

# How concerning are the growing twin deficits in Uzbekistan?

## Analysis and recommendations

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**UZBEKISTAN**

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## Executive summary

In this policy paper, we examine theoretically and empirically the growing twin deficits in Uzbekistan— the current account deficit and the fiscal deficit—amid the country’s economic reforms initiated in 2016. These reforms, aimed at transforming Uzbekistan into a market economy, have led to increased imports, government investments, and public spending, resulting in growing public and external deficits.

The current account deficit, standing at 7.7% of GDP in 2023, has been driven largely by trade imbalances, as rising imports outpaced export growth. This deficit has been financed through foreign investments, mainly loans, and also direct investments. The fiscal deficit, at 5.5% of GDP in 2023, arose primarily due to increased public expenditures, including energy subsidies and social spending, which grew faster than revenues.

In order to investigate the exact relationship between these two deficits, this paper applies modern econometric analysis. Our results indicate that the fiscal deficit is driving the current account deficit to a significant degree, suggesting that reducing the fiscal deficit could help improving the current account balance. This is in accordance with the original “twin deficits” view that the fiscal deficit ultimately causes the current account deficit. We did not find evidence for competing hypotheses in our empirical work.

How concerning are these growing deficits for policymakers? Despite their rise, our analysis concludes that Uzbekistan's macroeconomic stability is not immediately under threat. Public debt, although growing, remains manageable at 37% of GDP, and the country has ample foreign reserves to cushion against external shocks. However, the government should prioritize reducing the fiscal deficit by slowing the growth of public spending and accelerating reforms, such as increasing energy tariffs and pursuing privatization, as this helps to fund the deficit and possibly attract FDI inflows.

In summary, while the growing twin deficits pose certain risks, Uzbekistan's economy is still on a solid growth path. The government should closely watch respective dynamics to maintain long-term economic sustainability by reducing fiscal vulnerabilities, which will according to our analysis also imply lower external vulnerabilities.

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## 1. Motivation and background

In 2017, Uzbekistan began a remarkable reform process, transforming it from a closed, state-centred economy to an open market economy. The reform processes included the flexibilization of the exchange rate and the reduction of customs tariffs. The availability of foreign currency and lower import tariffs led to a sharp increase in imports, driven by rising consumption and rapidly increasing investments. The government increased spending to make the necessary investments and support the population. At the same time, privileges previously granted weighed on the national budget, such as energy subsidies for companies and the population.

In addition to strong economic growth and an increase in the population's prosperity, the rise in imports and rapidly growing government spending led to simultaneous current account and budget deficits. In Uzbekistan, the budget deficit and the current account deficit have risen steadily in recent years and reached 5.5% of GDP and 7.7% of GDP in 2023, respectively.

The contemporaneous presence of both deficits is widespread in the world. According to the IMF, in 2023, out of 198 IMF countries, 137 had a budget deficit of more than 1% of GDP, 100 had a current account deficit of more than 1% of GDP, and 82 countries had both. Budget deficits can become problematic if they can no longer be financed. A deficit in the current account can also be problematic. In principle, a deficit means that the country consumes more than it produces, thus incurring debt abroad. In addition to the size of the current account deficit, its structure also plays a role. If, for example, the deficit is driven by investment, it is usually not considered problematic, since the investments should lead to future exports and reduce the current account deficit. If, on the other hand, it is driven by consumption, it could lead to problems similar to a budget deficit.

Since Uzbekistan is facing a relatively new phenomenon and the deficits have increased continuously in recent years, the question arises as to whether macroeconomic stability could be threatened, and which policies may be appropriate to tackle the two deficits, if they were considered to be excessive.

Against this background, we examine in this analysis:

1. The reasons for the increase of the current account deficit
2. The reasons for the increase of the budget deficit
3. Verify econometrically whether the deficits are linked
4. Assess the risks for macro-economic stability
5. Provide recommendations what the government might do to reduce to reduce the deficits.

The study is structured as follows. Chapter 2 contextualises the current account deficit in the balance of payments. In chapter 3 we analyse the fiscal balance of Uzbekistan. In chapter 4 we analyse the relation between fiscal and current account deficit and test them econometrically. Chapter 5 discusses the sustainability of the two deficits from the point of view of long-term solvency and short-term liquidity. In chapter 6 we discuss the results and provide recommendations.

## 2. Analysis of current account balance

In this section, we analyse the development of the current account deficit in Uzbekistan. The current account is a major component of the balance of payment.

The balance of payments registers all transaction of residents to non-residents. It can be divided in current account (CA), capital account (KA), financial account (FA), and change in international reserves ( $\Delta IR$ ).

The **current account** registers the net income of residents derived by trade, remuneration of labour and capital from non-residents (primary income), or transfers without reciprocity, for Uzbekistan mainly remittances (secondary income). The balance of the current account is equal to the gap between savings and investments (IMF 2013, p. 223).

The **capital account** registers transfers of non-produced non-financial assets or transfers of (fixed) capital, by magnitude is normally the smallest part of the balance of payments. For instance, in 2023 the total turnover of the current account in Uzbekistan made 99.99% of the sum of current and capital account. For this reason, we will in the following sections use the wording “current account”, meaning both current and capital account.

In the **financial account** is registered how deficits in the current and capital account not covered by changes in international reserves, are financed: they include foreign direct investments, portfolio investments, other investments.

The **change in international reserves** depends on the active sale of purchase of international reserves by monetary authority and is a policy instrument of the central bank which directly affect the exchange rate.

Per definition, the sum of current account and capital account is equal to the net lending / borrowing from non-residents and should be equal to the sum of financial account and changes in international reserves.

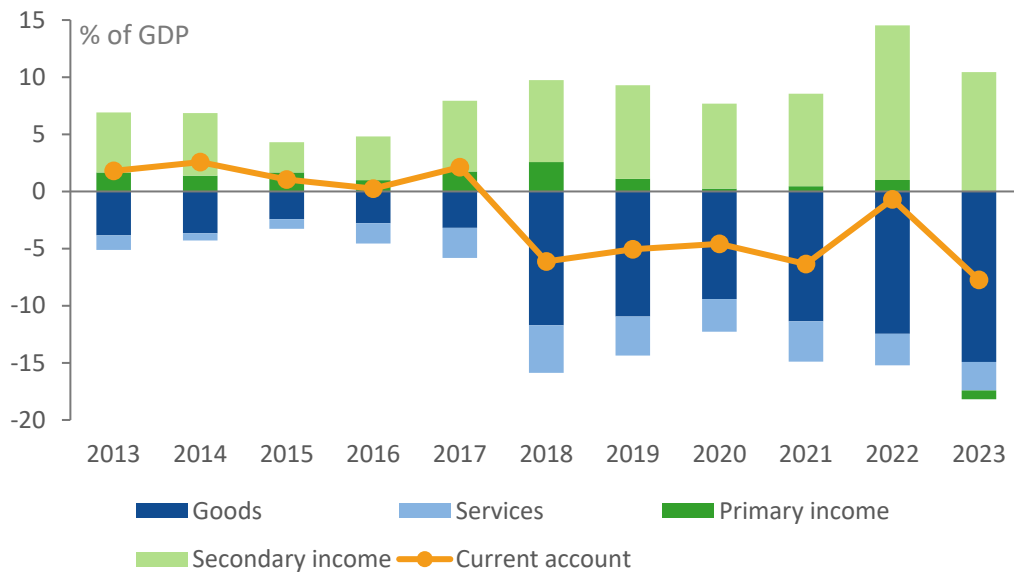
$$CA + KA = FA + \Delta IR$$

In practice non-reported or misreported transactions lead to a discrepancy. The **net errors and omissions** (NE) entry is a balancing item that closes the gap between the two.

$$CA + KA + NE = FA + \Delta IR$$

A **current account deficit**, i.e. a negative current account balance, happens when outgoing payments to foreign countries (trade of goods and services, payment of earnings of foreign individual and entities, and unilateral transfers) are higher than payment incoming from foreign transfers. A current account deficit increases the net foreign debt, i.e. the liabilities of domestic entities (public and private) towards foreign entities.

Figure 1: Components of the current account



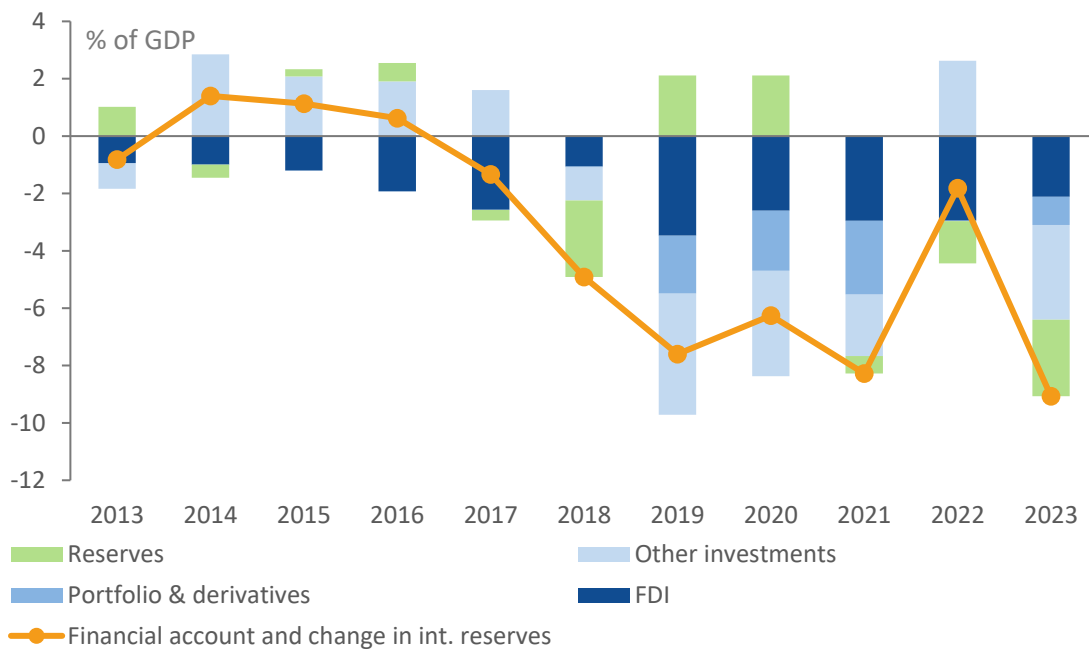
Source: Central Bank of Uzbekistan, Uzbekistan Statistics Agency, own calculations

The current account of Uzbekistan has been in deficit since 2018. The deficit was mainly caused by an increase of the goods trade deficit. Since 2018, the current account deficit has been mostly between 4.5 and 6.5 percent, with 2023 showing a deficit of 7.7%. The only outlier, 2022, is due to a temporary increase of secondary income (mainly remittances).

The increase of the current account balance was mainly caused by an increase of the goods trade deficit.

The accounting identities imply that the current account balance (plus the capital account, which we can neglect here) must be equal to the sum of financial account balance and change in international reserves. Moreover, the stability of the financing flows has an important impact on the sustainability of the current account deficit, thus it is worth to dig deeper also in the financial account.

Figure 2: Components of financial account and change in international reserves



Source: Central Bank of Uzbekistan

The financial account balance and change in international reserve has been negative since 2017, consistent with the deterioration of the current account. The difference between current and financial account and change of remittances is covered by the mentioned errors and omissions. The net errors and omissions should be random and average zero in the long term. However, the balance of payments in Uzbekistan is characterized by systematically negative net errors and omissions, which signals that the current account deficit is even bigger than the official value.

While the foreign direct investments only slightly increased since 2018, portfolio investment and other investment inflows have been major components of the negative financial account balance since the beginning of reforms. While direct investment is associated with a significant degree of influence, know-how transfer and a lasting relationship, portfolio investments are usually much more volatile. “Other investments” of Uzbekistan are mostly long-term loans from foreign banks to the private sector.

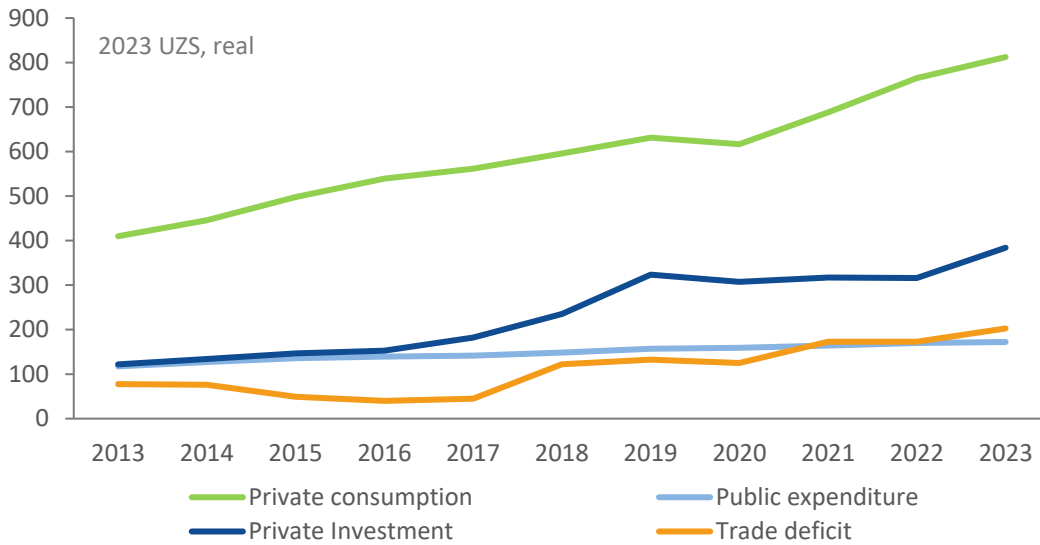
The increase of the current account deficit is mainly financed by an increase of the portfolio investments and other investments.

For the sustainability of the current account deficit, it is important to understand its causes, in particular if it is mainly due to higher consumption or investments. For this, we look at the demand-side components of GDP and the structure of imports.

The current account is by definition equal to the gap between savings and investments. But it makes a difference if this gap increases due to a fall in savings (i.e. an increase in consumption) or an increase in investments. We have also seen that the current account includes trade in goods and services, and primary and secondary income, and that the recent developments in Uzbekistan depend on trade, as primary income in Uzbekistan is negligible. The secondary income (mainly remittances) has increased but could not compensate for the worsening trade balance.



Figure 3: Components of gross domestic product

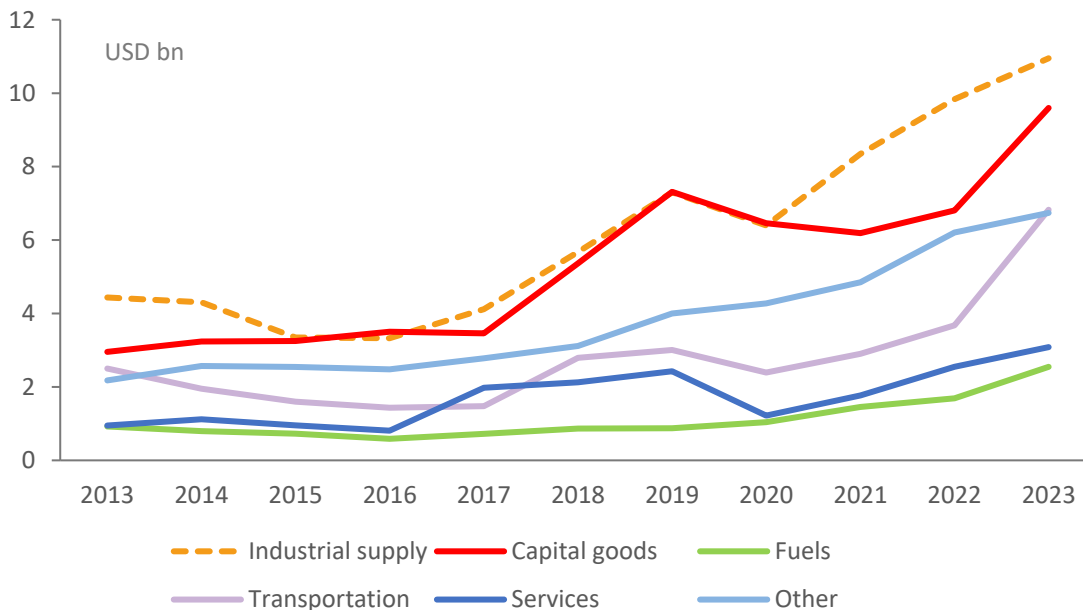


Source: Uzbekistan Statistics Agency

Indeed, between 2017 and 2019 a strong increase in investment took place, which seems to have contributed to the increase of the trade deficit. In 2021 it seems to have been driven by growing consumption and in 2023 primarily again by investments.

Data from imports by broad economic category (BEC) seem to confirm this picture: import of capital equipment rose in 2018-2019, then declined for two years, and since 2022 increased again, with a strong increase in 2023. Industrial supplies imports, which include goods that do not directly enter into final consumption but are essential for producing other goods and services show a comparable pattern. At the same time the figure shows a continues increase of other goods, which are mainly consumer products.

Figure 4: Composition of imports according to broad economic category (BEC)



Sources: Uzbekistan Statistical Agency, UN Comtrade

Thus, investment goods and industrial inputs seem to play an important role in the import increase. However, consumption has also risen strongly. Thus, we do not see a pure investment growth.

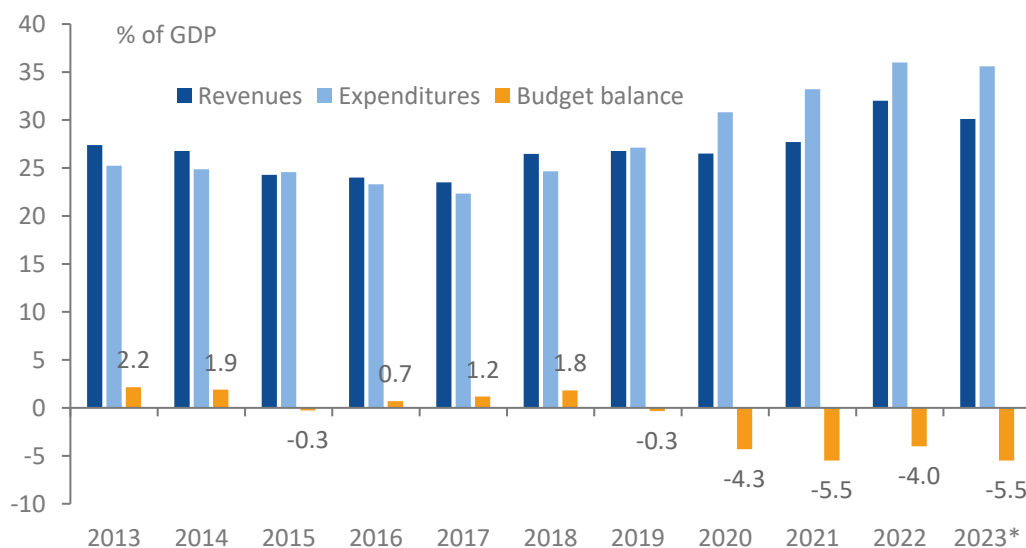
The increase in imports and thus the current account deficit is due to both rising investments and private consumption.

### 3. Analysis of the fiscal balance

A **fiscal deficit**, i.e. a negative fiscal balance happens when state expenditures are above state revenues, and the state must resort to borrow money (or privatisations) to finance its expenditures.

IMF data show a steady decline of the overall general government balance since 2018, which reached a deficit of 5.5% of GDP in 2023 according to estimates.

Figure 5: Public finances



Source: IMF WEO and Article IV report from July 2024; \*estimate

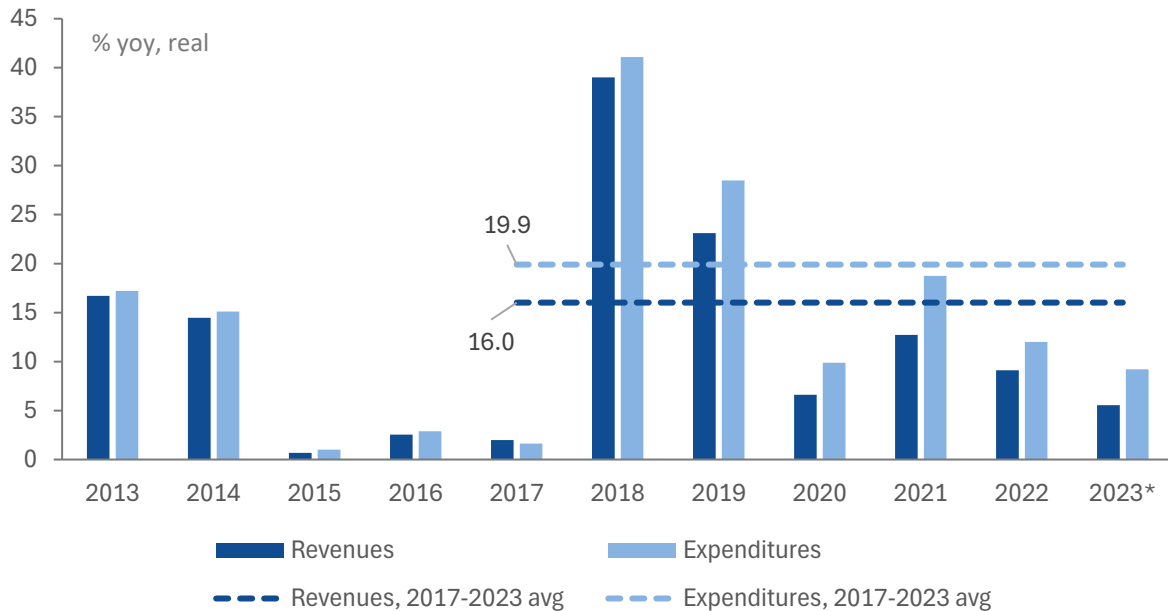
The figure shows that expenditures have risen significantly faster than revenues since 2019. A reduction in revenue in relation to GDP can also be observed in 2023. This has to do with the reduction in taxes and excises. VAT, for example, was reduced from 15% to 12%. Expenditures in relation to GDP also fell, but less than revenues.

An increase in the fiscal deficit can be linked to an economic downturn: as fiscal revenues depend on GDP, but expenditures not to the same extent, a recession usually causes a stagnation (or fall) of revenues with an increase of expenditures to GDP. This is not the case of Uzbekistan, as the country enjoyed a substantially steady real GDP growth of around 6%, with the only exception of the pandemic year 2020.

Another possibility is that expenditures increased due to inflation. However, this hypothesis seems also not supported by data. Figure 6 shows the change in public revenues and expenditures deflated by CPI inflation. With an average real growth in the

period 2017-2023 of around 20%, expenditures strongly grew not only in nominal terms, but also in real terms<sup>1</sup>.

Figure 6: Real change in public revenues and expenditures (CPI deflated)



Source: IMF WEO and Article IV report from July 2024; \*estimate

In this sense, the fiscal deficit was neither a consequence of an unexpected fall of revenues due to a recession, nor a consequence of an inertial increase of nominal expenditures due to inflation, but a result of a conscious increase of expenditures over revenues of the country.

The budget deficit was caused by a stronger increase of expenditures compared to revenues.

<sup>1</sup> The basket of government purchases is different from that of household purchases. Still, CPI seems to be a better approximation of the price development of government purchases than, say, the GDP deflator, as the latter includes only domestically produced goods.

## 4. Relation between fiscal and current account deficit

In this chapter we contextualise the current account balance and the fiscal balance in the systematic of the balance of payments and of the national accounts. We discuss the hypotheses of the causal relation between fiscal and current account, and try to assess empirically which kind of relation is more likely in Uzbekistan.

### 4.1 Theoretical hypotheses

Per definition the current account balance (CA) is equal to the gap between savings (S) and investments (I) (IMF 2013, p. 223).

$$CA = S - I$$

The total savings of the economy are equal to the sum of private savings, i.e., gross national disposable income<sup>2</sup> (Y) less taxes (T), less consumption (C), and public savings (i.e., public revenues (T) less public expenditures(G)).

$$S = S^{\text{private}} + S^{\text{state}} = (Y - T - C) + (T - G)$$

From the two previous relations follows that the current account is equal to private savings plus public savings less private investment

$$CA = S - I = (Y - T - C) + (T - G) - I$$

Private savings is all income that the private sector does not use for consumption or for paying taxes, public savings are all public revenues less public expenditures. **If all other variables do not change, a bigger deficit (or a smaller surplus) implies a bigger current account deficit (or smaller surplus).**

The question is thus, if a change in the fiscal balance has an impact also on the other variables. On this issue the academic literature considers three hypotheses.

1. The traditional Keynesian view arising from the Mundell-Fleming model (Fleming 1962, Mundell 1963) assumes that the other variables do not necessarily change, so that a fiscal deficit causes a current account deficit (**twin deficit hypothesis**).
2. Barro's "**Ricardian equivalence hypothesis**" (Barro, 1974, 1989) argues that in a number of circumstances the increase of fiscal deficit leads to an increase in private savings, thus leaving total savings unchanged. From this perspective, fiscal deficits should not impact the current account.
3. Kim & Roubini (2008) find instead that for the USA in most periods a **twin divergence** exists, namely, that an increase of the fiscal deficit goes together with a *reduction* of current account deficit. For this they propose two explanations

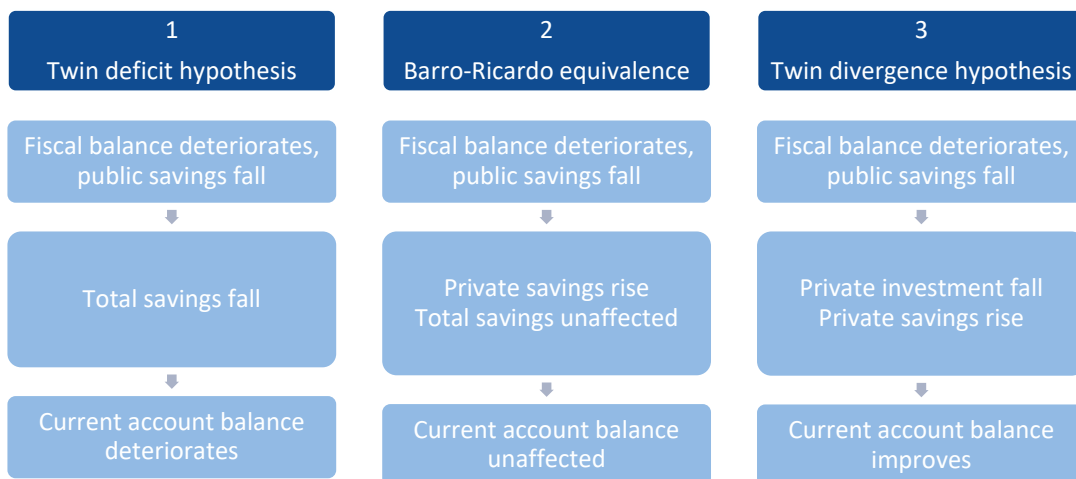
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<sup>2</sup> Gross national disposable income is equal to GDP plus income from abroad, whose main item for Uzbekistan are remittances.

- a. An increase of the fiscal deficit reduces total savings and leads to an increase of the interest rate, which reduces private investment. A partial “Ricardian” behaviour leads to an increase of savings, which then leads to an improvement of the current account balance
- b. During upturns of the business cycle, fiscal revenues increase, thus reducing the fiscal deficit, while imports increase, thus worsening the current account balance, during downturns the other way around: fiscal revenues fall and imports decrease

The twin divergence hypothesis was based on observations of the United States and we consider it unlikely to hold for Uzbekistan, because (1) the increase of the public deficit in Uzbekistan has no impact on the global interest rates and Uzbekistan is a small open economy, which finances itself to some extent in the global markets, hence, the increase of the public deficit is unlikely to substantially reduce private investment (2) in a small open economy exports are a bigger share on GDP, their correlation with GDP is thus stronger, (3) given the reduced importance of automatic stabilisers in Uzbekistan, the inertia of public spending is lower in Uzbekistan than in advanced economies.

Figure 7: Impact of a fiscal balance deterioration according to the three hypotheses



Source: own representation

We have thus three possible explanations of the relation between fiscal and current account deficit.

The implications of the three hypotheses would be:

1. Twin deficit hypothesis: the current account deficit grew (mainly) due to the fiscal deficit; to reduce the current account deficit one should reduce the fiscal deficit,
2. Fiscal and current account deficit are not causally related, if they are problematic, they must be tackled separately,
3. The increase of the current account deficit is a consequence of economic growth, reducing the fiscal deficit will lead to an increase in investment, which would further increase the current account deficit; tackling the fiscal deficit may make sense by its own, but not for its impact on the current account deficit.

## 4.2 Empirical analysis and results

In this section we try to evaluate the empirical evidence on the three hypotheses discussed above. To do this we resort to data provided by the Uzbek authorities.

Table 1: Sources of the data

Data	Frequency	Since	Source
Current account balance (USD)	Quarterly	1Q1995	Central Bank of Uzbekistan
Fiscal balance, central government (UZS)	Quarterly	1Q2012	Ministry of economy and finance
Nominal GDP (UZS)	Quarterly	1Q2015	Statistics Agency of Uzbekistan
Average UZS/USD rate	Monthly	Jan-12	Central Bank of Uzbekistan

Source: own representation

To assess the existence of a link between fiscal and current account deficit we use the Toda and Yamamoto (1995) test, which is similar in spirit to the more famous Granger (1969) “causality” test but can be performed independently of the order of integration of the series.

Concretely the test is based on a bivariate vector autoregression (VAR) in levels, in which both series are predicted using lag values of both series.

$$\begin{cases} CAB_t = \alpha_1 CAB_{t-1} + \beta_1 FB_{t-1} + \alpha_2 CAB_{t-2} + \beta_2 FB_{t-2} + \dots & (1) \\ FB_t = \gamma_1 CAB_{t-1} + \delta_1 FB_{t-1} + \gamma_2 CAB_{t-2} + \delta_2 FB_{t-2} + \dots & (2) \end{cases}$$

If the fiscal balance drives the current account balance, one expects that past values of the fiscal balance help in predicting the current level of the current account balance, i.e. the coefficient  $\beta_1, \beta_2, \beta_3, \dots, \beta_n$  should be statistically significant. The Toda-Yamamoto test consists in testing the joint significance of these coefficients by means of a Wald test.

Toda and Yamamoto showed that through a simple adjustment of the number of lags this method is valid also for integrated time series, it is thus more general than the Granger test, which is suitable only for stationary time series.

The Toda-Yamamoto test may wrongly reject the hypothesis if the chosen number of lags is too short; if the number of lags is too long, it may instead fail in rejecting the hypothesis even if it would be correct to. For our purpose it is important to assess a causal relationship between fiscal and current account deficit, which require to reject the hypothesis of the test. Thus, for us it would be a far more serious mistake to erroneously reject the hypothesis than erroneously be unable to reject it. Thus, we will prefer larger lag specifications to a more parsimonious model.

We considered the values of the fiscal and of the current account balance both as a share of GDP, in US dollars and in UZB soms. The series start in 1Q2015, because quarterly values of GDP are available only since 1Q2015. The lag-selection criteria suggest a number of lags between 1 and 10 for the series as share of GDP, and between 2 and 10 for the data in US dollars and in Uzbek som.

The Toda-Yamamoto test requires to increase the number of lags by the order of integration of the series, according to the statistical tests we performed and the nature of the economic series, it is likely not higher than 1. Therefore, potential lag orders range from 2 to 11 for the series as a share of GDP and from 3 to 11 for the series in US dollars and Uzbek soms. Unfortunately, the series as share of GDP can start only from 2015, so that a test with 11 lags is not possible due to data limitation, therefore for the series as share of GDP we test all lags between 2 and 10.

The Null hypothesis of the test is that a series is NOT able to predict the other. Thus, if this hypothesis is rejected, we assume that the series can predict the other one.

The results with the series in share of GDP, in US dollars and in Uzbek som suggest unanimously that the fiscal balance allows to predict the current account balance. The results are shown in table 2.

**Table 2: Toda-Yamamoto test: fiscal balance → current account balance**

Hypothesis: fiscal balance does not improve prediction of current account balance						
lag	As share of GDP		In US dollars		In UZB som	
	Statistic	p-value	Statistic	p-value	Statistic	p-value
1	10.947	0.004***	17.984	0.000***	25.438	0.000***
2	10.185	0.017**	15.781	0.001***	23.115	0.000***
3	16.495	0.002***	15.781	0.001***	23.115	0.000***
4	15.955	0.007***	15.003	0.010**	28.031	0.000***
5	15.955	0.007***	15.003	0.010**	28.031	0.000***
6	14.064	0.029**	16.485	0.011***	41.896	0.000***
7	11.611	0.071*	13.272	0.039**	33.830	0.000***
8	11.611	0.071*	16.695	0.010**	46.191	0.000***
9	17.650	0.007***	16.484	0.011**	91.167	0.000***
10	196.777	0.000***	19.551	0.003***	74.507	0.000***
11	Na	Na	21.048	0.002***	47.124	0.000***

*Source: own calculations*

In the series as a share of GDP, the Null hypothesis is rejected at 10% significance in all lag specifications, and in all apart from two specification the Null Hypothesis is rejected at a significance of 5% or less. In the series in US dollars the Null hypothesis is rejected at 5% significance in all lag specifications between 2 and 11, and in all apart four specifications it is rejected at a significance level below 1%. In the series in US dollars the Null hypothesis is rejected for all series with a significance level below 1%.

We conclude that data of the fiscal balance is useful in predicting future values of the current account balance.

We want to test now if the data of the current account balance allows to improve the prediction of the fiscal balance. In this case the result is not so clear-cut, while for the series expressed as a share of GDP and in US dollars the current account balance is unable to improve the prediction of future values of the fiscal balance, for the series in Uzbek

soms, models with more than five lags suggest that the current account is useful to predict future values of the fiscal balance.

Table 3: Toda-Yamamoto test: current account balance → fiscal balance

Hypothesis: current account balance does not improve prediction of fiscal balance						
lag	As share of GDP (1Q2015-1Q2024)		In US dollars (1Q2012-1Q2024)		In UZB som (1Q2012-1Q2024)	
	Statistic	p-value	Statistic	p-value	Statistic	p-value
1	4.470	0.107	4.090	0.129	4.670	0.097
2	3.735	0.291	2.532	0.470	2.529	0.470
3	2.678	0.613	2.532	0.470	2.529	0.470
4	1.523	0.910	1.876	0.866	2.831	0.726
5	1.523	0.910	1.876	0.866	2.831	0.726
6	5.869	0.438	7.386	0.287	23.303	0.001***
7	5.456	0.487	6.104	0.412	15.738	0.015**
8	5.456	0.487	5.609	0.468	22.989	0.001***
9	2.943	0.816	2.455	0.874	12.355	0.054*
10	6.348	0.385	5.279	0.509	21.944	0.001***
11	Na	Na	8.451	0.207	22.132	0.001***

Source: own calculation

As mentioned above, the estimation with a higher lag order rejects the Null hypothesis more easily, in other words the likelihood of wrongly not rejecting the hypothesis is low, but this comes at the cost of a higher risk of wrongly rejecting it. Moreover, given the short time series and the presence of a structural break of the data at the beginning of the reform process, there is a possibility that the rejection is a consequence of statistical uncertainty. If instead the correct number of lags is above 5, then it must lie in a difference in the behaviour of the series in som from that in US dollars and as a share of GDP. One possible explanation is that the fiscal balance affects the current account balance, and the current account affects the exchange rate, which in turns affects inflation. A higher inflation requires a higher amount of soms to purchases the same goods. This would explain why the current account balance may impact the fiscal balance when expressed in soms, but not when expressed in US dollars or as a share of GDP. This possibility does not contradict by itself the hypothesis that the fiscal balance causes the current account balance but implies that the current account has also a feedback on the fiscal balance.

Our question of interest is, however, whether the fiscal deficit causes the current account deficit, and not merely predicts it. That a time series predicts another time series is not sufficient to prove by itself that it causes it. But the cases are two: either the fiscal balance causes the current account balance or not. But, how showed above, the system of the national accounts implies that changes of the fiscal balance impact the current account, unless the reaction of other items of the national accounts compensate it (as in the Ricardo-Barro equivalence).



In absence of another explanation of why the fiscal balance systematically improves prediction of the current account balance, we consider it as sufficient evidence that the Ricardo-Barro equivalence is not likely to hold in Uzbekistan.

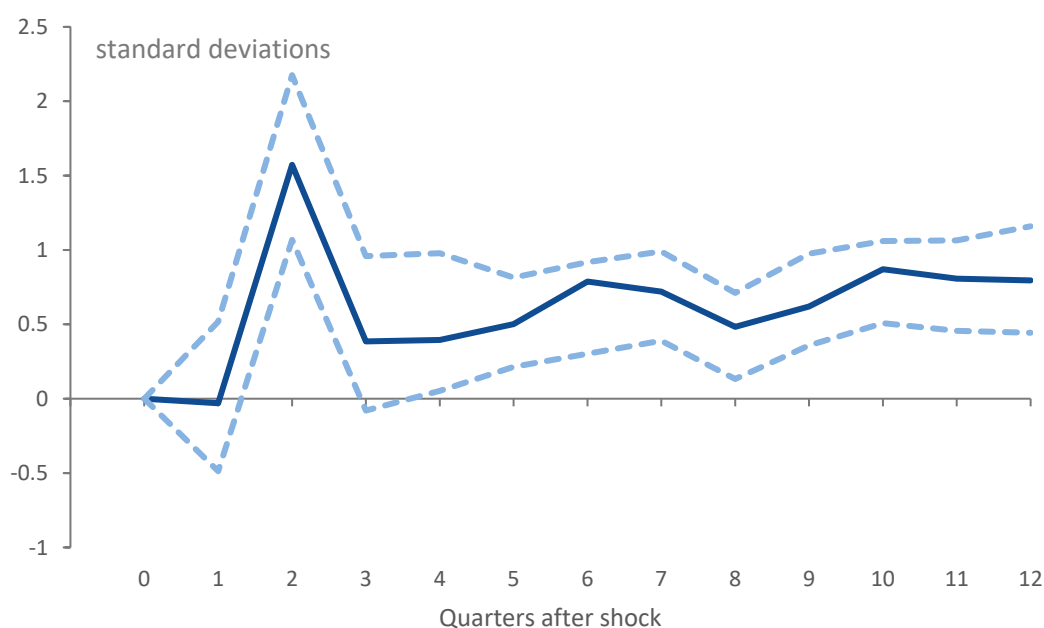
Still, it would be important to know if the fiscal balance has a positive impact on the current account (as implied by the “twin deficit” hypothesis), or a negative impact (as implied by the “twin divergence” hypothesis).

To assess this hypothesis, we need a structural identification of the bivariate VAR, which requires to impose a restriction on the data. We use a standard short-run restriction, namely, we impose that the current account balance does not impact in the same quarter the fiscal balance. Given that according to the Toda-Yamamoto test the current account balance does not seem able to predict at whatsoever horizon the dynamics of the fiscal balance, if expressed neither as a share of GDP nor in US dollars or Uzbek soms, this assumption seems plausible. This restriction is sufficient for a structural identification of the VAR.

We estimated the impulse-response function of the structural VAR estimated with four lags. The impulse response function represents the effect of a change (“shock”) of one variable to the other variable, in our case to a change of the fiscal balance to the current account balance.

We performed the estimation using the values in US dollar, in Uzbek som, and as a share of GDP. The impulse response with the value in US dollars shows a first strong impact only after two quarters, which reduces from the third quarter onwards. The 68% confidence band (one standard deviation, which is a standard measure for structural VARs) remains above zero, suggesting that an increase of the absolute value of the fiscal deficit leads to a persistent increase of the current account deficit, expressed in US dollars.

Figure 8: Impact of a shock of the fiscal balance on the current account (US dollars)



Source: own calculations

The responses of the series in Uzbek som and as a share of GDP are given in Annex 2 (Figures 14 and 15).

The result of the analysis of the impulse response is that a fiscal balance shock has a persistent positive impact on the current account balance, both expressed in US dollars and expressed in Uzbek som, while it lasts only two quarters if expressed as a ratio of GDP. In all three cases, the increase of the foreign debt is persistent, as even as a share of GDP the positive impact in the second and third quarter is not compensated by a negative impact afterwards.

To check the sensitivity of our results, we estimated the structural VAR also with a different number of lags. For a lag order between 2 and 6 the results are very similar. We also estimated the VAR with the opposite short-run restriction, namely that the fiscal balance has no impact on the current account in the same quarter. Also, here the results are similar, because in both cases the estimated impact in the same quarter is rather small.

Despite the robustness of our results, our method has some limitations. The presence of a structural shock at the beginning of the reform process, increase the uncertainty of the results. Moreover, due to the short time series a frequentist<sup>3</sup> estimation of a larger model is not possible, therefore the results may not give the full picture of the macroeconomic interaction.

Empirical evidence is compatible with the hypothesis that the current account deficit is at least partly driven by the fiscal deficit.

## 5. Analysis of sustainability of the deficits

Both fiscal and current account deficits imply that an “external” source finances the resulting gap. For the fiscal deficit “external” are all sources outside the state itself, be it the private sector within or outside the national borders, or foreign public institutions<sup>4</sup>. For the current account, deficit financing “external” sources are all sources outside the national borders.

A threat to the normal funding of such deficits can come from two directions:

1. **Long-term solvency issues:** the debtor may be unable meet its financial obligations due to a structural problem: the value of liabilities in comparison to the value of total assets is too high not only contingently, but also in the foreseeable future. For a private corporation this happens when the value of liabilities is higher than the value of assets, while a state may consider part of their assets inalienable, thus insolvency may occur before reaching that point.
2. **Short-term liquidity issues:** the debtor may be unable to service the debt due to a contingent problem: sources of financing are (temporarily) not available or too expensive, even though solvency is not the issue, i.e. the fundamental debt-service

<sup>3</sup> A Bayesian estimation would be in principle possible, but it goes beyond the scope of this analysis

<sup>4</sup> We abstract from the selling of public assets, i.e. privatisation.

capacity is not under threat. However, liquidity problems can over time eventually turn into insolvency issues.

To ensure **long-term solvency**, the ratio between revenues (from which debt is serviced) and debt should not grow indefinitely.

To fulfil this condition, the current account deficit and the fiscal deficit should not grow stronger than GDP in the long run, when expressed in terms of the currency, in which liabilities are denominated. Since the overwhelming part of both the foreign debt as the public debt of Uzbekistan are denominated in foreign currency, the value in US dollars of GDP and of the deficits are of particular importance.

Investment can justify an exception to this general rule, but the exception is rather apparent than substantial: investment is supposed to increase future GDP, as such an increase of the fiscal deficit due to public investment and of the current account deficit due to public or private investment, are not supposed to increase the ratio between debt and GDP in the long run. Although, of course, while the cost of an investment is certain, future return of investment can be only estimated, thus, a cautious estimation of returns is of the utmost importance.

A second, more substantial exception, is the conduct of countercyclical policies, and concerns only the fiscal deficit. During economic recessions, as GDP falls, also private consumption and investment fall, and this can cause financial distress and insolvencies, which may damage the long-term productive capacity of the country. Under these circumstances, the state should not reduce expenditures to match the decline of GDP, but rather increase them, to compensate for the fall of private demand. This, however, requires that the state finances are solid, so that an increase in debt does not cause financial distress.

To ensure **short-term liquidity**, the debtor must have access to financing, and the price (or availability) of financing must not increase abruptly (“sudden stop”). This may depend on:

1. Due date of the liabilities: if a big part of liabilities is due in a certain period, and they must be rolled over, a sudden fall of revenues, or an increase of the interest rates may be difficult to sustain,
2. Currency denomination of the liabilities: liabilities in foreign currency are subject to exchange rate risk. If the domestic currency depreciates, the burden of debt in foreign currency increases,
3. Type of credit and creditor: private investors might be more risk averse and short-term oriented, are thus likelier to withdraw funds in periods of distress, while multilateral institutions have other (development) objectives and are less likely to abruptly change their policies
4. Residence of the creditor: domestic creditors are less likely to withdraw financing from the country, and the government has more means to prevent it

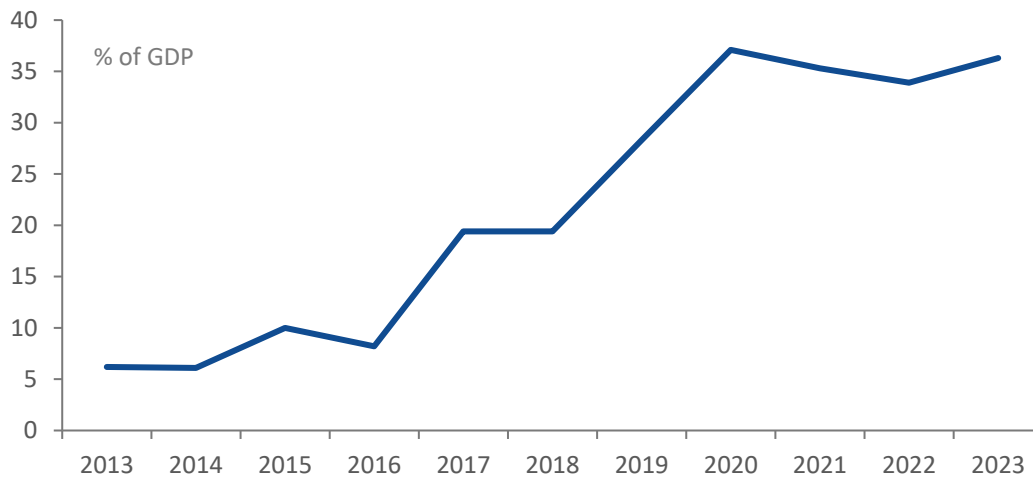
We identified two factors relevant for sustainability: solvency should be ensured in the long run by keeping the ratio between debt and GDP stable, however a level is very

difficult to define as it depends on a variety of factors. Liquidity is ensured if the debtor is able to finance its short-term needs.

## 5.1 Sustainability of public debt

Figure 9 shows the development of the public debt.

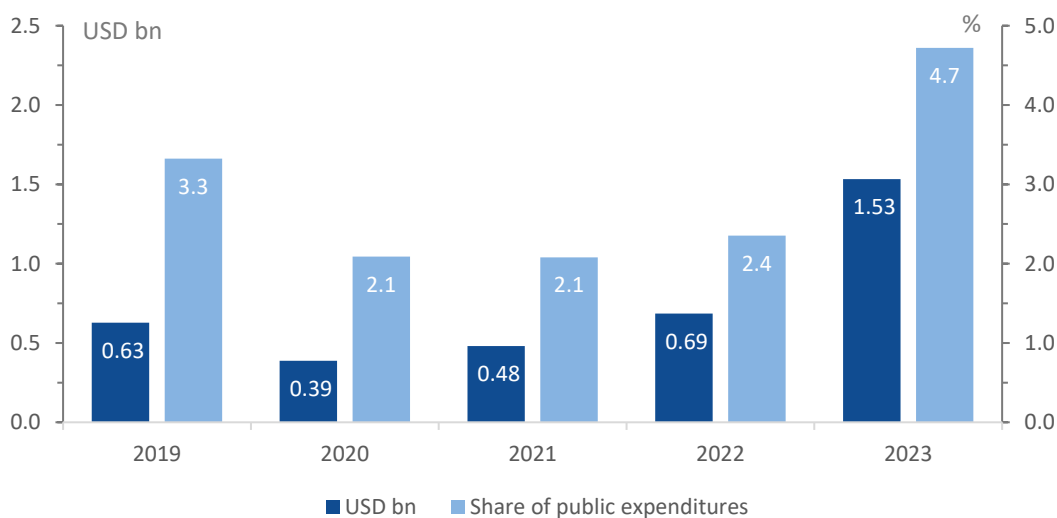
Figure 9: Public debt



Source: IMF-WEO

The public debt has increased significantly between 2016 and 2020 from 8.2% of GDP to 37.1% of GDP (IMF), but has since then remained rather constant in relation to GDP. The debt to GDP ratio is rather moderate in international comparison. There does not seem to be a **solvency risk** in the medium term. Still, the higher debt implies a higher share of expenditure for debt servicing. While in the first years after the start of the reform process the ratio of servicing costs to public expenditures remained roughly constant, in 2023 they almost doubled as a share of public expenditures and more than doubled in US dollar terms.

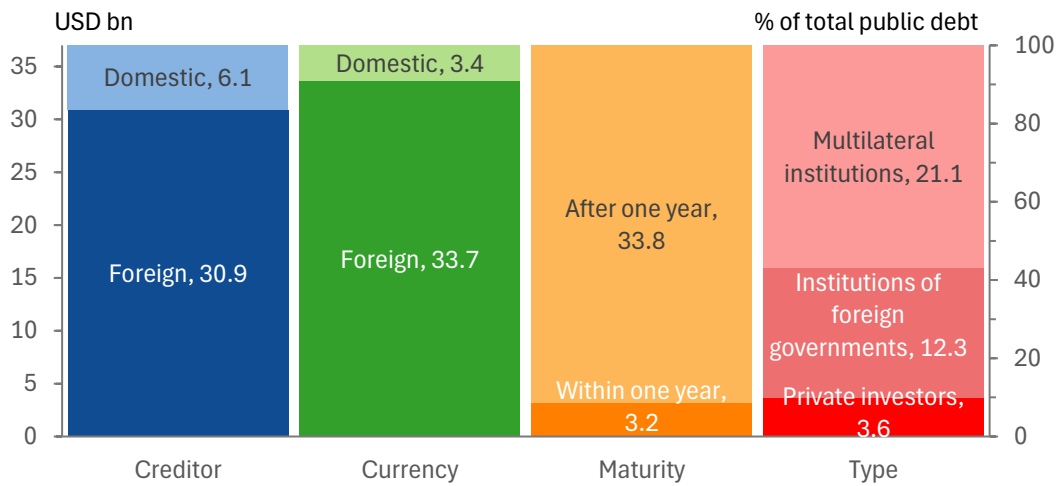
Figure 10: Costs of public debt service



Source: Ministry of Economy and Finance, own calculations

Even if solvency is not at risk, there may still be the **risk of illiquidity**. We consider due date, currency, type and residence of creditor.

Figure 11: Structure of public debt



Source: Ministry of Economy and Finance, 31.06.2024

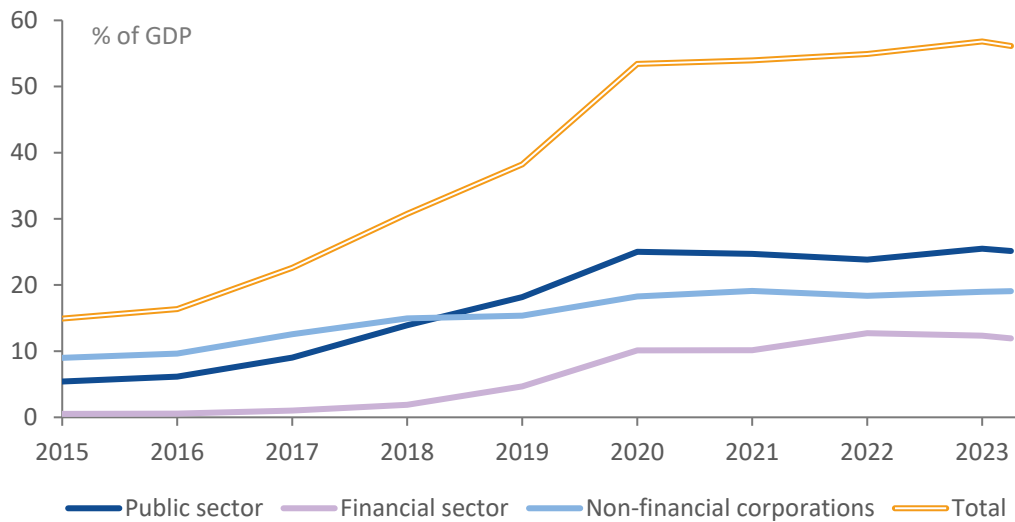
Uzbekistan's public debt at 31.06.2024 was USD 37.0 bn. Of it around 83% is towards foreign residents. Even higher (91%) is the share of public debt in foreign currency, as virtually all (98%) foreign debt is in foreign currency and even domestic creditors prefer bonds in foreign currency, only 45% of debt towards domestic residents is in domestic currency. On the positive side, debt has a long maturity, with only a small amount due within one year, and repayments due before June 2025 are all domestic and amount to only 1% of total debt, moreover, debt is due to a diversified pool of multilateral and national economic institutions with favourable conditions, so that a sudden reduction of credit inflow is highly unlikely.

Overall, public debt seems sustainable, both for its moderate, but stable volume, and for the long-term repayments. This judgement is confirmed by the main rating agencies, which rate the Republic of Uzbekistan with BB-/Ba3 and whose ratings remained stable in the last years. All agencies see downside risks in case of a continued high pace of debt increase, or in a slowdown of GDP growth, which would increase the ratio of debt to GDP. A similar picture for the external debt as a whole. There has been an increase between 2017 and 2020, but debt as a share of GDP stabilised since 2020 at below of 40% of GDP.

## 5.2 Sustainability of foreign debt

Here we consider foreign debt. First we consider the development over time of foreign debt by splitting it in public debt, debt of the financial sector, and debt of non-financial corporations (foreign debt of households is in principle non-existing). Almost half of foreign debt is due to the state.

Figure 12: Foreign debt

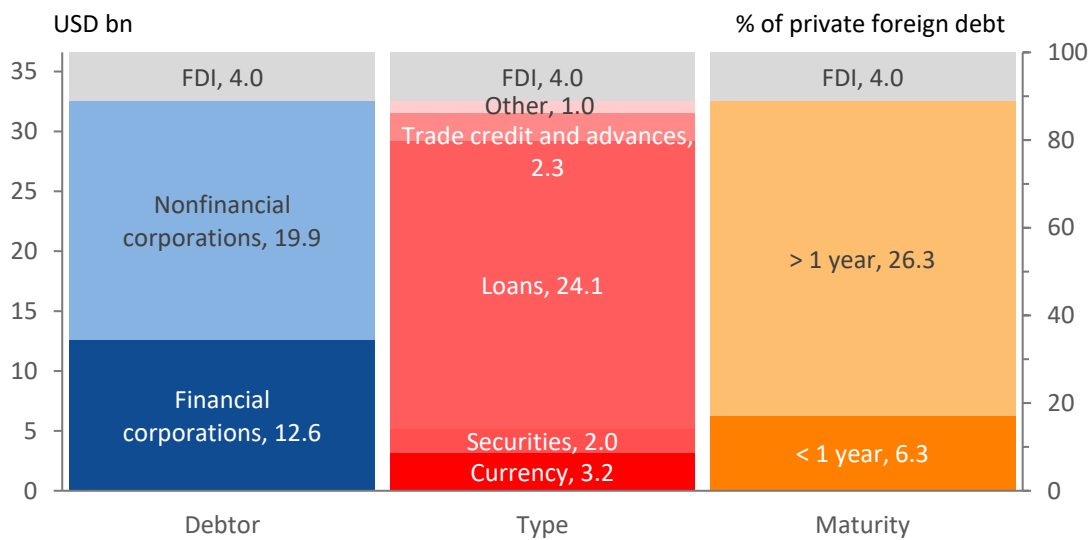


Source: Central Bank of Uzbekistan

Foreign debt strongly increased with the beginning of the reform process in 2017, as the country became more accessible to foreign investors and foreign financing became more accessible to domestic business but has stabilised since 2020. This is true for foreign debt as a whole, as for the three components in which we have divided it. No worrying ever-increasing trend can be noticed. It must be, however, considered, that also here an increase of debt stock goes together with higher debt repayments abroad.

To analyse possible liquidity risks we focus now only the private foreign debt, as the public part has been already discussed in the previous section.

Figure 13: Structure of private foreign debt



Source: Ministry of Economy and Finance. Note: FDI refers mainly to debt liabilities of direct investment enterprises to direct investors and in part to Debt liabilities to fellow enterprises, values at 30.06.2024

Of private foreign debt, as of 30<sup>th</sup> June 2024 the majority are loans, most of them with a due date above one year. The private sector has more risks than the public sector due to the higher share of short-term debt, but overall, the risk seems moderate, as this share is still less than 20% of total debt. Overall, also the private foreign debt does not show major risks of sustainability.

Financing of the public sector is secured thanks to long-term maturities and reliance on a diversified pool of multilateral and governmental institutions. The financing of the private sector seems more vulnerable, but risks are moderate.

## 6. Policy discussion and recommendations

The starting point of our analysis was that both the current account and the fiscal deficit have increased in recent years. In the econometric analysis, we have shown that the current account deficit is likely to be fuelled by the rising fiscal deficit.

The growth in the current account deficit is primarily due to rising imports of consumer and capital goods, to which exports have not been able to keep up with. Nevertheless, the sustainability analysis concludes that the risk of private sector external over-indebtedness is low in the medium term. A similar picture emerges for the fiscal deficit. It has risen due to significantly higher expenditure than income. However, the risk of over-indebtedness for the state is also low in the medium term, as debt remains very moderate at less than 40% of GDP. Moreover, the debt is long-term with international donors. In addition, Uzbekistan still has very high international reserves of USD 41.1 bn (Sep-24), which corresponds to over 9 months of import cover that can serve as a buffer to absorb shocks.

Against this background, macroeconomic stability does not appear to be under direct threat, at least if both the current account balance and the budget deficit fall in the medium term as currently expected. However, it must also be borne in mind that the forecasts of recent years have regularly underestimated the development of both the current account deficit and the budget deficit. The latest figures also show that both deficits are remaining high. Imports rose by 18% year-on-year in the first half of 2024 while exports only increased by 1%. The budget deficit for the consolidated budget amounted to 7% of GDP in the last four available quarters (up to March 2024). Investment and social spending are going to remain high in the medium term, especially in light of the growing inequality of the population and the challenges of the green transition of the economy.

In our view, the priority should therefore be to reduce the budget deficit. In a fast-growing economy like Uzbekistan's, spending can continue to rise, but consolidation is already possible if spending rises more slowly than economic growth. The pressure to consolidate can also help to accelerate ongoing reforms. Such as the already implemented energy tariff increase for households, which should ease the burden on the state budget - despite rising expenditure to cushion the effects of the energy price increase for vulnerable households. Privatisation could contribute to lowering the public debt stock, and might also help to attract FDI, thus relying less on foreign debt. Provided that market regulation ensures competition and prevent formation of private monopolies and rent-seeking behaviour, this should also contribute to economic growth and, in the long term, to an increase in exports.



## 7. Sources

### 7.1 Literature

- » Barro, Robert J. (1974). "Are Government Bonds Net Wealth?" *Journal of Political Economy*, November/December 1974, 82, 1095–1117
- » Barro, Robert J. (1989). "The Ricardian approach to budget deficits." *Journal of Economic perspectives* 3.2: 37-54.
- » Dickey David A.; Fuller Wayne A. (1979). Distribution of the Estimator for Autoregressive Time series with a Unit Root », *Journal of the American Statistical Association*, 74, pp. 427-431
- » Fleming, J. Marcus (1962). "Domestic Financial Policies under Fixed and Floating Exchange Rates," *Staff Papers*, International Monetary Fund, Vol. 9 (November), pp. 369–79.
- » Granger, Clive WJ. (1969). "Investigating causal relations by econometric models and cross-spectral methods." *Econometrica: journal of the Econometric Society*: 424-438.
- » IMF (2013). Balance of Payments and International Investment Position Manual Sixth Edition (BPM6). <https://www.imf.org/external/pubs/ft/bop/2007/bopman6.htm>
- » Kilian, Lutz; Lütkepohl, Helmut (2017). "Structural Vector Autoregressive Analysis," Cambridge Books, Cambridge University Press, ISBN: 9781316647332
- » Kim, S., & Roubini, N. (2008). "Twin deficit or twin divergence? Fiscal policy, current account, and real exchange rate in the US". *Journal of international Economics*, 74(2), 362-383.
- » Kwiatkowski, D., Phillips, P. C. B., Schmidt, P., & Shin, Y. (1992). "Testing the null hypothesis of stationarity against the alternative of a unit root". *Journal of Econometrics*, 54(1-3), 159-178. [https://doi.org/10.1016/0304-4076\(92\)90104-Y](https://doi.org/10.1016/0304-4076(92)90104-Y)
- » Mundell, Robert A. (1963). "Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates", *Canadian Journal of Economics and Political Science*, Vol. 29 (November), pp. 475–85
- » Toda, Hiro Y., and Taku Yamamoto (1995). "Statistical inference in vector autoregressions with possibly integrated processes", *Journal of econometrics* 66.1-2 225-250.

### 7.2 Data

- » Revenues: <https://www.imv.uz/en/static/davlat-budjeti-daromadlari-2>
- » Expenditures: <https://www.imv.uz/en/static/davlat-budjeti-xarajatlari-2>
- » Public debt by currency and residency of the creditor <https://www.imv.uz/en/static/davlat-qarzining-valyuta-tarkibi-2>
- » Public debt by residency of the creditor and maturity <https://www.imv.uz/en/static/davlat-qarzi-muddatlari>
- » GDP and National accounts: <https://nsdp.stat.uz/>
- » Balance of payments, Exchange rate, External debt: <https://cbu.uz/en/statistics/e-gdds/data/>

## Annex 1: Details of the empirical analysis

A widespread method to assess causal relation in time series is the Granger test (Granger, 1969). The Granger test is a method to assess the capability of a time series to predict another. In this case the question is whether the course of the fiscal balance allows to predict the future course of the current account balance.

If A allows to predict B but is not the cause of B, affecting A will have no impact on B (compare Lütkepohl & Kilian, 2017:198). The Granger test allows us to assess whether movements of the fiscal deficit at least allow to predict the current account deficit, but cannot by itself prove the causal relationship. For instance, retail sales may allow to predict GDP growth, but they are only a small part of GDP growth and are not the main cause of GDP growth.

After having pointed out this limitation, we can proceed with the statistical procedure. The original Granger test can be used only on stationary time series, i.e., series which revert to a linear trend. Time series, which are not stationary even after subtracting a trend, are called integrated, and they are integrated of order one, if their first difference is stationary.

The ADF (Dickey & Fuller, 1979) and the KPSS (Kwiatkowski, Phillips, Schmidt, and Shin, 1992) test are the most widely used for assessing stationarity. If the hypothesis of the ADF test is rejected, then there is evidence for the stationarity of the series, if the hypothesis of the KPSS test is rejected, then there is evidence for integration. In other words, the two tests assess the opposite hypothesis, and ideally should point to the same direction: in the case of stationary series ADF should reject the hypothesis, while KPSS not, in the case of integrated series, ADF should not reject the hypothesis, while KPSS should. If the two tests do not agree, further analyses are needed. If both tests are not able to reject their hypothesis, it may just depend to the short sample size, while if both reject the hypotheses, a typical problem is the inability of KPSS to recognise stationary series with time varying volatility. Table 4 summarises the interpretation of the KPSS and ADF tests.

Table 4, interpretation of KPSS and ADF test

	ADF hypothesis rejected	ADF hypothesis not rejected
KPSS hypothesis rejected	Unconclusive, possibly due to short sample	Integrated
KPSS hypothesis not rejected	Stationary	Unconclusive, possibly due to volatility clusters

Source: own representation

We performed the two tests for the series as share of GDP, US dollars, and Uzbek soms, both choosing the lag order with the Akaike information criterion (AIC), as with the Bayesian information criterion (BIC). The results are shown in table 5.

Table 5: Results of the KPSS and ADF tests test

Criterion	Series	ADF	KPSS	Implied assessment
Series as share of GDP				
AIC	FB	-4.912	0.311**	Integrated
	CA	-4.099	0.334	Inconclusive
	$\Delta$ FB	-7.741**	0.03	Stationary
	$\Delta$ CA	-6.691**	0.04	Stationary
BIC	FB	-4.912	0.311**	Integrated
	CA	-4.099	0.334*	Integrated
	$\Delta$ FB	-7.741**	0.03	Stationary
	$\Delta$ CA	-6.691**	0.04	Stationary
Series in US dollars				
AIC	FB	-2.661	0.374***	Integrated
	CA	-4.493	0.318	Inconclusive
	$\Delta$ FB	-7.864**	0.029	Stationary
	$\Delta$ CA	-7.69**	0.03	Stationary
BIC	FB	-2.661	0.374**	Integrated
	CA	-4.493	0.318	Inconclusive
	$\Delta$ FB	-7.864**	0.029*	Inconclusive
	$\Delta$ CA	-7.69**	0.03	Stationary
Series in Uzbek soms				
AIC	FB	-2.027	0.663***	Integrated
	CA	-3.533	0.355	Inconclusive
	$\Delta$ FB	-7.905**	0.028	Stationary
	$\Delta$ CA	-7.168**	0.035	Stationary
BIC	FB	-2.027	0.663**	Integrated
	CA	-3.533	0.355*	Integrated
	$\Delta$ FB	-7.905**	0.028*	Inconclusive
	$\Delta$ CA	-7.168**	0.035	Stationary

Source: own calculations. Confidence levels marked as follows:  
 \* < 10%, \*\* < 5%, \*\*\* < 1%

The tests do not deliver an unequivocal result. The fiscal balance is integrated in levels across all specifications, but while it is stationary in first differences as a share of GDP, when expressed in US dollars or Uzbek soms the result is not clear cut.

The stationarity (or absence thereof) of the current account balance in levels is even more ambiguous, whereas its stationarity in first difference is confirmed across all specification. These results can be explained on economic and econometric grounds, for instance it seems reasonable to think that with growing GDP and price levels, the absolute magnitude of fluctuations of the fiscal balance may also increase, and the inability to cope with heteroskedasticity, i.e. to inconstant variance is a well-known feature of KPSS. But

even explaining these features of the data does not easily allow to apply the original Granger test across the different series.

The Granger test to the series in levels cannot be used on integrated series, but on the other side the Granger test to series in first differences should be used only if the series are actually integrated. Given the uncertainty linked to the integration of the variables, an alternative approach is recommendable.

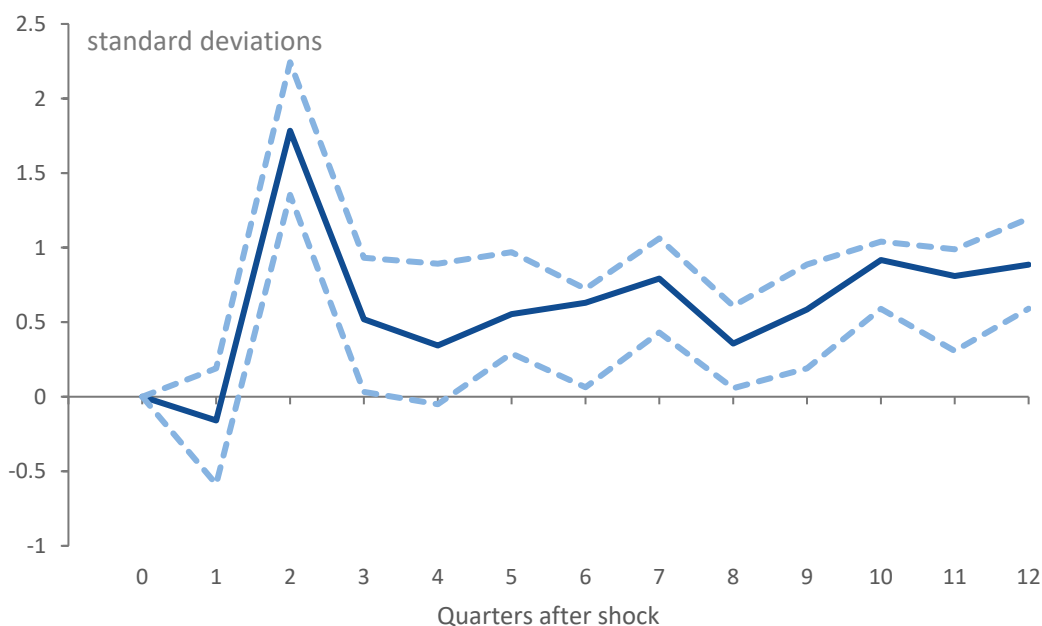
The Toda-Yamamoto approach allows to test the same hypothesis also with integrated series. The method consists in estimating a bivariate VAR with the two series, and then test the joint significance of the lags of the other variable with a Wald test. As lag length is usually not known a priori, we chose the lag length is relying on information criteria, of which the most common are AIC, HQC, and BIC. AIC tends to choose larger models, BIC smaller, while HQC is somehow in the middle (Lütkepohl & Kilian, 2017).

For integrated time series the lag order has to be higher than the actual lag order of a value equal to the order of integration. If the series are integrated of order 1, the model lag order of the model must be increased by 1 lag, if the series are estimated of order 2, it must be increased by 2 lags. An exaggeration of the number of lags can make the estimates insignificant, but a wrong rejection of the null hypothesis happens only if the lag order chosen is too small. This approach, while arguably less efficient if the order of integration is known, allows to overcome errors linked to pretesting of integration (Clarke & Mirza, 2006).

## Annex 2: Impulse-responses for UZB som and as % of GDP

The response in the series in Uzbek som is similar to the one in USD, a strong increase after two quarters, while the effect fades but remains above zero afterwards.

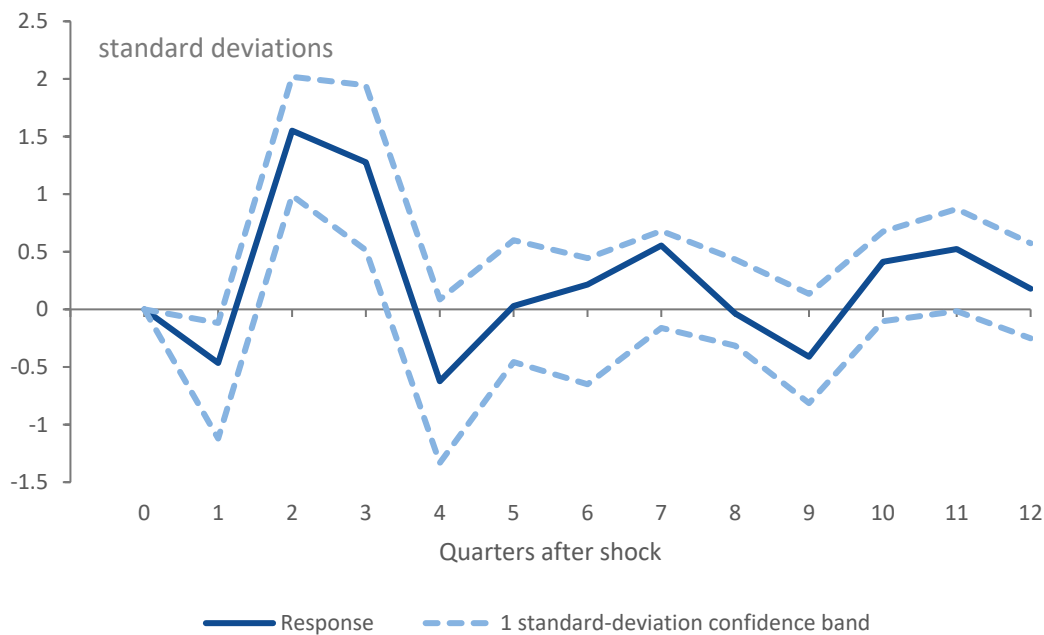
Figure 14: Impact of a shock of the fiscal balance on the current account (Uzbek soms)



Source: own calculations

The series as a share of GDP shows instead a different picture: an increase of the fiscal deficit (as a share of GDP) increases the current account deficit (as a share of GDP) in the second and third quarter after the increase of the fiscal deficit, thereafter the shock fades away. However, it must be noted that in these two quarters the increase of the current account deficit permanently increases the foreign debt as a share of GDP. A possible explanation of this behaviour is that in part a fiscal deficit has a stimulating effect on the economy in the short term, and in part an increase of the fiscal deficit is likely to weaken the som, thus bringing the current account to the previous level.

Figure 15: Impact of a shock of the fiscal balance on the current account (% of GDP)

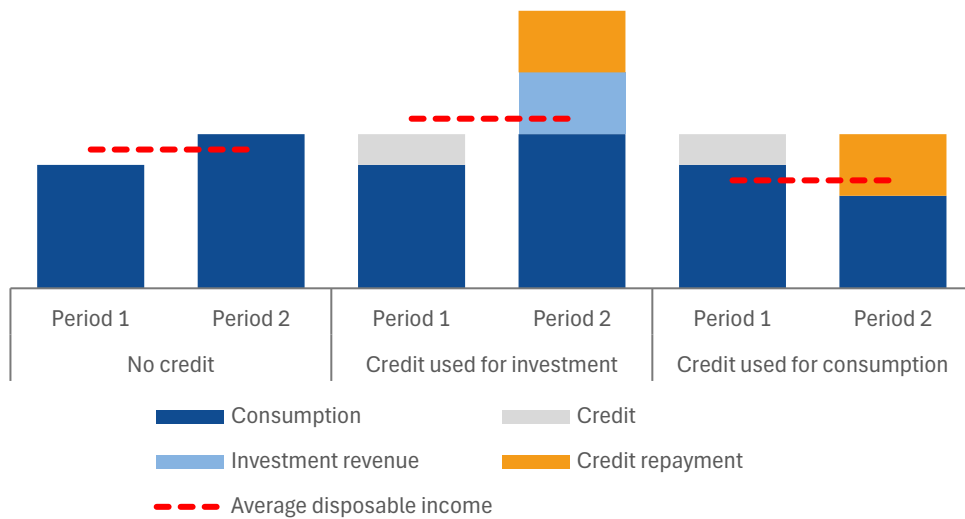


Source: own calculations

### Annex 3: Fiscal deficit due to investment or recessions

In normal times, external financing can increase investments without the need of reducing current consumption and increased savings, and this can allow to increase future income and consumption even after accounting for the debt service (principal and interests). However, if credit is used for consumption, it will not increase future income, and it results in a lower income in the future, as both principal and interest must be paid.

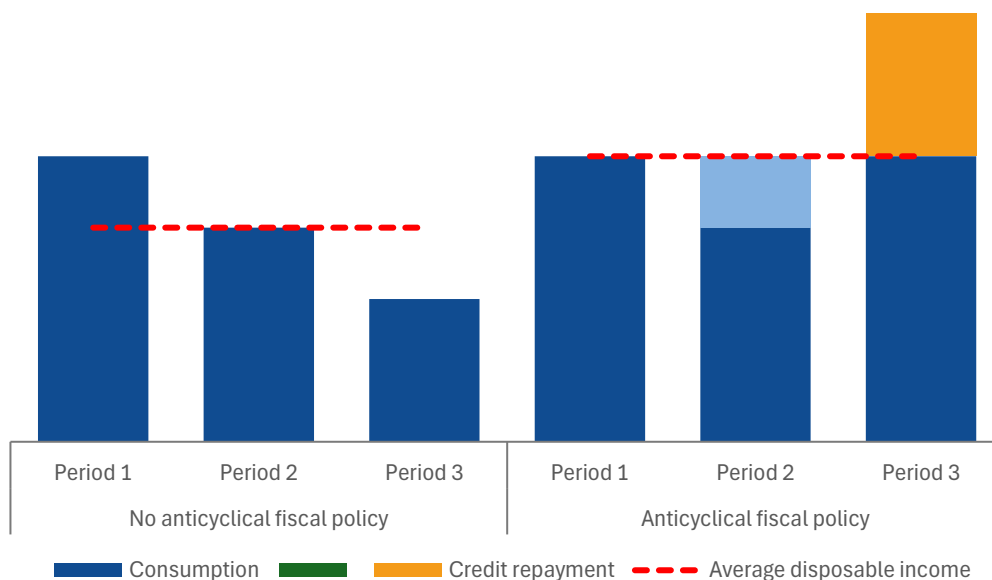
Figure 16: Credit for investment vs for consumption in a normal period



Source: own representation

During a recession, instead, it may be sensible to increase the deficit even if it is not invested. In a recession the fall of private demand can lead to insolvent firms which under normal conditions would be profitable. If the state compensates the fall of private demand, this can be avoided, and the fall of GDP can be reduced, thereby mildening the increase of the debt-to-GDP ratio.

Figure 17: Use of credit for anti-cyclical policy during a recession



Source: own representation

These exceptions, however, hold only if the positive impact on GDP is higher than the cost of repaying the debt.