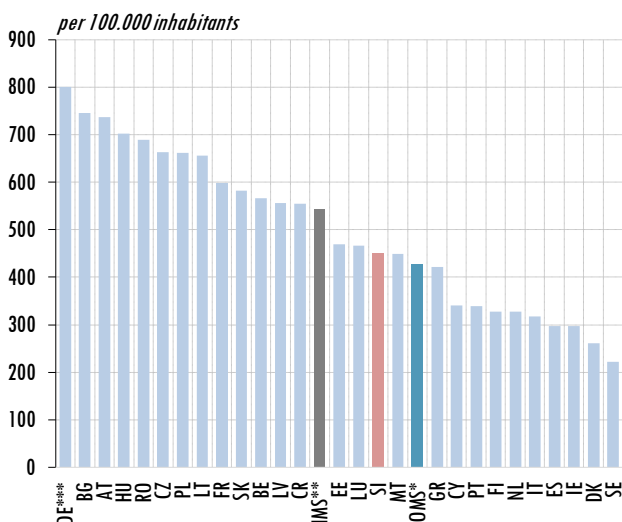
Source: Eurostat, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.31: Percentage of individuals that use internet for interaction with public authorities (2019)



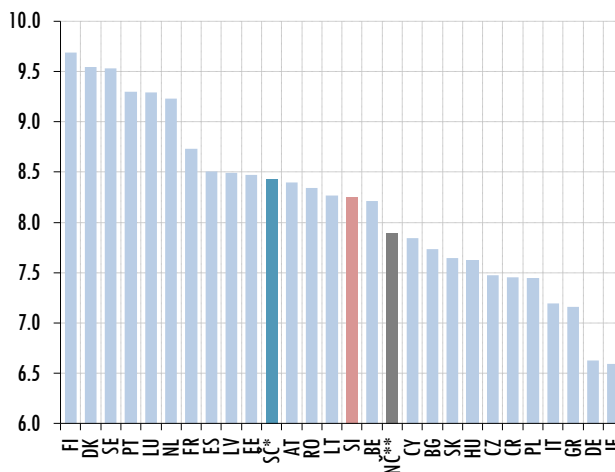
Source: Eurostat, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.33: Hospital beds (2018)



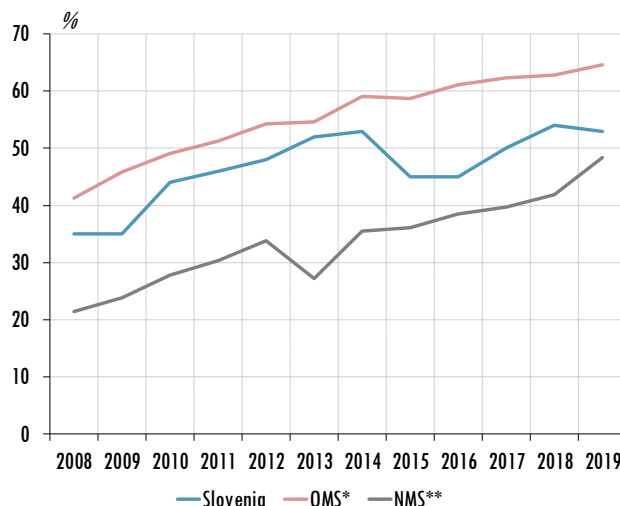
Source: Eurostat, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia), *** data for 2017.

Figure 1.30: IMD communications technology meets business requirements (2020)



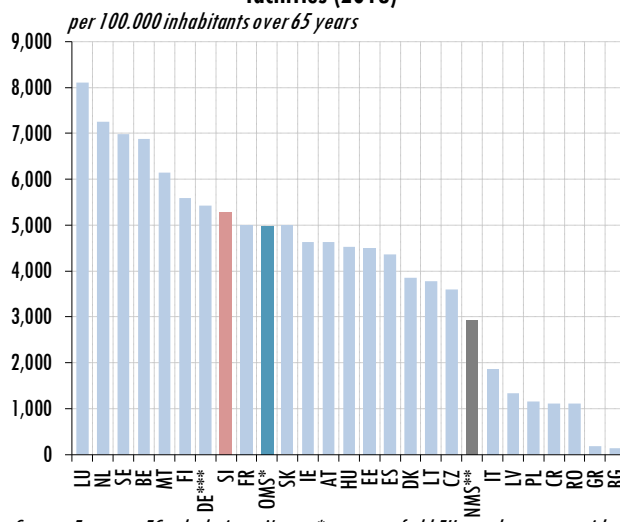
Source: IMD, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia) with available data.

Figure 1.32: Percentage of individuals that use internet for interaction with public authorities



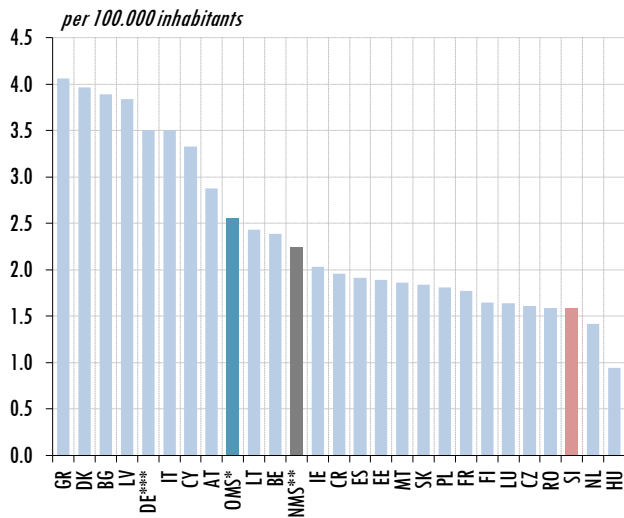
Source: Eurostat, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia).

Figure 1.34: Long-term care beds in nursing and residential care facilities (2018)



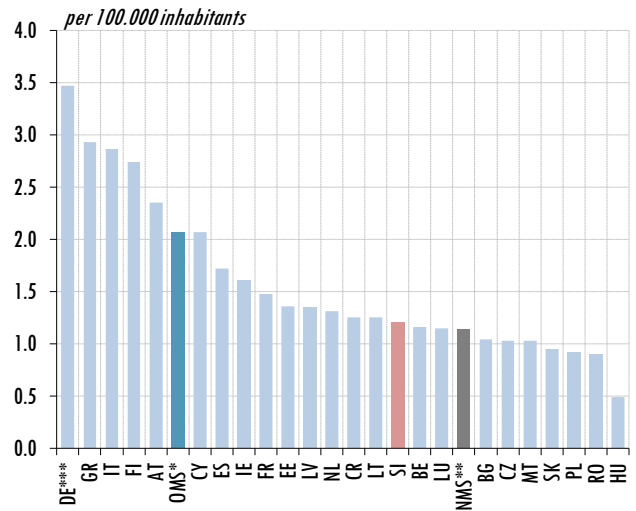
Source: Eurostat, FC calculations. Notes: *average of old EU member states with available data, **average of new EU member states (excl. Slovenia) with available data, *** data for 2017.

Figure 1.35: CT scanners (2018)



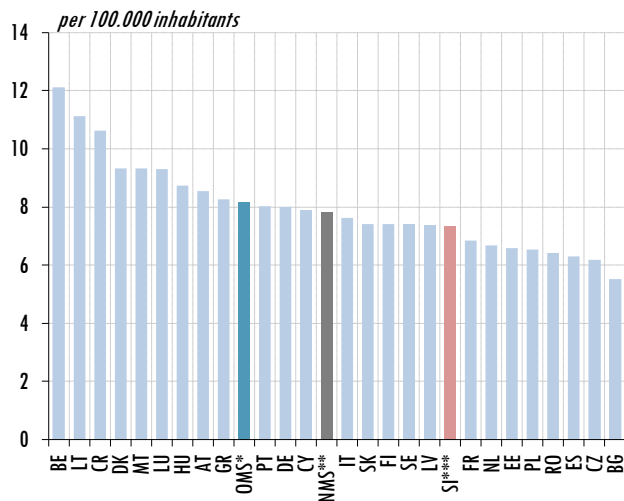
Source: Eurostat, FC calculations. Notes: *average of old EU member states with available data, **average of new EU member states (excl. Slovenia), *** data for 2017.

Figure 1.36: Magnetic resonance imaging units (2018)



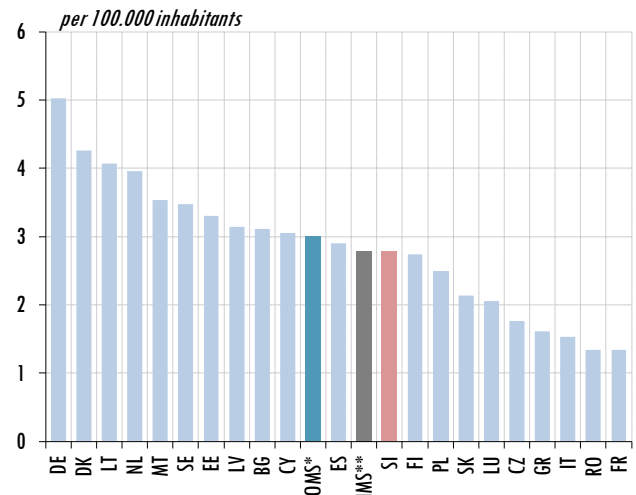
Source: Eurostat, FC calculations. Notes: *average of old EU member states with available data, **average of new EU member states (excl. Slovenia), *** data for 2017.

Figure 1.37: Classroom teachers and academic staff in secondary education (2018)



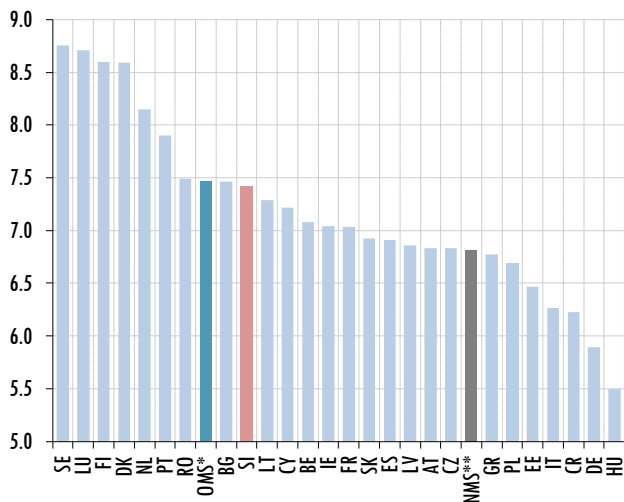
Source: Eurostat, FC calculations. Notes: *average of old EU member states with available data, **average of new EU member states (excl. Slovenia), *** data for 2017.

Figure 1.38: Classroom teachers and academic staff in tertiary education (2018)



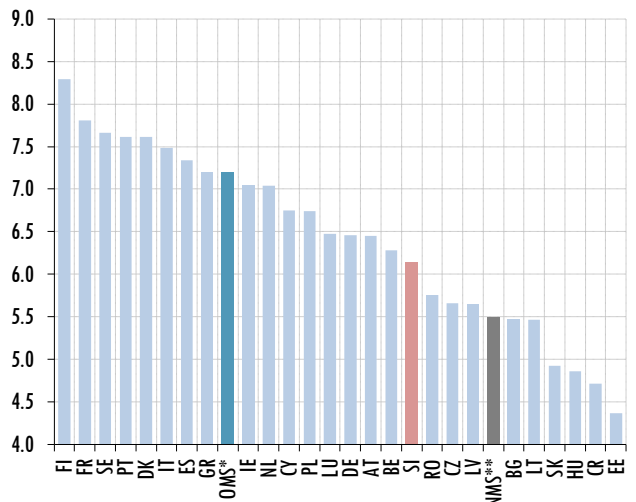
Source: Eurostat, FC calculations. Notes: *average of old EU member states with available data, **average of new EU member states (excl. Slovenia) with available data.

Figure 1.39: IMD digital/technological skills are readily available (2020)



Source: IMD, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia) with available data.

Figure 1.40: IMD qualified engineers are available (2020)



Source: IMD, FC calculations. Notes: *average of old EU member states, **average of new EU member states (excl. Slovenia) with available data.

past decade. The share of investment in research and development has been stagnating at a low level for a long time, while investment in education as a share of GDP has been lower since 2015 than the average of the decade prior to the global financial crisis. In recent years, investments in healthcare have also dropped below this level. In the field of environmental protection and regulation, significant fluctuations in investment funds can be detected, which illustrates the absence of consistent plans and the impact of the dynamics of the use of European funds. Their share in GDP in recent years has not reached even 0.5% of GDP, while on average in 2014–2015 it amounted to 1.2% of GDP.

2. Public investment challenges

Public investment is expected to make an important contribution to the economic recovery after the epidemic crisis and to addressing development challenges, where their quality is crucial. According to an IMF assessment (IMF, 2020a), public investment has greater short-term multiplier effects than government spending, tax cuts and transfers. The creation of the EU's Next Generation Fund, mainly made up of the Recovery and Resilience Mechanism, is a clear signal that public investment in the EU should play an important role in ensuring economic recovery from the epidemic crisis and addressing key development challenges such as digitalisation, i.e. green transition and increasing the resilience of key social subsystems, such as health. The public finance plans available so far indicate that public investment will play a key role in ensuring recovery in Slovenia as well, or to an even greater extent than in the EU average. According to the latest Draft Budget Plan from October last year, the share of general government investment in GDP is expected to increase to 6.2% this year, the highest level so far and the second largest increase compared to the pre-crisis year 2019 among all euro area Member States.¹² Higher level public investment in the coming years could also contribute to accelerating the process of catching up. According to IMF estimates (IMF, 2020b), EU Member States from Central and Eastern Europe should, on average, invest between 3.5–6% of GDP per year in transport, energy and telecommunications over the next ten years to close the infrastructure gap in these areas with respect to old Member States. When drawing up public investment plans, the IMF (IMF, 2020c) warns that public finance incentives are necessary in the current crisis, but given the limited fiscal space, their quality is crucial due to the significantly increased level of public debt, as they will have long-term socio-economic consequences.

The actual multiplier effects of public investments are uncertain and depend on many factors. The size of multiplier effects of public investments depend on the macroeconomic situation and the state of the economic cycle at the time of their increase, their purpose and efficiency, the source of their financing and the level of development of the country. The IMF (IMF, 2020c) estimates that a public investment of 1% of GDP in developed economies increases GDP by 0.55% in the first year. An analysis for the new EU Member States from Central and Eastern Europe, which are also members of the euro area,¹³ estimated this effect at 0.40–0.48% in the first year and at 3.19–3.59% after ten years (IMF, 2020b). The difference in the estimated impact is due to different scenarios regarding the source of financing the increase in investment. The calculation is based on three options, i.e. financing by increasing debt, raising taxes, or limiting the growth of other expenditures, including a scenario of financing through debt and increasing efficiency. The medium-term impact on economic growth is highest in both debt growth scenarios, but does not deviate significantly from the other two financing modalities, while the long-term impact on the balance and especially on net public debt growth is much smaller in the

¹² In recent years, investment forecasts in Slovenia have been the most overestimated of all the main categories of expenditure. For more see The Fiscal Council (2020a).

¹³ In addition to Slovenia, also Slovakia, Estonia, Latvia and Lithuania.

Table 2.1: Estimates of multiplier effects of public investments in new EU Member States which are also members of the euro area

difference in p.p. or p.p. of GDP	t				t+5				t+10			
	higher debt	higher taxes	holding back growth of other expenditure	higher debt&higher effectiveness	higher debt	higher taxes	holding back growth of other expenditure	higher debt&higher effectiveness	higher debt	higher taxes	holding back growth of other expenditure	higher debt&higher effectiveness
real GDP	0.46	0.40	0.41	0.48	1.82	1.62	1.74	2.00	3.22	3.19	3.45	3.59
real investment	0.69	0.46	0.42	0.72	1.87	1.69	1.89	2.06	2.63	2.71	2.82	2.93
real consumption	0.49	0.19	0.42	0.54	1.03	-0.27	0.94	1.15	1.54	1.27	1.50	1.75
primary balance	-0.81	-0.64	-0.72	-0.80	-0.66	0.30	0.09	-0.63	0.33	-0.04	0.09	0.32
net public debt	0.61	0.47	0.55	0.60	4.16	0.50	1.33	4.00	6.12	-1.37	0.60	5.76

Source: IMF.

scenarios of financing public investments by raising taxes or limiting the growth of other expenditures (see Figure 2.1). The multiplier effects also depend on the macroeconomic situation. In general, the effects are expected to be greater during recessions and in countries with fixed exchange rate or where the central bank does not have room for manoeuvre to further reduce interest rates (Ilzetzki, 2013; Chodorow-Reich, 2019). The effects are expected to be greater at a time of increased uncertainty limiting the private sector investment. The IMF (IMF, 2020c) estimates them to be 0.65% in the first year in such a situation, the effect is expected to increase by 2.7% in the second year, while it is expected to be 0.70% in the second year under normal circumstances.

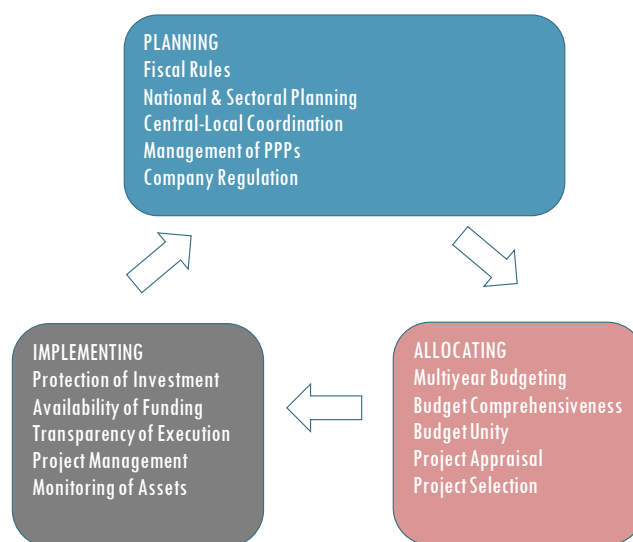
An important factor in the multiplier effects of public investments is their efficiency and the appropriateness of their orientation. The multiplier effects may be significantly reduced with a rapid and marked increase in public investment, as in such situations the risk of corruption increases, among other things, and investment costs may increase by between 10–15% (IMF, 2020c). At the same time, projects implemented at a time of rapid increase in public investment are less successful in achieving their goals (Isham, 1999; Presbitero, 2016). Estimates of multiplier effects thus largely depend on efficiency

Figure 2.1: Relationship between quality of infrastructure and volume of general government investment



Source: Eurostat, WEF.

Figure 2.2: The PIMA framework

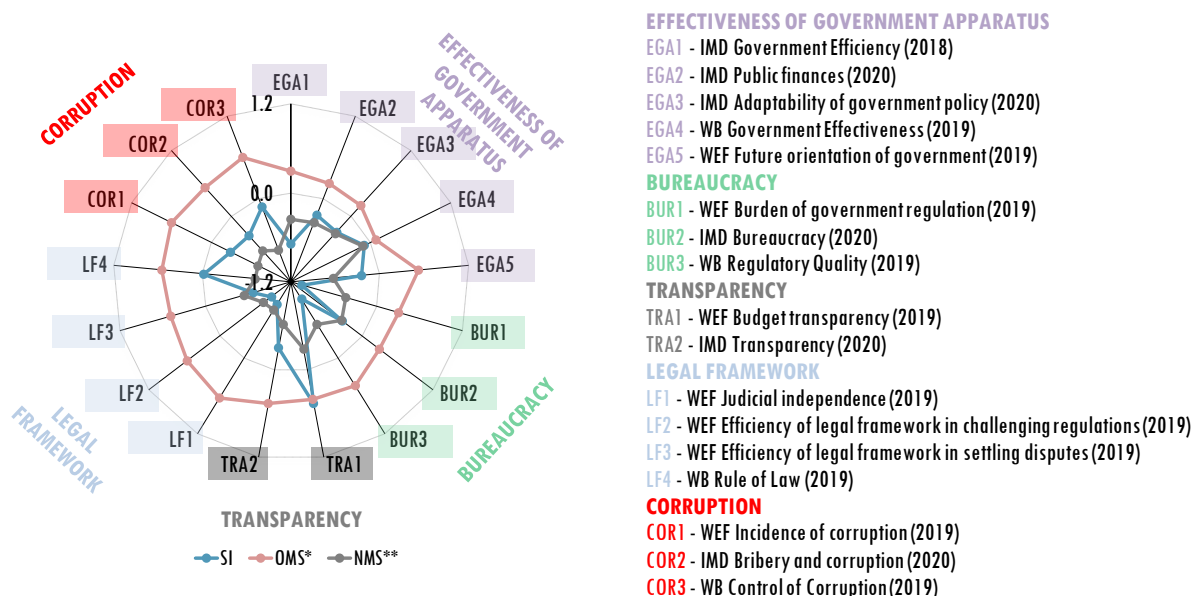


Source: IMF.

in the entire planning and implementation process. As a rule, various studies find that about a third of funds spent on public infrastructure are lost due to inefficiency (IMF, 2015; Baum, 2020; Schwartz, 2020). The multiplier effects of public investment in developed countries, which record a high value on the WEF index of government spending efficiency, are expected to be four times greater than in countries with the worst value of the said index (Abiad, 2016). The above study (IMF, 2020b) also finds, with a different efficiency criterion, that improved efficiency increases the multiplier effects of public investment in the new EU Member States that are members of the euro area.

The economic and social impact of public investments depends crucially on their effectiveness (IMF, 2015). The link between improving the volume and quality of infrastructure and public investment is relatively weak (see Figure 2.1), which indicates an important role of public investment inefficiency. With a view to improving the efficiency of public investment, the IMF has developed a comprehensive Public Investment Management Assessment (PIMA)¹⁴ framework that assesses fifteen key institutions in planning, allocating funds and implementing public investment (see Figure 2.2). By the end of 2019, estimates for Estonia, Kosovo, Slovakia and Ukraine had been prepared in the wider region, while the estimates for Albania, Bosnia and Herzegovina, Bulgaria, Moldova and Serbia had been made and not yet published. In particular, two findings are crucial in the assessments made: there are significant differences between the formal characteristics of PIMA institutions and their actual effectiveness, and there is a significant lag in efficiency behind the most developed countries in all fifteen areas.¹⁵ Also important for Slovenia are the findings of PIMA, implemented both in developed countries and in countries in the wider region, that it would be necessary to strengthen the medium-term fiscal framework, which would contribute to improving investment planning and planning coherence between different levels of government, and better coordinate the national and sectoral development strategies and integrate them more fully into the budget planning process (IMF, 2015). Unfortunately, the PIMA assessment for Slovenia is not available, although it is supposedly being prepared.¹⁶ Carrying out such an assessment and especially the implementation of its findings could significantly contribute to

Figure 2.3: Quality of institutional framework***



Source: WB, WEF, IMD, FC calculations. Notes: *old EU member states, **new EU member states excl SI, MT, CY, *** standardised indicator values EU-27=0.

¹⁴ More information available at: <https://infrastructuregovern.imf.org/content/PIMA/Home/PimaTool/What-is-PIMA.html>.

¹⁵ https://infrastructuregovern.imf.org/content/PIMA/Home/Region-and-Country-Information/Regions/Europe.html#tab_2.

¹⁶ <https://infrastructuregovern.imf.org/content/PIMA/Home/Region-and-Country-Information/Countries/Slovenia.html>.

the improvement of the institutional framework for planning and implementation of public investments and thus to better efficiency and a greater multiplier effect of the planned accelerated investment activity in the coming years. It would also be advisable to systematically plan investments to have in stock for good times and their accelerated implementation in less favourable times.

A review of the available quality indicators of the institutional framework shows that Slovenia lags far behind the average of the old EU Member States in all areas, which may affect the efficiency of public investment. Given the unavailability of the PIMA assessment for Slovenia, we used the latest available WEF, IMD and WB indicators to assess the effectiveness of the institutional framework. These indicators cover a broader institutional framework and not only institutions that influence the effectiveness of public investment, while one of their weaknesses is the subjective nature of the responses, as they are mostly surveys.¹⁷ Nevertheless, we estimate that this type of review also illustrates certain characteristics of the institutional framework, which also affect the efficiency of the public investment. The available indicators were divided into five areas, namely the efficiency of the state apparatus, bureaucracy, transparency, justice and corruption. The key finding is that Slovenia lags behind the average of the old EU Member States in practically all areas. According to most indicators, it ranks around the average of the new EU Member States, with the exception of the area of corruption, which is not perceived in Slovenia as such a big problem as in the average of the new Member States. According to some indicators in the areas of justice, bureaucracy and the state apparatus efficiency, Slovenia also lags behind the new Member States.

The quality of the institutional framework is related to the effectiveness of public investment, and according to the latter, Slovenia ranks around the average of the EU Member States. The impact of public investment can be measured directly through the impact of the quality of the institutions covered by the PIMA framework, on the quality of infrastructure, or indirectly through performance indicators in each of the intermediate stages of the investment process (IMF, 2015). Based on the IMF study (IMF, 2015), we considered six indirect indicators, two of which respectively relate to the planning phase, resource allocation and implementation. The planning phase refers to the general government investment level indicator, measured as its share in total general government expenditure, and the fluctuation indicator, measured as the standard deviation of general government investment growth. The funds allocation stage refers to the indicator of stability of the sectoral allocation of investment funds of the general government sector, measured as the average absolute year-on-year change in the distribution of investment funds between nine dedicated areas according to COFOG classification (excluding defence) and an indicator of the orientation of investment funds towards growth, measured as the share of investment funds for the purpose of economic activity according to the COFOG classifi-

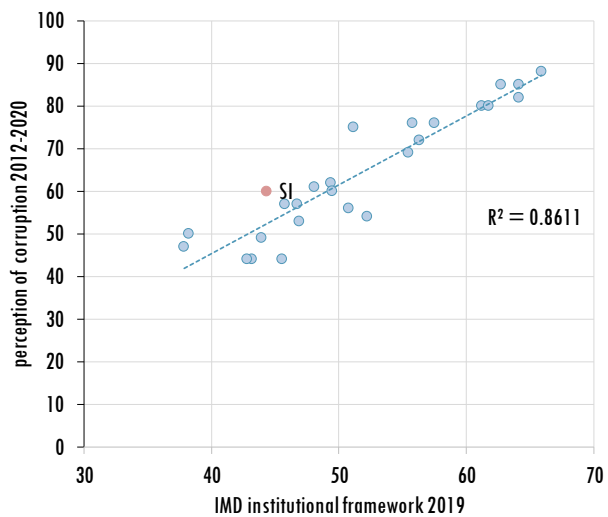
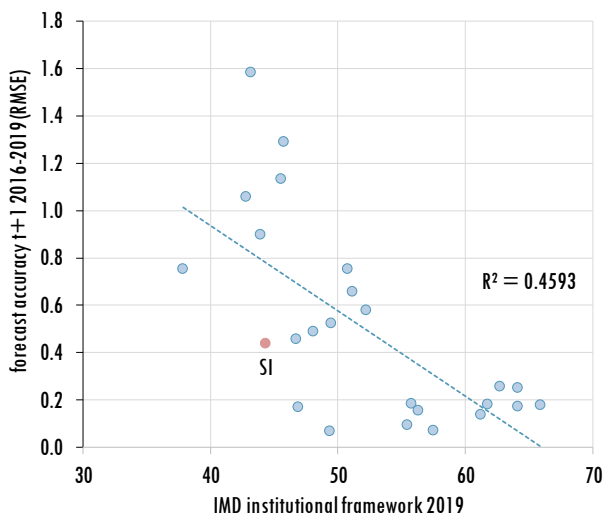
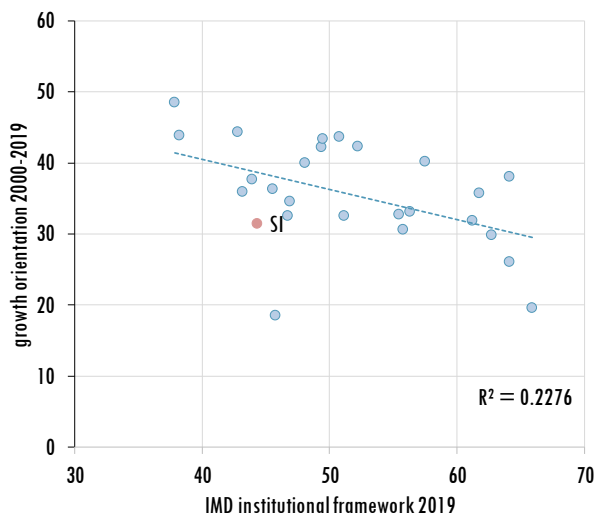
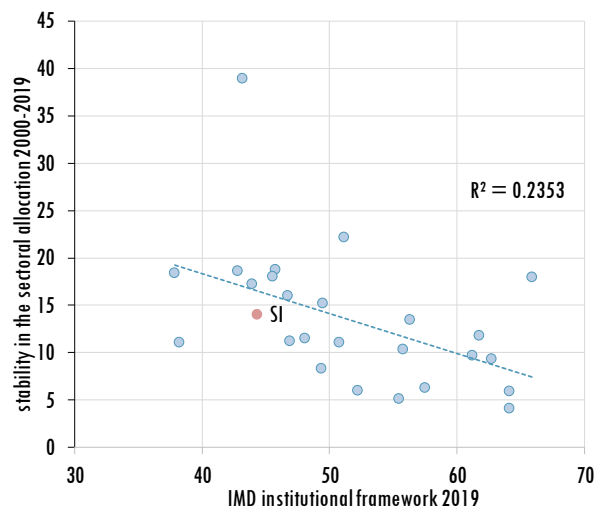
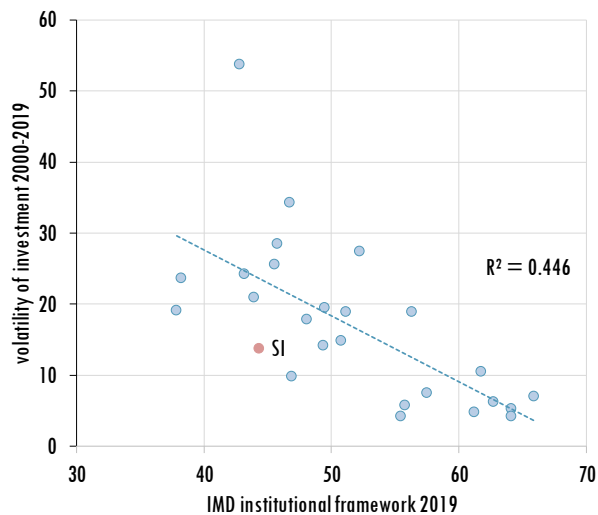
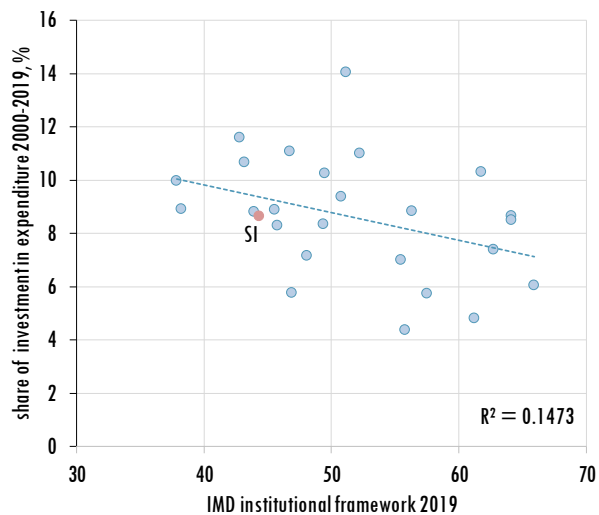
Table 2.2: Indicators of the effectiveness of public investment

		2000-2009	2010-2019
		SI rank in EU27	SI rank in EU27
planning	Share of general government expenditure	15	12
	Volatility	9	14
allocating	Stability in the sectoral allocation	13	20
	Growth orientation	23	14
implementing	Credibility of planning ¹	n.p.	13
	Integrity of investment process ²	n.p.	15

Source: Eurostat, EC, Transparency International, FC calculations. Notes: ¹2016-2019 period. ²2012-2020 period.

¹⁷ PIMA is also largely based on qualitative indicators. For example, each indicator can receive one of three ratings: not consistent, partially consistent, fully consistent.

Figure 2.4: Effect of public investment and the quality of institutional framework



Source: EC, Eurostat, IMD, Transparency International, FC calculations.

cation in the total investment funds of the general government sector. The implementation stage is related to the indicator of the credibility of the implementation of investment plans, measured as the ratio between planned and actually implemented investment funds, and the indicator of the integrity of the public investment process, measured by the corruption perception index. Slovenia was ranked among the EU Member States in terms of the value of each of the six indicators, i.e. the decade average prior to the global financial crisis and the ten-year average up to the current epidemiological crisis. The key finding is that, according to all six indicators, Slovenia ranks in the middle of the Member States without any visible shifts between the previous and the last decade. In addition to assessing the impact of public investment in individual countries, a certain link between the quality of the institutional framework and this impact can also be seen. Since PIMA assessments are not available for all Member States, we used the IMD quality indicator of the institutional framework.¹⁸ In the planning phase, in countries with better assessed quality of the institutional framework, government investment fluctuations are generally smaller. The share of investment expenditure is also lower, which may indicate a lower need for investment funds with a higher quality of institutions, or this need is lower due to a higher level of development. In countries with a higher quality of institutions, in the stage of allocation of funds, greater stability of the allocation of investment funds can be observed, while in the implementation stage there are smaller deviations of actual investments from those planned and the perception of corruption.

¹⁸ The value of R^2 is relatively low for most indicators and, as a rule, lower than when compared to the quality assessment of the institutional framework according to PIMA.

Literature

Abiad, Furceri, and Topalova (2016). The macroeconomic effects of public investment: Evidence from advanced economies. *Journal of Macroeconomics*, Volume 50, Issue C.

Baum, Mogues, and Verdier (2020). Getting the Most from Public Investment. September. IMF – International Monetary Fund. Washington, DC

Chodorow-Reich (2019). Geographic Cross-Sectional Fiscal Spending Multipliers: What Have We Learned? May. *American Economic Journal: Economic Policy*, Volume 11, No. 2.

Darvas, Martin, Ragot (2018) European fiscal rules require a major overhaul. October. Policy Contribution, Issue No. 18. Available at https://www.bruegel.org/wp-content/uploads/2018/10/PC-18_2018.pdf.

ECB (2016). Public Investment in Europe. *Monthly Bulletin*, Issue 2/2016. European Central Bank. Frankfurt.

EFB (2019). EFB Annual report 2019. October. European Fiscal Board. Brussels.

Ilzetzki, Mendoza, and Végh (2013). How big (small?) are fiscal multipliers? March. *Journal of Monetary Economics*, Volume 60, Issue 2.

IMD World Competitiveness. <https://worldcompetitiveness.imd.org/>

Fiscal Council (2020a). An ex post evaluation of forecasts of macroeconomic and fiscal aggregates in the reference period 2016–2019. August. http://www.fs-rs.si/wp-content/uploads/2020/08/Ex_post_evaluation_August_2020.pdf

Fiscal Council (2020b). Assessment of budgetary documents for 2021 and 2022. October. <http://www.fs-rs.si/wp-content/uploads/2020/10/Assessment.pdf>

IMF (2015). Making Public Investment More Efficient. June. International Monetary Fund. Washington D.C.

IMF (2019a). Investment and Capital Stock Dataset 1960–2017. August. International Monetary Fund. Washington D.C. IMF (2019b). Manual Estimating Public, Private, and PPP Capital Stocks. August. Available at: <https://www.imf.org/external/np/fad/publicinvestment/data/info122216.pdf>.

IMF (2020a). IMF World Economic Outlook. April. International Monetary Fund. Washington D.C.

IMF (2020b). Infrastructure in Central, Eastern, and Southeastern Europe: Benchmarking, Macroeconomic Impact, and Policy Issues. September. International Monetary Fund. Washington D.C.

IMF (2020c). IMF Fiscal Monitor. October. International Monetary Fund. Washington D.C.

Isham and Kaufmann (1999). The Forgotten Rationale for Policy Reform: The Productivity of Investment Projects. February. *The Quarterly Journal of Economics*, Volume 114, Issue 1.

Draft budgetary plans for 2021 of euro area Member States, available at:

https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/stability-and-growth-pact/annual-draft-budgetary-plans-dbps-euro-area-countries/draft-budgetary-plans-2021_en

Presbitero (2016). Too much and too fast? Public investment scaling-up and absorptive capacity. May. *Journal of Development Economics*, Volume 120.

Stability and Convergence Programmes of individual Member States, available at:

https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/stability-and-growth-pact/stability-and-convergence-programmes_en

Schwartz, Fouad, Hansen and Verdier (2020). Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment. September. International Monetary Fund. Washington D.C.

Transparency International Corruption Perceptions Index <https://www.transparency.org/en/cpi/2020/index/nzl>

WEF Global Competitiveness Reports <https://www.weforum.org/reports/>

World bank Worldwide Governance Indicators <https://info.worldbank.org/governance/wgi/>