IWP
WORKING
PAPERS

11/2022
Nº 1

Fiscal Sustainability Cycles: Empirical Evidence from Swiss Cantons.

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Abstract

We examine the fiscal sustainability of 26 Swiss cantons from 1991 to 2019. By comparing the cyclically-adjusted primary balance and the debt-stabilizing primary balance, we compute a yearly sustainability indicator for each canton which abstracts from noise induced by fluctuations in aggregate output. We find that cantonal finances have been mostly sustainable on average, yet follow a fiscal sustainability cycle. Cantonal fiscal policies tend to be classified as not sustainable in the 1990s. A period of consolidation followed in the 2000s. Coinciding with the European debt crisis in 2010 fiscal sustainability has declined again, while an improvement can be observed in the most recent years observed.

1 Introduction

The global increase of public debt since the 2000s has sparked debates about fiscal sustainability among academics and practitioners alike. Generally speaking, the budget should be balanced for reasons of generational equity and allocational efficiency (Rossi and Dafflon, 2002). Deviations from balanced budgets may be justified, inter alia to finance investment projects that offer long-term utility or macroeconomic stabilization (Kirchgässner, 2014). Evidence on the effects of public indebtedness and deficit spending on economic growth may suggest a negative correlation between the two (Panizza and Presbitero, 2013). In contrast, there is broad support for expansionary fiscal policy in times of crisis, with the global financial crisis and Covid-19 only being the latest examples (Eichengreen et al., 2021). Fiscal sustainability is seen as an overarching foundation to allow such spending, however (Rogoff, 2021). The Swiss debt brake supported the federal government to strive towards fiscal sustainability while granting flexibility to counteract recent crises (Eichenauer and Sturm, 2022). OECD countries tend to react to economic upturns by increasing deficits, but are slow to adjust their fiscal policies when the situation is reversed (Beqiraj et al., 2018). Thus, especially advanced countries may need to consider consolidation measures (Afonso et al., 2022).

The literature on public debt tends to focus on the federal level of government. However, for countries with decentralized fiscal systems, sub-federal levels of government are crucial elements of policy-making. The cantons occupy a particularly prominent position in the Swiss economy., They enjoy a high degree of fiscal autonomy,and account for about 40 percent of public expenditures and revenues

(Burret and Feld, 2018a; Mosler and Schaltegger, 2021). Generally, Swiss institutions have promoted fiscal sustainability on the upper two levels of government (Kirchgässner, 2014) which has led to attractive financing conditions for the cantons in recent years (see figure A.1 in the appendix). Such developments sparked debates on whether cantons can or should leverage low interest rates and a potential equity premium to generate profits by debt-financing additional investments (Christen and Soguel, 2019). The financing conditions are volatile over the long-term, however. Interest rates are seen as below the long-term trend in recent years, as Rogoff (2021) argues. Central banks are tightening monetary policy to combat the current surge in inflation. An increase in financing costs may not only substantially increase interest expenditures, but in extreme cases even call the solvency of local authorities into question. Though such scenarios seem unlikely, cantons and municipalities are faced with the no-bailout principle as a consequence of their pronounced autonomy (Blankart, 2011; Kirchgässner, 2014). Accordingly, there is a threat of bankruptcy in the case of over-indebtedness due to not sustainable fiscal policies, as the case of the municipality of Leukerbad in Valais in 1998 has illustrated at the sub-state level (Schaltegger and Winistörfer, 2016).

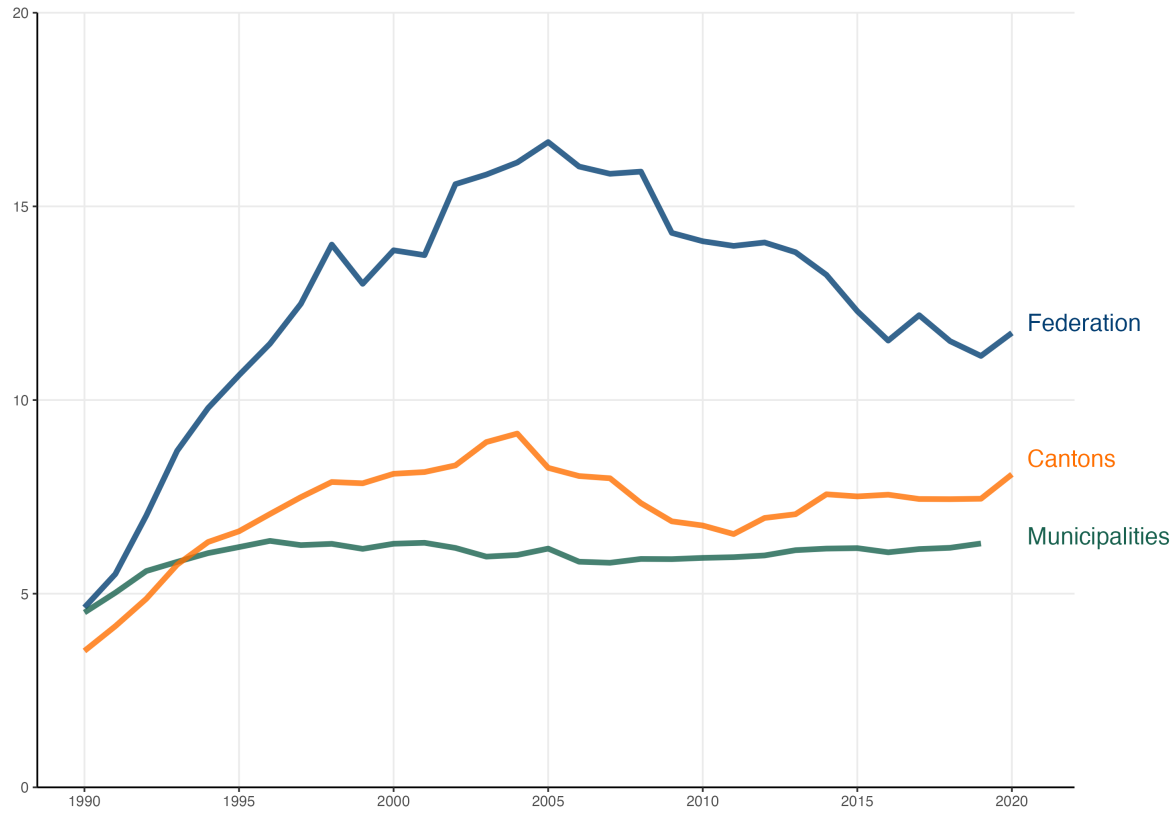
In this paper, we assess the fiscal sustainability of Swiss cantonal finances annually over the period 1991 to 2019. We examine whether cyclically-adjusted primary balances (CAPB) have matched or exceeded debt-stabilizing primary balances (DSPB). This method allows us to provide a granular perspective on the finances of the cantons while accounting for business cycle fluctuations in aggregate output. Our approach method is related to the interpretation of fiscal sustainability according to the Federal Finance Administration (2021), which defines fiscal sustainability as the permanent stabilization of the debt ratio. Our results suggest that the sustainability of cantonal finances is characterized by a cyclical pattern. In the 1990s, cantonal finances are largely classified as not sustainable. They recovered in the following years, which was presumably supported by the introduction of more stringent fiscal rules (Kirchgässner, 2014; Krogstrup and Wälti, 2008). With the onset of the European debt crisis, from 2010 onward, cantonal finances tended to be not sustainable again. A recent visible improvement in fiscal sustainability since around 2015 is likely to be dampened again by the effects of the pandemic and associated policy efforts.

The remainder of the paper is as follows. We descriptively present the debt situation of the Swiss cantons in section 2. In section 3, we present our methodology. The empirical results are presented in section 4. Lastly, we interpret the results in section 5, before section 6 concludes.

2 Debt Situation of the Swiss Cantons

We illustrate the context for cantonal fiscal sustainability by exploring the gross indebtedness[1] of all three levels of government. Figure 1 shows the aggregate real gross debt per capita of the territorial authorities on the federal, cantonal and municipal levels in Switzerland since 1990. The federal government accounts for the largest share of per capita debt, followed by the cantons and municipalities. Since 1990, there was a marked increase in gross debt at the federal and cantonal levels. In contrast, the Swiss municipalities have been able to keep their debt more or less constant during the whole period.

Figure 1: Real per capita gross debt of Swiss authorities, 1990 to 2020, in 1'000 CHF



Data sources: Federal Finance Administration (2022a), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022)

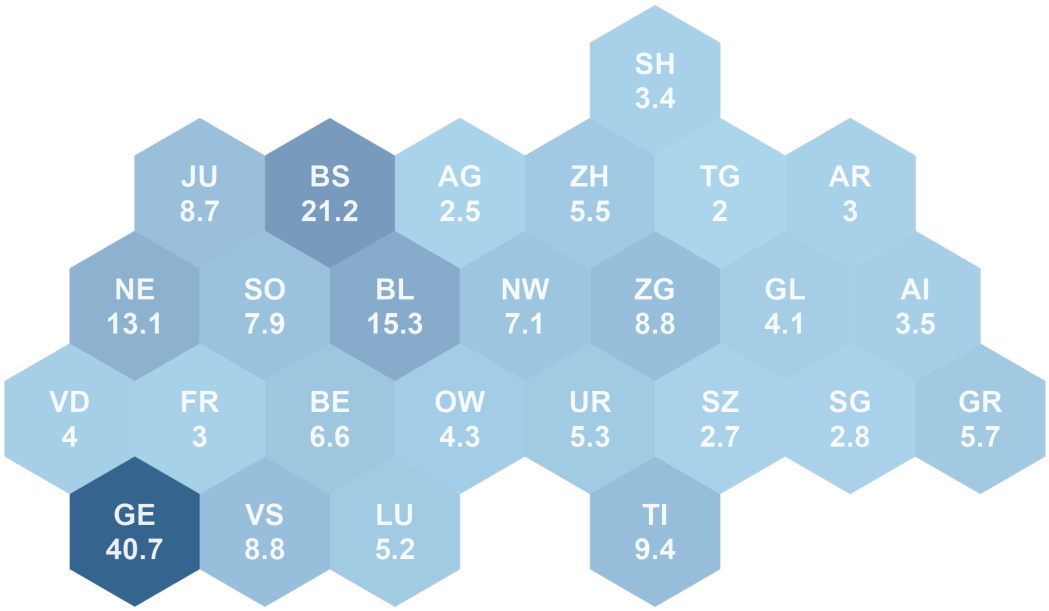
Note: The base year of the GDP deflator is 2015, with municipal data available through 2019.

[1] Gross debt includes liabilities toward taxpayers and cantons as well as financial liabilities. The latter are comprised of bonds and money market debt register claims. Net debt, on the other hand, also accounts for non-administrative assets (excluding productive capital of public services) which could theoretically be used to repay debt (Federal Finance Administration, 2022b). Thus, analyses of gross debt generally lead to a more conservative estimate of the cantons' fiscal stance.

Cantonal debt per capita roughly doubled from 1990 to around 2004. From 2005 to 2011, a decline is observed that can be partly explained by the introduction and revision of cantonal fiscal rules at the end of the 1990s and the beginning of the 2000s, respectively (Kirchgässner, 2002, 2013; Waldmeier and Mäder, 2015). The robust fiscal position at the advent of the global financial crisis of 2008 had allowed the cantons to participate in countercyclical fiscal policy in coordination with the federal government. This effort, however, remained modest in size (Soguel, 2014). From 2012 onward, cantonal public debt shows a slight upward trend again. Real cantonal debt increased from just over CHF 6'600 per capita in 2010 to about CHF 8'100 per capita in 2020. This upward trend may be partly due to the effects of the global financial crisis and the Covid-pandemic. Likewise, the change in the division of tasks between the government sectors implemented in the reform of the national fiscal equalization system in 2008 and the incentive effects of that same fiscal equalization system may have influenced the debt situation (Leisibach and Schaltegger, 2019). Still, a part of the real debt increase that can be attributed to discretionary fiscal policy of the cantons remains (Schaltegger and Weder, 2010).

Cantons follow heterogeneous fiscal strategies, however (see figure A.2 in the appendix). Figure 2 shows the per capita gross debt of the cantons in 2020. Generally, most cantons have a rather low level of debt compared to the European context, both at the cantonal and municipal level (Eichler and Peters, 2021). With a debt per capita of over CHF 40'700, the canton of Geneva has the highest debt of all cantons. The canton with the second highest debt, Basel-City, has a debt of just over CHF 21'200 per capita, which is only about half. It is followed by Basel-Country with around CHF 15'300 and Neuchâtel with CHF 13'100 per capita. In most cantons, however, the per capita debt is between CHF 3'000 and CHF 10'000. Argovia, St. Gall, Schwyz and Thurgovia have the lowest per capita debt, with values below CHF 3'000.

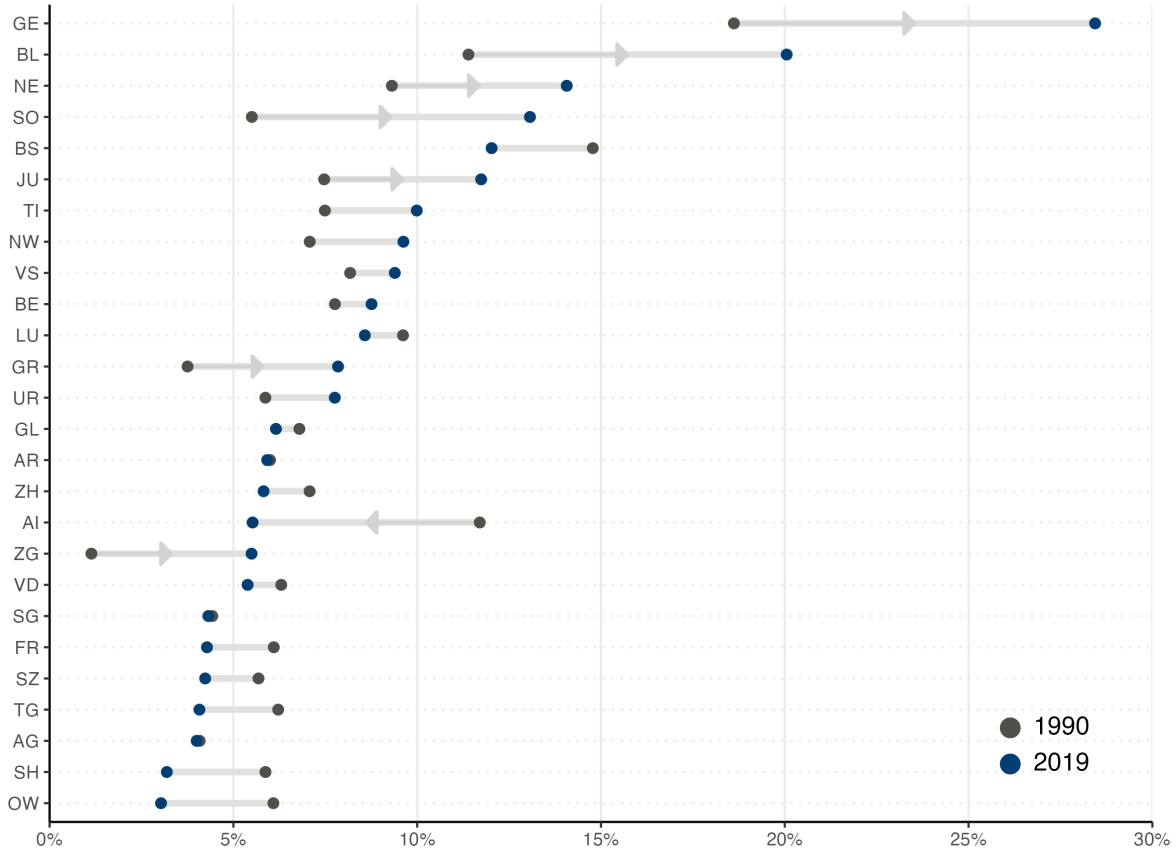
Figure 2: Cantonal gross debt per capita, 2020, in 1'000 CHF



Data sources: Federal Finance Administration (2022c), Global Administrative Areas (2022)

Debt dynamics over time are heterogeneous as well, as becomes apparent when looking at gross debt levels as a percentage of cantonal GDP in 1990 and 2019 in figure 3. The figure shows whether the gross debt ratio has decreased or increased over the observation period. Most cantons show a high stability of their debt-to-GDP ratios. It has increased in only 12 cantons. The cantons of Geneva and Basel-Country recorded the largest increases, with around 8.6 percentage points. These two cantons also have the highest gross debt ratios, at respectively 27.2 and 20.1 percent of GDP in 2019. The high debt per capita in Basel-City is compensated by a comparatively large GDP, placing the canton closer to the average of the cantons, as compared to the metric used in figure 2. Solothurn has also seen a vast increase of around 7.6 percentage points. On the other hand, the most extensive consolidation can be seen in the canton of Appenzell Inner-Rhodes, where the debt ratio decreased by around 6.2 percentage points. In contrast, the cantons Appenzell Outer-Rhodes, St. Gall and Argovia have managed to keep their gross debt ratios remarkably stable with virtually no change from 1990 to 2019.

Figure 3: Cantonal gross debt ratios, 1990 and 2019, in percent of GDP

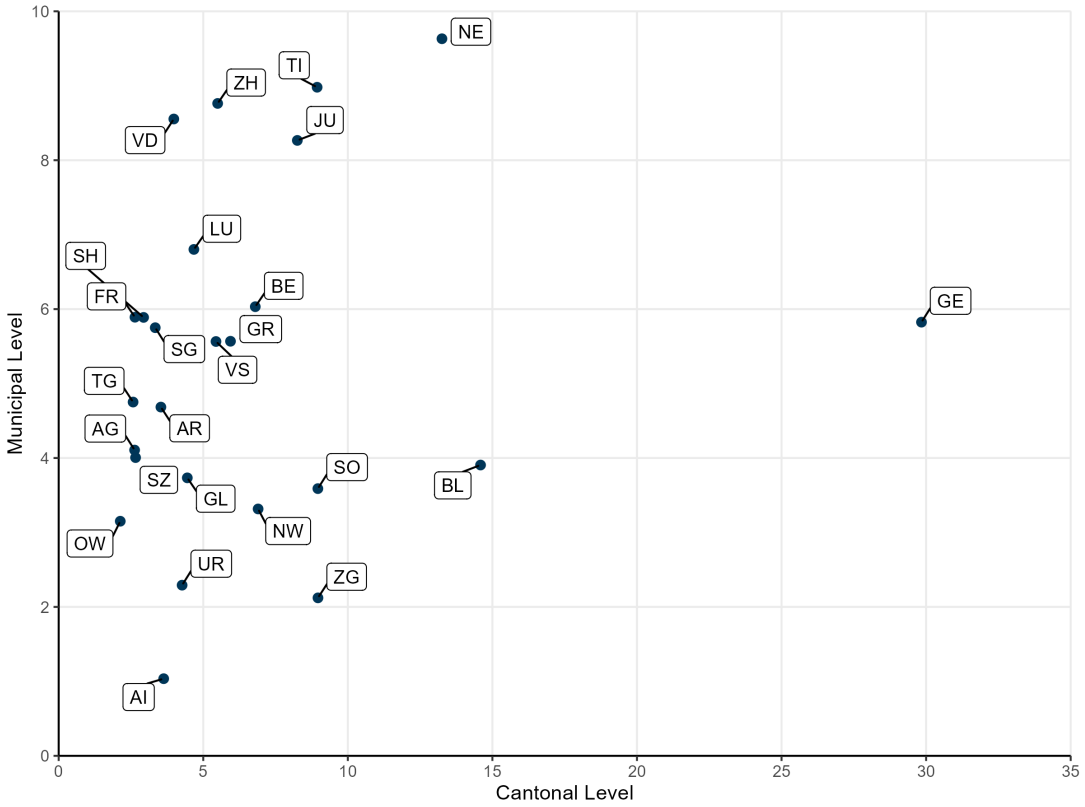


Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c)

Financing burdens and thus debt levels of the cantons may also vary because of differences in the vertical division of competencies and responsibilities (Kellermann, 2021; Kirchgässner, 2002). The levels of per capita debt at the cantonal and municipal level in 2019 are shown in figure 4. The figure clearly reflects the relevance of the vertical division of competencies for fiscal policy. For example, the high cantonal debt in Geneva might partly be a consequence of greater centralization, which relieves the burden on the municipalities but requires the canton to take on additional financial burdens. Apart from the highly urbanised canton Basel-City, Geneva is the most centralised canton with only 21.2 percent of sub-federal government spending attributable to municipalities as compared to the Swiss mean of 36.5 percent. Other cantons, including Jura, Ticino, Vaud and Zurich, have relatively low debt at the cantonal level but high municipal debt compared to most other cantons. The largest territorial reform in the observation period has occurred in Glarus, where the intra-cantonal division of tasks was substantially changed and 70 municipalities were reorganized to form three communes in 2011. The reform may have contributed a

modest amount to the comparably favorable situation the canton and its municipalities find themselves in today (Hofmann and Rother, 2019). While one might expect a negative influence of cantonal fiscal rules on the other levels' fiscal outcome, Burret and Feld (2018b) do not find effects of cantonal fiscal rules on local finances or decentralization.

Figure 4: Cantonal and municipal gross debt per capita 2019, in CHF 1'000



Data sources: Federal Finance Administration (2022c)
Note: Basel-City is excluded, as there is no separate accounting for the city and the canton.

3 Cyclically-Adjusted and Debt-Stabilizing Primary Balances

Definitions of fiscal sustainability remain contested. Many metrics are used to evaluate the sustainability of public finances[2]. Following Afonso et al. (2022), Alesina and Ardagna (2013), Escalano (2010) and Kose et al. (2022), the basis of our analysis are

[2] For example, neither the absolute nor per-capita values of indebtedness are sufficient, as they cannot serve as an indicator for the actual extent of public indebtedness. Since the government has access to the income of the national economy through taxation, the GDP is a naive useful reference value to address this shortcoming (Blanchard et al., 1991). For this reason, the Maastricht Criteria of the European Union aim to cap the government debt-to-GDP ratio to 60 percent and prevent deficits

the yearly cantonal primary balances. The primary balance is defined as the difference between revenues and expenditures after the deduction of interest payments. A positive primary balance (or primary surplus) indicates that revenue is sufficient to cover current spending excluding interest payments. The absolute debt level can be stabilized if the primary surplus is sufficient to cover interest payments for previously accumulated debt. If GDP growth exceeds the real interest rate, deficits are compatible with a stable debt-to-GDP ratio (Holtfrerich et al., 2016). Primary balances are hence useful to assess the sustainability of the finances of a canton through a stabilisation of the debt ratio.

We employ two variations of the primary balance. The CAPB adjusts the primary balance for cyclical variation in tax revenues due to output fluctuations. As such variation is beyond the immediate control of fiscal policy, this adjustment can offer a clearer picture of the fiscal stance of the canton (Fedelino et al., 2009). To compute the indicator, we separate the potential GDP from the cyclical component using the Hodrick-Prescott filter with a smoothing parameter of 100. The same methodology is applied in the Swiss debt brake to determine the trend output for the calculation of the cyclical adjustment factor (Danninger, 2002; Pfeil and Feld, 2016; Salvi et al., 2020). Potential GDP, Y^p, as a share of actual GDP, Y, is used to adjust the revenues to fluctuations in output. The CAPB in canton i and year t is calculated as follows:

$$CAPB_{it} = REV_{it} * \frac{Y_{it}^p}{Y_{it}} - PEXP_{it},$$

where REV_{it} are the revenues and $PEXP_{it}$ the primary expenditures of canton i in year t. The formula assumes an elasticity of revenues with respect to cyclical fluctuations of 1, which implies that revenues rise and fall in proportion to the cycle. While this is a simplification, it comes close to empirical estimates and is thus commonly used in the literature (Afonso et al., 2022; Fedelino et al., 2009; Girouard and André, 2005). The fiscal data are taken from the Federal Finance Administration (2022c). Until 2007, we use estimated GDP data from BAK Economics (2022); from 2008 onward, we resort to data from the Federal Statistical Office (2022).

The DSPB is closely related to the approach of the Federal Finance Administration (2021) but not tied to a certain reference year. Instead, it is defined as the primary balance that has to be achieved in year t to keep the debt ratio at the same level as in

of more than 3 percent. However, this interpretation of fiscal sustainability is subject to a critical debate, not least because of its arbitrary determination of parameters (Balassone and Franco, 2000).

$t-1$ (Escalano, 2010; Ncube and Brixiová, 2015). Formally, the DSPB of canton i in year t is determined as follows:

$$DSPB_{it} = \frac{r_{it} - g_{it}}{1 + g_{it}} * d_{i,t-1},$$

where r is the real interest rate, g is real GDP growth and d is the gross debt. The primary balance required in year t to stabilize debt is thus increasing in d as well as in the difference between r and g. The DSPB thus captures the fact that an increase in absolute debt can be compatible with a stable debt ratio if economic growth exceeds the interest rate. To approximate r, we compute the share of interest payments with respect to gross debt.

Since the CAPB describes the primary balance actually achieved in year t, taking into account the business cycle, and the DSPB depicts the primary balance that would be necessary to keep the debt ratio stable, the following relationship represents the condition for fiscal sustainability:

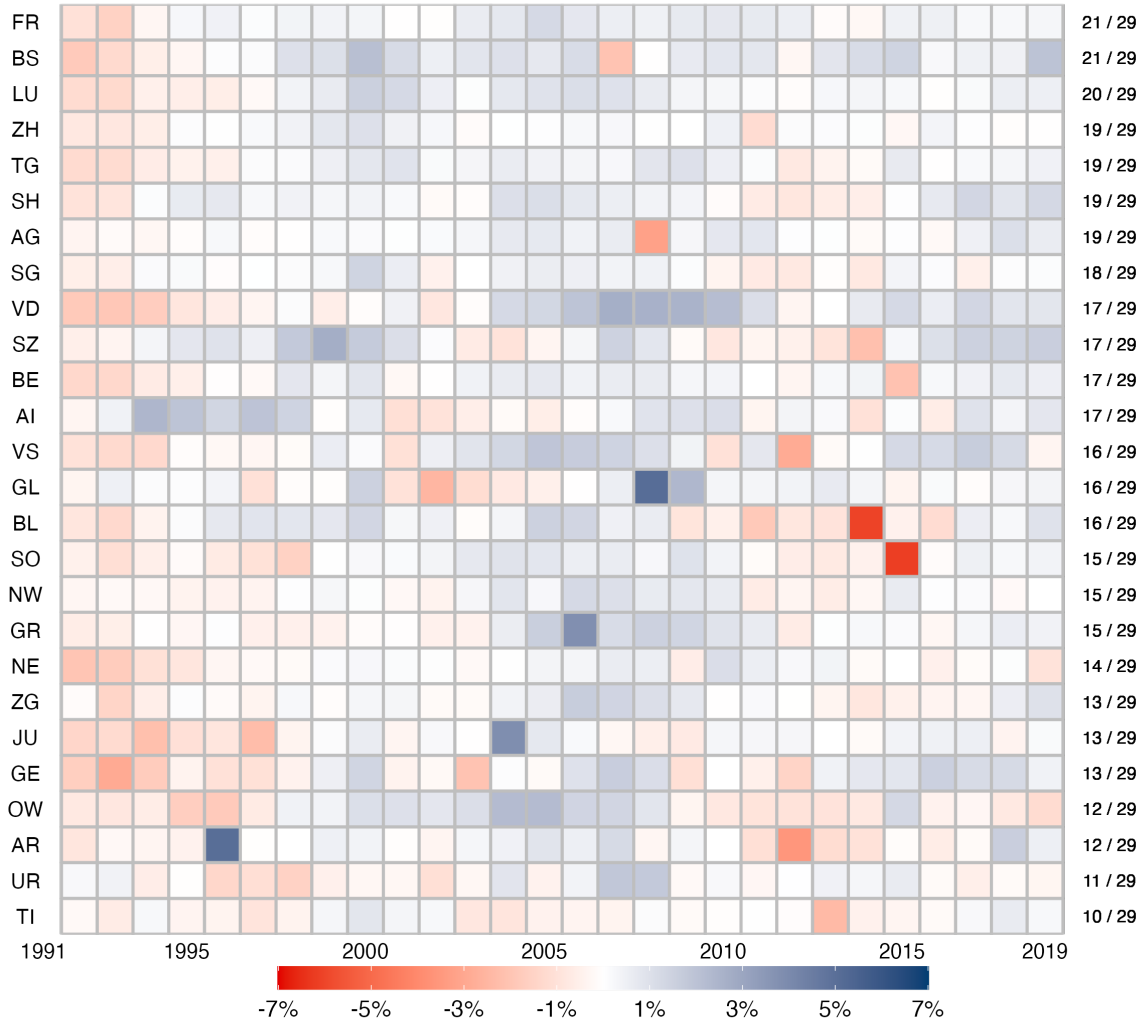
$$DSPB_{it} \leq CAPB_{it}.$$

When the CAPB is larger than or equal to the DSPB, fiscal policy is considered sustainable and vice versa. We emphasize that sustainability is evaluated only regarding the stabilization of the debt ratio. Using this method, the frequency and magnitude of (un-)sustainable episodes can be assessed, thus providing an overview of the sustainability of cantonal finances. Since positive and negative deviations from the DSPB can cancel each other out, the presence of only a few not sustainable years does not imply long-term unsustainability of fiscal policy.

4 Empirical Results

In total, we empirically find 415 sustainable and 339 not sustainable canton-years. Moreover, 18 cantons have followed a sustainable fiscal policy over half or more of the observation period. This is an indication that the finances of the cantons were sustainable on average. For most of the observations, 582 out of 754, the annual difference between the cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB) was below 1 percent of GDP, further indicating a relatively stable debt ratio (see figure 5). See tables A.1 to A.3 for the exact values.

Figure 5: Differences between the cantonal cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 1991 to 2019, in percent of potential GDP



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

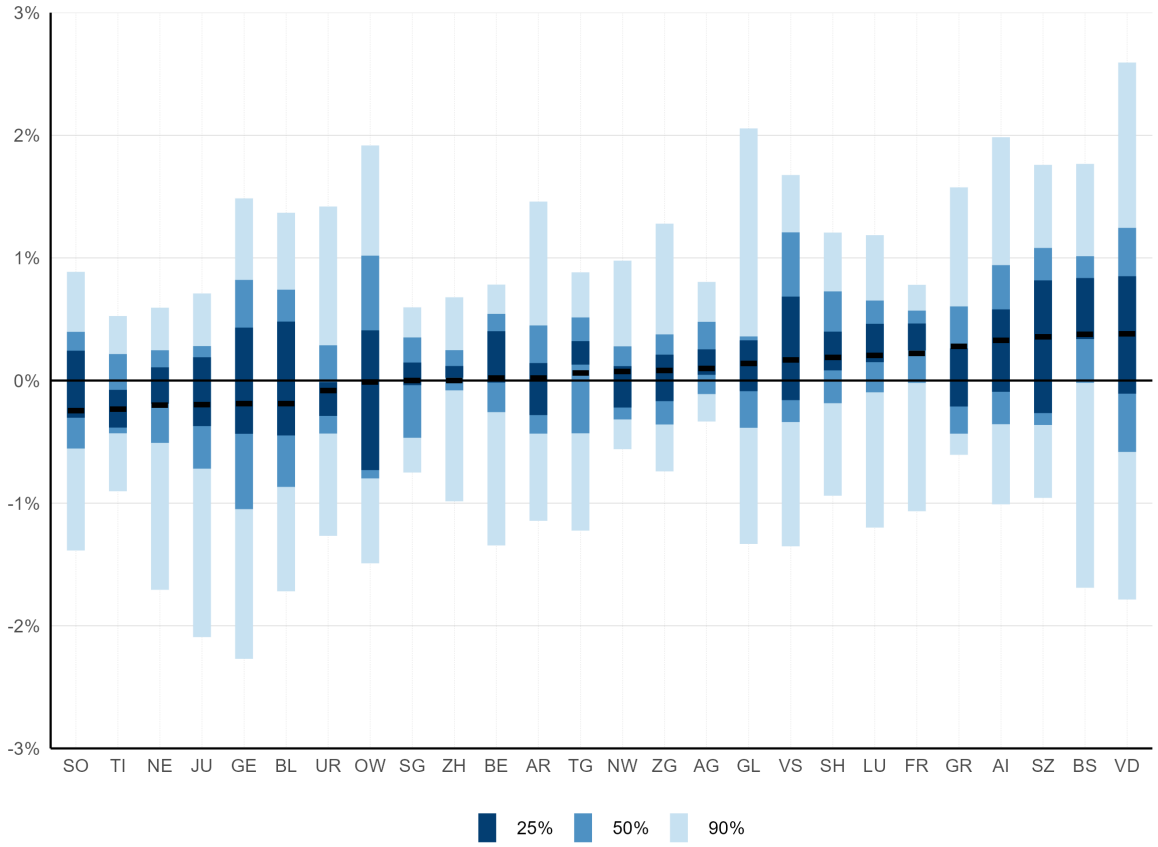
Note: Blue marks a sustainable fiscal policy, red marks an not sustainable fiscal policy. The right-hand scale shows the number of sustainable years relative to the entire observation period.

The largest negative differences between the CAPB and the DSPB are observable in the cantons of Solothurn and Basel-Country in 2015 and 2014, respectively, each exceeding 6 percent of GDP. This implies that a substantially lower CAPB was achieved than would have been necessary to stabilize the debt ratio. These extraordinarily high values may be attributed to the funding of the cantonal pension funds which amounted to about one billion Swiss francs for each canton. On the

other end of the spectrum, the cantons of Appenzell Outer-Rhodes in 1996 and Glarus in 2008 had a substantially higher CAPB than necessary to stabilize debt. The differences to the DSPB amounted to around 5.1 percent of GDP in the respective years. Both instances may be traced to factors besides regular fiscal policy and economic performance: Appenzell Inner-Rhodes sold its cantonal bank and Glarus benefitted from substantial fee payments of hydro power plants. Figure 5 also shows how often the cantons achieved fiscal sustainability. With 21 years or 72 percent of the period under review classified as fiscally sustainable, Fribourg and Basel-City are the cantons that achieved debt-stabilisation in the most years according to our measure. The cantons Uri and Ticino are at the other end of the distribution: in both cantons, fiscally not sustainable periods predominate, with 18 and 19 years respectively.

The conclusions partly change once we focus on the average values. Figure 6 shows the averages and distributions of our results across cantons. The CAPB of Vaud and Basel-City positively exceeded the DSPB the most at 0.38 percent of GDP on average, Schwyz follows with 0.36 percent. The CAPB of Ticino and Solothurn most pronouncedly falls below the DSPB, at an average of 0.23 and 0.25 percent of GDP, respectively.

Figure 6: Distributions of the differences between the cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB) per canton, in percent of potential GDP

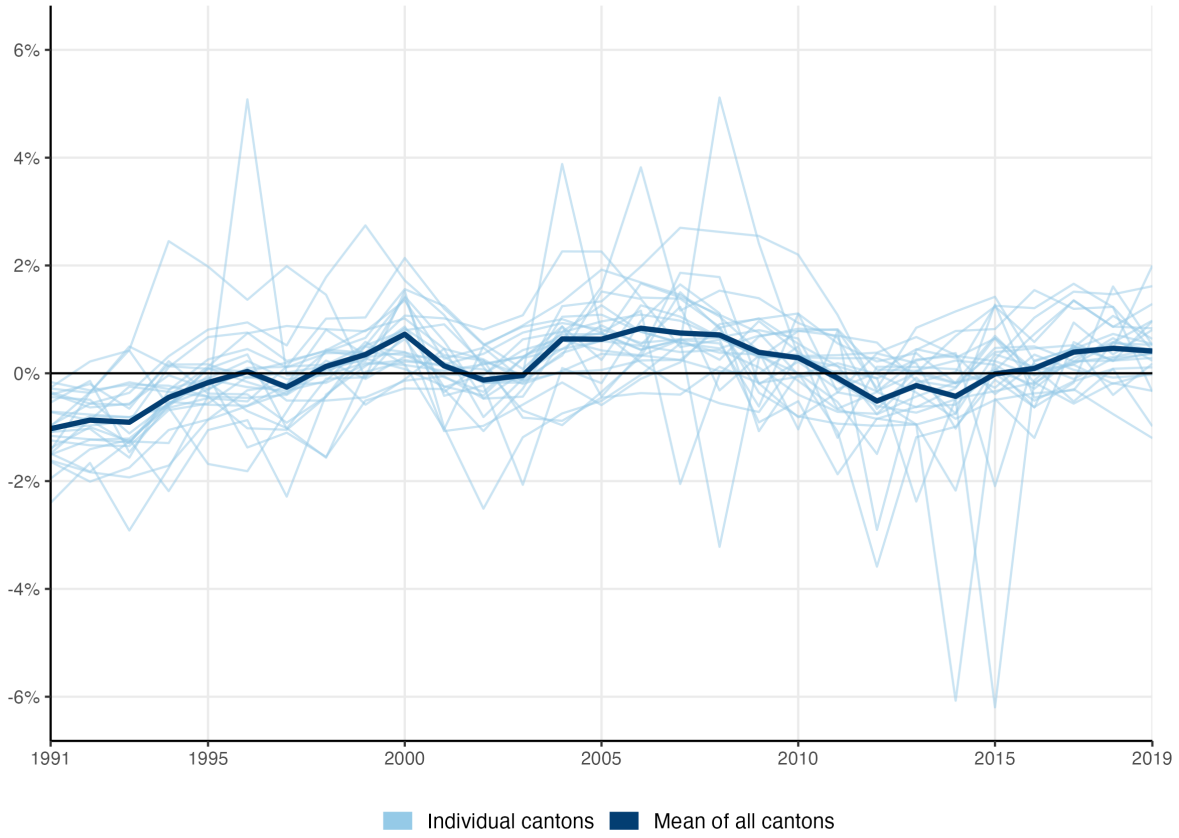


Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

Note: The intervals include the inner 25, 50 and 90 percent of observations per canton. The ordering of the cantons is based on the average difference between the CAPB and DSPB (indicated by the black lines).

Cantonal fiscal policies seem to be subject to fiscal sustainability cycles, as indicated in figure 7. The cycles follow a pronounced common pattern. Fiscal sustainability was generally rather weak in the 1990s. Afterwards, it recovered until the mid-2000s. Only at the height of the European debt crisis from 2010 onward did many cantons follow a fiscal policy that could no longer be classified as sustainable when comparing their CAPB and DSPB. This downward trend reversed again at around 2015, however. This may be the result of the decline in borrowing costs which happened simultaneously.

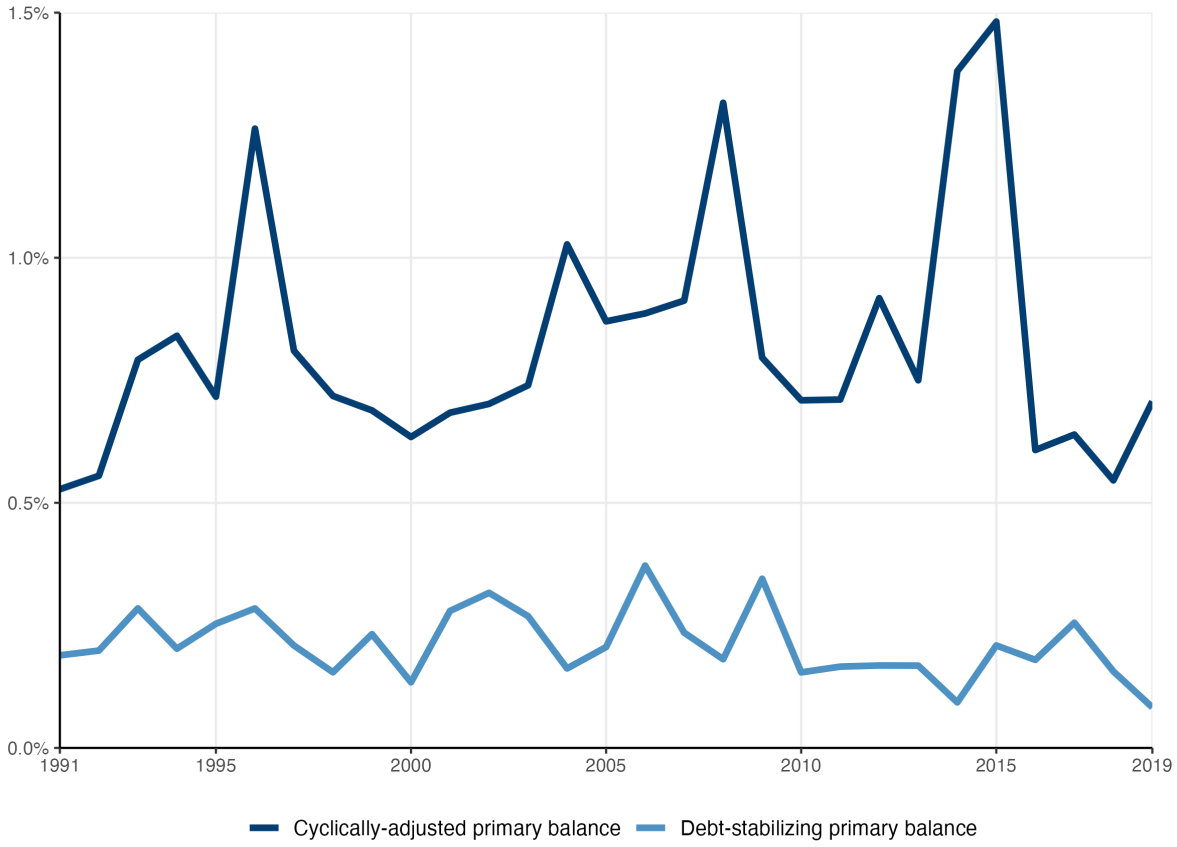
Figure 7: Differences between the cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 1991 to 2019, in percent of potential GDP



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

Figure 8 shows the yearly standard deviations of both the CAPB and the DSPB across cantons. The CAPB has a consistently higher standard deviation than the DSPB over the entire observation period. Thus, the heterogeneity of realized fiscal outcomes is more pronounced than that of the primary balances that would theoretically be needed to stabilize debt. It should be noted, however, that outliers like Appenzell Outer-Rhodes in 1996 can have a large influence on this measure. The same finding is illustrated by figure A.3 that shows the results for all cantons in the final year of our observation period in 2019. This might suggest that the importance of common economic trends is rather small. Decisions within the discretionary scope of the cantonal governments seem to play a larger role in determining fiscal sustainability.

Figure 8: Standard deviations of the cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 1991 to 2019, in percent of potential GDP



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

5 Discussion

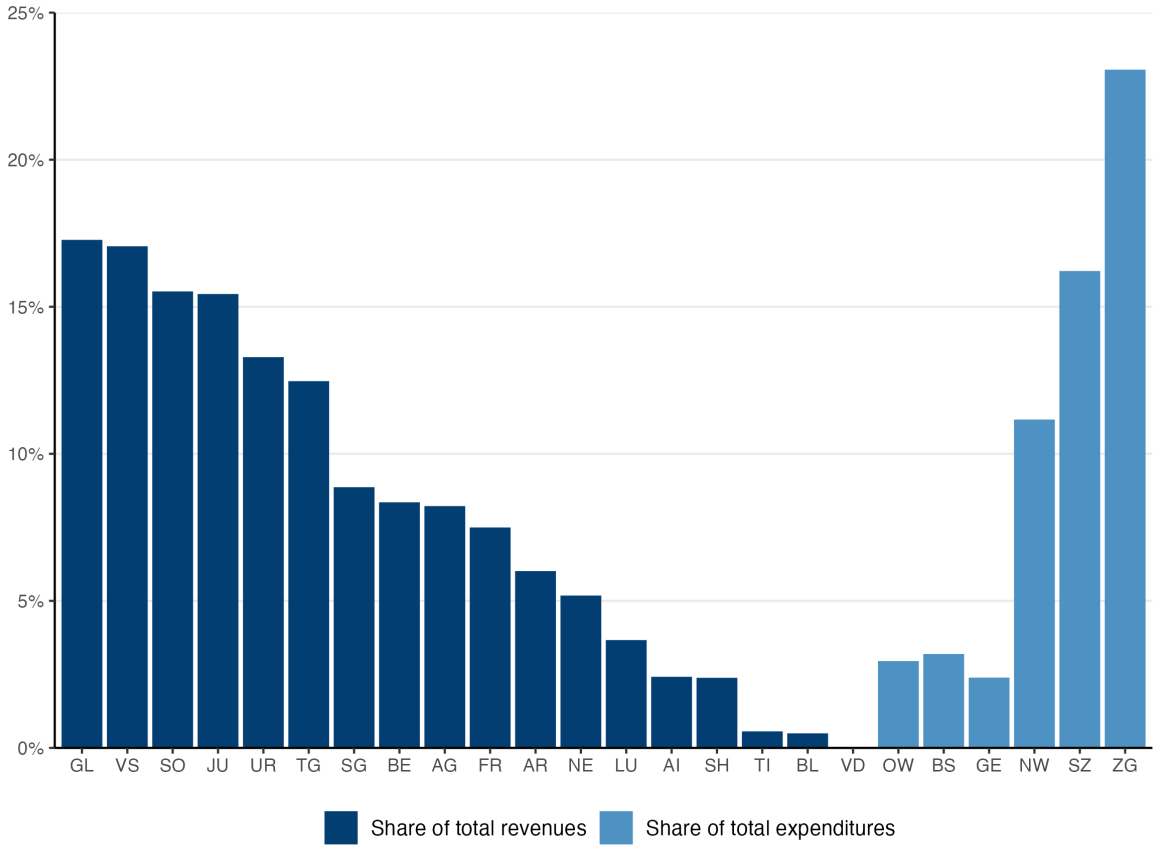
As there are different definitions of fiscal sustainability, the classification outcomes depends on the indicator chosen. Our method, the comparison between the cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), offers the advantage of providing granular results while abstracting from the noise generated by fluctuations in economic output. One of the main limitations of our approach is that it does not take the level of debt into account. Cantons with above average gross debt relative to GDP may appear more fiscally sustainable than their debt ratios would suggest. This is the case for the canton of Geneva, for example, which has been classified as fiscally sustainable in almost half of the observation period (13 out of 29 years) even though it stands out as the canton with by far the highest debt ratio. However, one may argue that Geneva could service its debt for a prolonged time also indicates that its aggregate level is not not sustainable per se.

A related point of discussion is whether or not net debt instead of gross debt shall be considered. The cantons are not only indebted, but also own financial assets that generate interest revenues. Figure A.5 shows that nine cantons actually have net wealth as of 2019. Cantonal heterogeneity in this regard is pronounced, in levels as well as dynamics. To estimate whether our results are affected by the indicators used, we compute the DSPB using net debt and net interest payments. The results of this analysis are documented in figures A.6 to A.8. While individual assessment changes slightly for some asset-rich cantons, the overall conclusion remains. Moreover, Henao-Arbelaez and Sobrinho (2017) show that the sovereign spreads of advanced economies are not substantially impacted by their assets. The scholars show that an important factor which determines the usefulness of government assets in upholding fiscal sustainability is their liquidity, which is difficult to assess with available data.

As mentioned, cantonal fiscal policies and the sustainability of public budgets are influenced by numerous institutional determinants (Badinger and Reuter, 2017; Blankart, 2011; Claeys et al., 2008; Feld and Kirchgässner, 2008; Feld et al., 2011; Funk and Gathmann, 2011; Kirchgässner, 2002, 2014; Krishnakumar et al., 2010). A particularly important institutional factor that influences cantonal finances in the Swiss context are horizontal and vertical transfers. In Jura, transfers make up the highest share of cantonal revenues at roughly 53 percent, while the share of transfers is the lowest in the highly indebted cantons of Geneva and Basel-City, at about 17 and 22 percent, respectively (Federal Finance Administration, 2022c). Regarding its incentives, the most important transfer scheme is the national fiscal equalization system, as it directly redistributes between the cantons based on their resource potential. As illustrated by figure 9, revenues and expenditures related to this institution have a large impact on cantonal finances.

One example of the influence of the national fiscal equalization system on fiscal sustainability is the canton of Fribourg, which has the highest number of sustainable years in our analysis. On one hand, it is among the cantons with the most rigorous fiscal rules (Kirchgässner, 2014). On the other hand, it is also a net recipient of the fiscal equalization. This may indicate that the observed sustainability of Fribourg is not only due to a sound fiscal policy, but has also been aided by inter-cantonal redistribution. The inverse may be said about the canton of Zug, which is slightly below average in terms of the share of sustainable years. It is constrained as more than 23 percent of its total expenditures accrue for the resource equalization, however.

Figure 9: Shares of total revenues / expenditures due to the resource equalization system as a percentage of total revenues / expenditures, 2020, in percent



Data sources: Federal Finance Administration (2022c)

Varying fiscal outcomes might also be induced by different preferences of local constituencies (Brennan and Buchanan, 1977; Buchanan, 1995). Importantly, attitudes towards the role of the state and fiscal policy vary between linguistic regions, with the German-speaking cantons more in favor of balanced budgets and lower spending per capita (Kellermann, 2021; Pujol and Weber, 2003). This influences policy-making due to the extensive autonomy of the cantons, combined with pronounced democratic institutions. Recently, it has been shown that voters in Swiss cantons generally tend to prefer finance ministers that succeed in balancing fiscal accounts, indicating that there is indeed a preference for sustainable public finances (Buchs and Soguel, 2022). There are also economically justifiable reasons for which primary balances may deviate from the DSPB, including but not limited to anti-cyclical fiscal policy or the financing of long-term investments that may generate positive future returns (Kirchgässner, 2014). Our approach does not distinguish between productive investments and consumptive spending.

In the recent past, the demographic development has lead to increasing health care expenditures in cantonal budgets (Mosler and Schaltegger, 2021). For the same reason, Federal Finance Administration (2021) has already identified a financing gap in Switzerland's public budgets. The health and nursing care sector in particular will put a strain on cantonal budgets in the long term because of the ageing population or Baumol's cost disease (Brändle et al., 2022; Colombier and Brändle, 2018). Policy-makers are encouraged to regularly examine the cantonal budget compositions to ensure fiscal sustainability and to adapt them to the preferences of the citizens. From a political economy perspective, this may also include evaluating the cantonal fiscal rules, which are only weakly restrictive in some cantons (Feld et al., 2021).

Keeping the finances on a sustainable path is especially relevant, since some economic shocks, such as the Covid crisis, are beyond the control of cantonal governments and cannot be budgeted for in advance. The strained fiscal situation of the cantons of Appenzell Outer-Rhodes, Berne, Geneva, Glarus, Solothurn and Vaud in the 1990s was caused by losses incurred by the respective cantonal banks (Blankart, 2011). Fiscal policy that is classified as not sustainable at certain points does not necessarily indicate an asymmetry in the cantons' fiscal strategy itself but may be driven by external factors. Sound finances are nevertheless more likely to enable appropriate counteracting measures in such situations (Eichengreen et al., 2021; Soguel, 2014).

After the implementation of the OECD minimum tax, numerous Swiss cantons will lose a fiscal policy instrument in international location competition (Mosler and Portmann, 2022). It has yet to be seen how this loss of autonomy influences the sustainability of public finances. Not sustainable cantonal finances entail the risk of consolidation measures which can be an marginal decision criterion in location competition for individuals and legal entities.

6 Conclusion

Given the cantons' high degree of fiscal autonomy, the sustainability of cantonal fiscal policy is of particular importance for Switzerland's economy. To assess the sustainability of cantonal fiscal policy, we examine the yearly cyclically-adjusted and debt-stabilizing primary balances for each canton over the period 1991 to 2019. While we find substantial heterogeneity between cantons, we observe a fiscal sustainability cycle common to most cantons.

During the 1990s, fiscal sustainability was rather weak. This was followed by a period in which cyclically-adjusted primary balances were usually larger than debt-stabilizing primary balances. However, the onset of the European debt crisis in 2010 marked turning point with a phase of rather weak fiscal sustainability lasting until around 2015. Afterwards, sustainability of cantonal finances improved again until the end of our observation period. Although the effects of the pandemic on fiscal policy are not yet reflected in the analysis, it can be assumed that a new cycle has begun.

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A Appendix

Table A.1: Differences between cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 1991 to 1999, in percent of potential GDP

	1991	1992	1993	1994	1995	1996	1997	1998	1999
AG	-0.28	-0.36	-0.17	-0.29	-0.10	0.23	-0.11	-0.03	0.19
AI	-0.98	-0.35	0.43	2.45	1.98	1.36	1.99	1.46	-0.08
AR	-0.72	-0.87	-0.25	-0.34	-0.43	5.08	-0.04	-0.01	0.49
BE	-1.25	-1.34	-1.35	-0.68	-0.56	-0.06	-0.21	0.81	0.34
BL	-1.49	-0.87	-1.30	-0.42	0.12	0.74	0.88	0.82	0.78
BS	-1.49	-1.82	-1.27	-0.57	-0.30	0.10	0.12	1.01	1.04
FR	-1.09	-1.03	-1.57	-0.32	0.26	0.45	0.11	0.37	0.38
GE	-2.40	-1.66	-2.92	-1.76	-0.43	-1.02	-1.05	-0.44	0.51
GL	-1.43	-0.36	0.50	0.13	0.08	0.35	-1.03	-0.10	-0.07
GR	-0.37	-0.63	-0.56	-0.04	-0.29	0.06	-0.51	-0.51	-0.45
JU	-1.95	-1.41	-1.23	-2.19	-1.05	-0.87	-2.29	-0.39	0.13
LU	-1.16	-1.23	-1.29	-0.53	-0.58	-0.60	-0.21	0.40	0.66
NE	-1.64	-2.01	-1.75	-1.05	-0.86	-0.32	-0.21	-0.18	0.16
NW	-0.16	-0.32	-0.21	-0.23	-0.43	-0.46	-0.40	0.05	0.27
OW	-0.71	-0.77	-0.81	-0.64	-1.68	-1.82	-0.71	0.44	0.38
SG	-0.97	-0.56	-0.58	0.16	0.17	-0.09	0.02	0.13	0.23
SH	-1.02	-0.97	-0.89	0.11	0.67	0.76	0.23	0.41	0.30
SO	-0.44	-0.49	-1.12	-0.55	-0.17	-0.70	-1.02	-1.57	0.03
SZ	-0.35	-0.56	-0.36	0.32	0.81	0.94	0.52	1.78	2.74
TG	-1.51	-1.23	-1.21	-0.64	-0.46	-0.52	0.12	0.16	0.51
TI	-0.39	-0.20	-0.66	0.22	-0.38	-0.39	-0.92	-0.43	0.28
UR	-0.27	0.22	0.42	-0.62	-0.05	-1.38	-1.10	-1.55	-0.51
VD	-1.62	-1.83	-1.93	-1.71	-0.86	-0.61	-0.35	0.13	-0.58
VS	-1.39	-1.00	-1.26	-1.29	-0.11	-0.26	-0.32	-0.14	0.58
ZG	-0.54	-0.14	-1.47	-0.59	0.09	-0.16	-0.39	0.24	-0.10
ZH	-1.10	-0.80	-0.82	-0.59	0.08	0.03	0.20	0.43	0.80

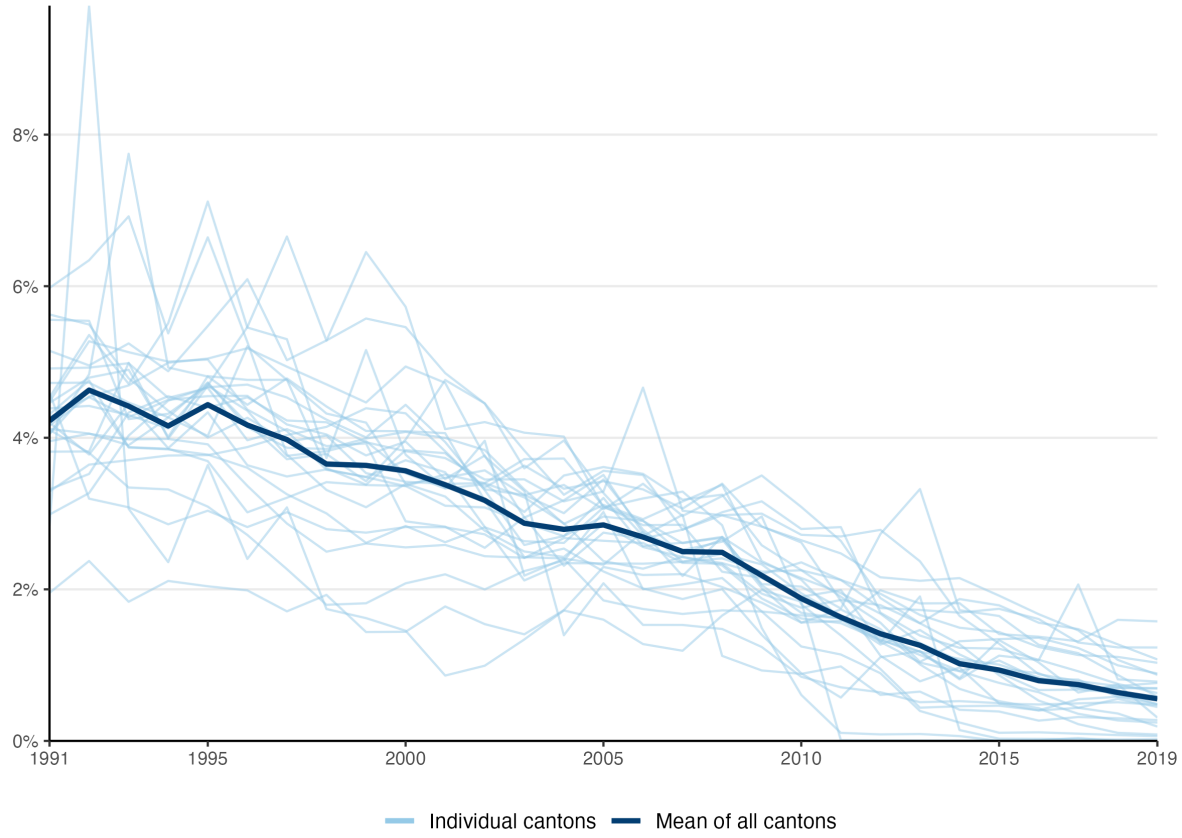
Table A.2: Differences between cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 2000 to 2009, in percent of potential GDP

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
AG	0.15	0.05	0.16	0.31	0.72	0.73	0.43	0.62	-3.22	0.28
AI	0.73	-1.07	-0.97	-0.58	-0.17	-0.59	-0.10	0.20	0.91	1.01
AR	0.39	-0.07	-0.34	0.28	0.45	0.89	0.53	1.23	-0.32	0.33
BE	0.87	-0.26	-0.02	0.43	0.64	0.74	0.44	0.63	0.66	0.29
BL	1.35	0.27	0.48	-0.12	0.33	1.52	1.38	0.49	0.62	-0.91
BS	2.14	1.20	0.53	0.86	1.00	0.76	1.16	-2.05	-0.02	0.68
FR	0.34	-0.02	-0.04	0.63	0.77	1.26	0.77	0.56	0.46	0.70
GE	1.40	-0.42	-0.22	-2.07	0.10	-0.18	0.97	1.65	1.11	-1.07
GL	1.53	-1.00	-2.51	-1.19	-0.74	-0.51	-0.03	0.55	5.12	2.41
GR	-0.14	-0.05	-0.47	-0.43	0.60	1.60	3.82	1.16	1.53	1.39
JU	0.64	-0.35	0.22	-0.03	3.88	0.76	0.20	-0.28	-0.56	-0.72
LU	1.56	1.25	0.55	0.08	0.76	0.96	1.09	0.97	0.65	0.31
NE	0.25	0.13	0.07	-0.20	0.04	0.36	0.32	0.62	0.55	-0.62
NW	0.08	-0.24	-0.41	0.28	0.87	0.25	1.26	1.05	0.67	0.80
OW	1.07	1.02	0.81	1.08	2.26	2.26	1.41	1.38	0.86	-0.36
SG	1.43	0.59	-0.47	0.01	0.45	0.60	0.51	0.39	0.43	0.11
SH	0.39	0.20	-0.18	-0.11	1.05	1.09	0.77	0.57	0.38	0.35
SO	0.22	0.16	0.36	0.75	0.93	0.82	0.56	0.63	0.25	0.97
SZ	1.72	1.08	0.11	-0.69	-0.96	-0.35	0.31	1.50	0.82	-0.19
TG	0.80	0.91	0.17	0.31	0.62	0.42	0.33	0.25	0.84	1.02
TI	0.84	0.34	0.24	-0.82	-0.88	-0.45	-0.37	-0.40	0.12	-0.18
UR	-0.28	-0.29	-1.07	-0.28	0.87	-0.43	0.38	1.86	1.78	-0.20
VD	-0.11	0.46	-0.81	-0.10	1.24	1.33	1.98	2.70	2.62	2.55
VS	0.16	-1.04	0.51	0.89	1.33	1.92	1.69	1.45	1.05	0.41
ZG	0.31	0.31	-0.17	-0.17	0.38	0.61	1.67	1.41	1.09	0.75
ZH	1.02	0.45	0.26	-0.14	0.02	0.06	0.24	0.25	0.04	-0.00

Table A.3: Differences between cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 2010 to 2019, in percent of potential GDP

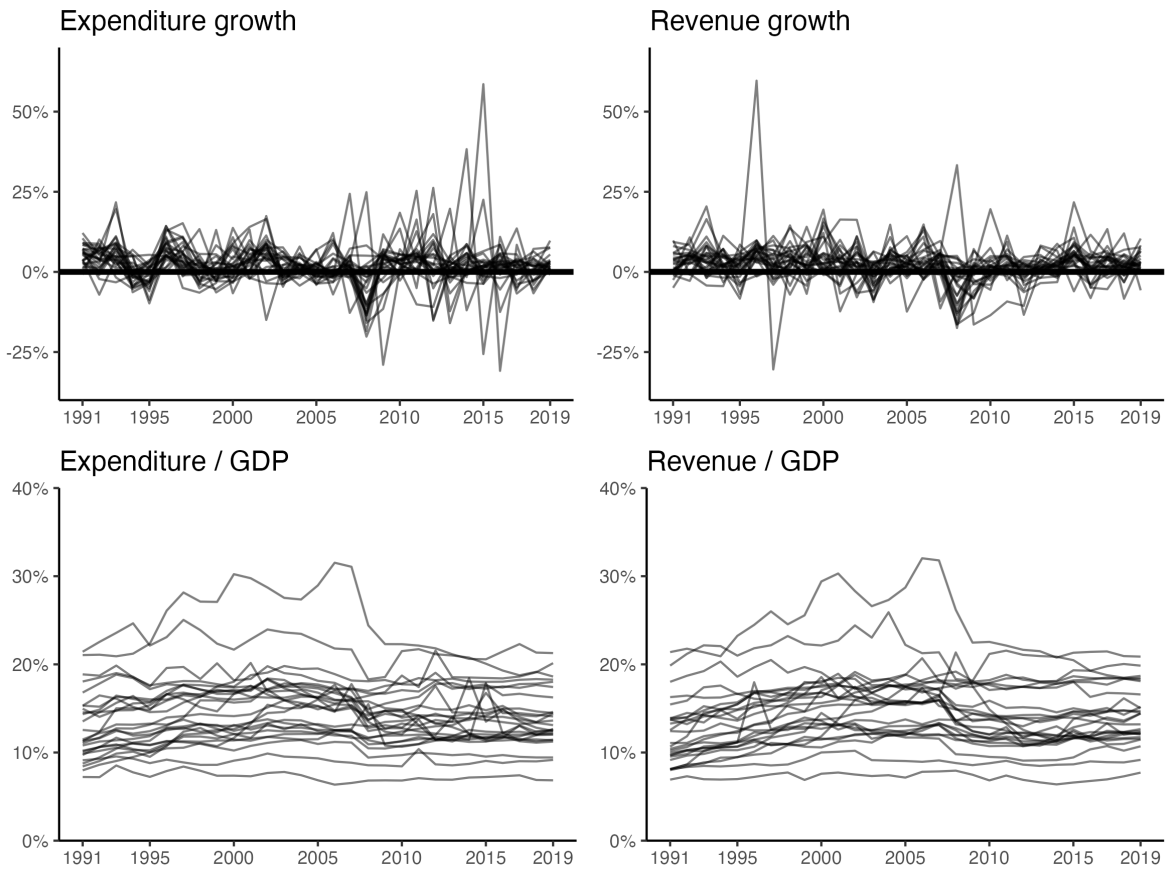
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AG	0.78	0.82	0.07	0.05	-0.18	0.06	-0.22	0.48	1.07	0.64
AI	1.11	-0.36	0.37	0.19	-1.03	0.11	-0.64	0.94	0.35	0.81
AR	0.00	-1.08	-3.59	-1.19	-0.99	-0.12	-0.63	-0.18	1.61	0.52
BE	0.35	-0.01	-0.34	0.24	0.37	-2.09	0.24	0.45	0.73	0.54
BL	-0.52	-1.87	-0.84	-0.95	-6.07	-0.48	-1.20	0.58	0.23	0.97
BS	0.83	0.80	-0.28	0.84	1.15	1.42	0.22	0.46	0.46	2.00
FR	0.79	0.70	0.57	-0.14	-0.26	0.47	0.50	0.22	0.23	0.28
GE	-0.00	-0.53	-1.50	0.43	0.78	0.82	1.54	1.20	1.23	0.43
GL	0.32	0.34	0.38	0.67	0.34	-0.39	0.17	-0.11	0.28	0.36
GR	0.93	0.66	-0.66	0.05	0.24	0.16	-0.29	0.29	0.58	0.43
JU	0.30	0.28	0.28	-0.00	-0.19	0.39	0.46	0.52	-0.40	0.18
LU	0.27	0.13	-0.10	0.25	0.32	0.23	-0.04	0.17	0.56	0.53
NE	1.10	0.55	0.22	0.37	-0.18	-0.01	-0.51	-0.15	0.08	-0.98
NW	0.64	-0.66	-0.35	-0.63	-0.27	0.65	0.06	0.16	-0.20	0.01
OW	-0.80	-0.94	-0.97	-0.95	-0.75	1.27	-0.45	-0.30	-0.76	-1.20
SG	-0.40	-0.72	-0.75	-0.08	-0.75	0.35	0.12	-0.52	0.08	0.11
SH	-0.14	-0.67	-0.85	-0.62	-0.58	0.05	0.73	1.35	0.86	1.29
SO	0.40	-0.15	-0.61	-0.73	-0.48	-6.20	-0.13	0.50	0.24	0.38
SZ	-0.82	-0.35	-0.49	-0.95	-2.18	0.26	1.03	1.51	1.47	1.62
TG	0.55	0.13	-0.76	-0.43	-0.17	0.69	-0.03	0.21	0.30	0.45
TI	-0.07	0.04	-0.09	-2.38	-0.47	-0.33	-0.17	0.22	0.65	0.23
UR	0.21	-0.30	0.02	0.45	0.29	0.64	-0.17	-0.56	-0.18	-0.33
VD	2.20	1.08	-0.33	0.01	0.69	1.24	0.58	1.36	0.87	0.84
VS	-1.04	0.79	-2.91	-0.18	0.03	1.25	1.21	1.66	1.23	-0.34
ZG	-0.03	0.19	-0.01	-0.36	-0.84	-0.49	-0.37	-0.31	0.57	0.98
ZH	0.50	-1.20	0.12	0.12	0.08	-0.27	0.35	0.06	-0.08	-0.03

Figure A.1: Cantonal interest rates, in percent



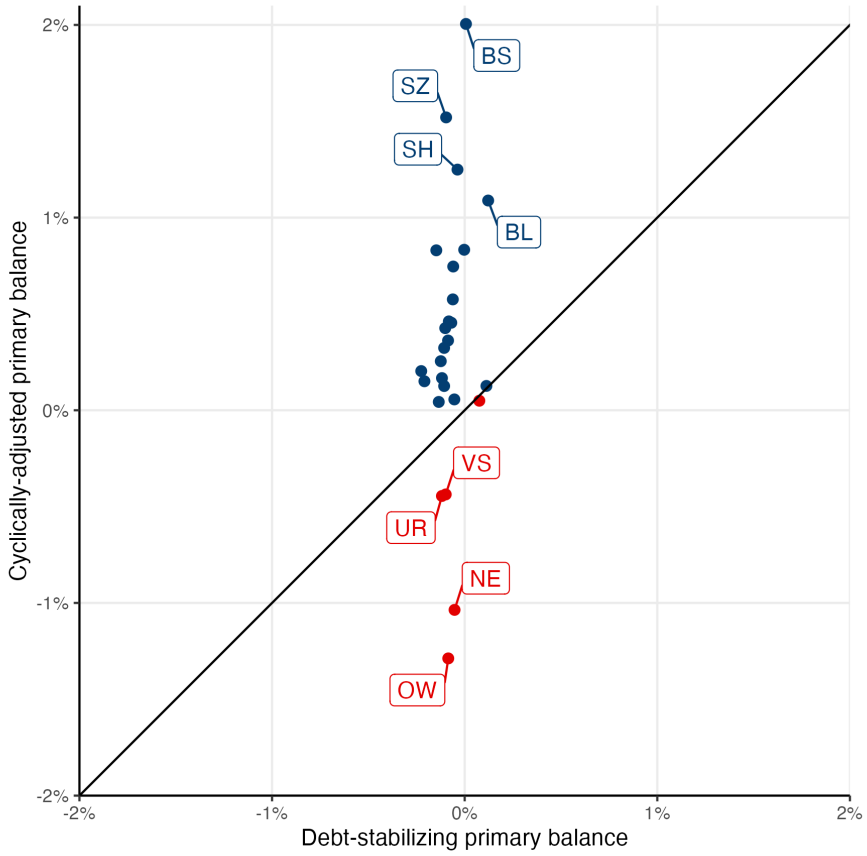
Data sources: Federal Finance Administration (2022c), own calculations
Note: The interest rate is defined as the ratio of interest payments to gross debt.

Figure A.2: Overview of cantonal revenues and expenditures



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

Figure A.3: Cantonal cyclically-adjusted primary balance (CAPB) and debt-stabilizing primary balance (DSPB) as percentages of real GDP, 2019, in percent of potential GDP



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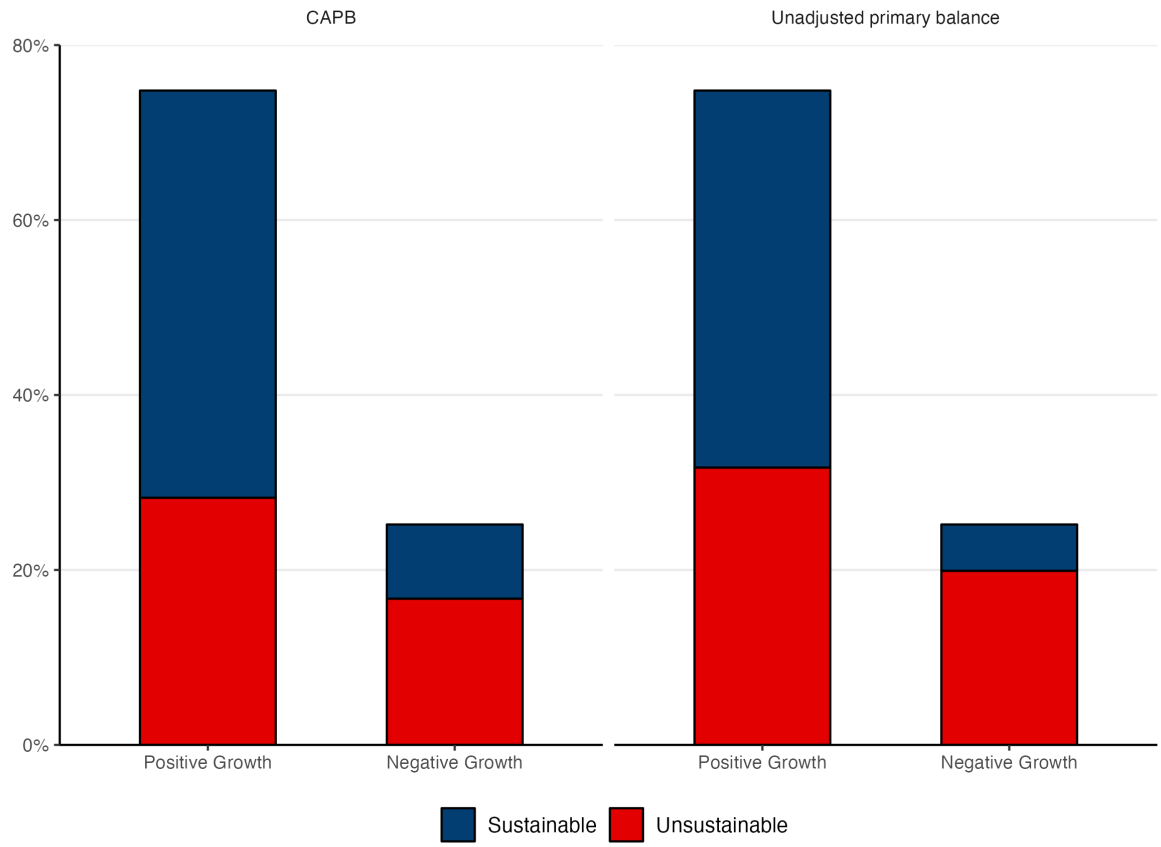
Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

Note: If the CAPB was greater than or equal to the DSPB - pointing towards a sustainable fiscal policy - the canton is plotted above the 45-degree line and colored blue. Otherwise, the canton is drawn below the 45-degree line and colored red.

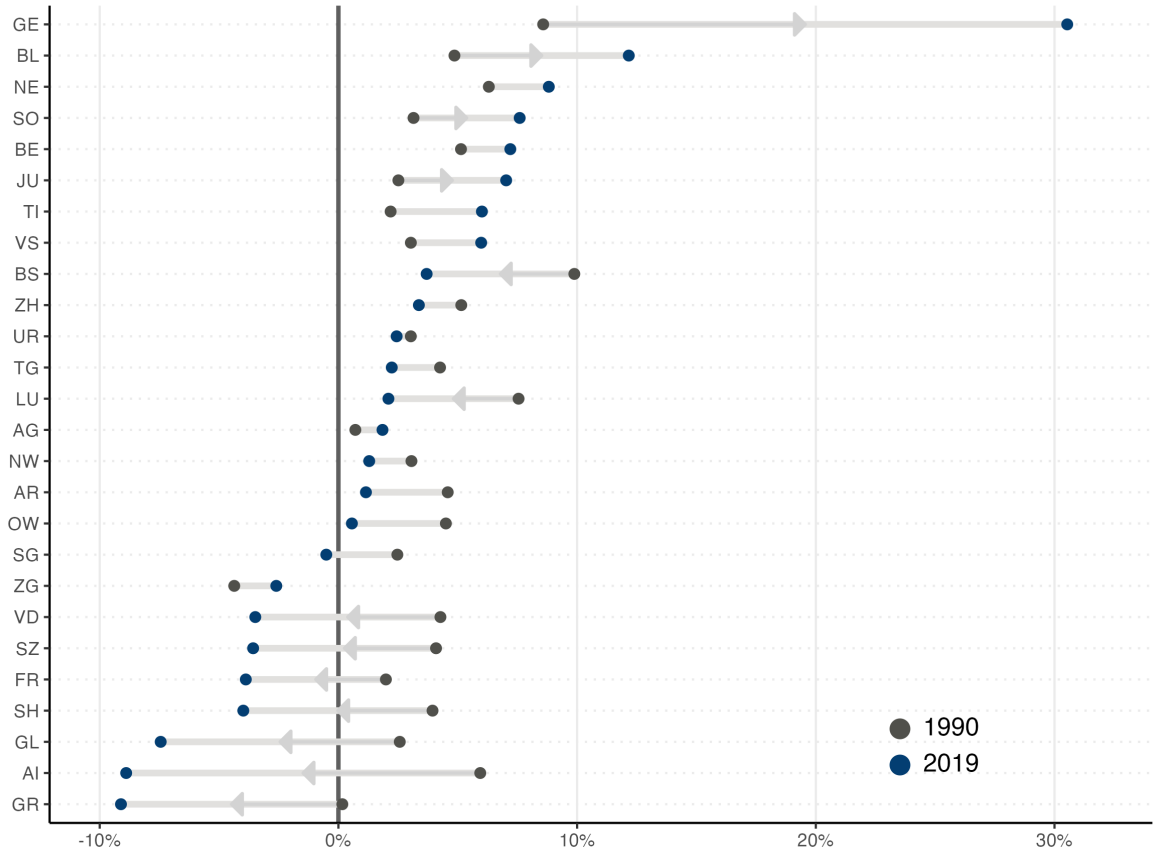
Figure A.4: Relationship between real GDP growth and sustainability depending on the method, in percent



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

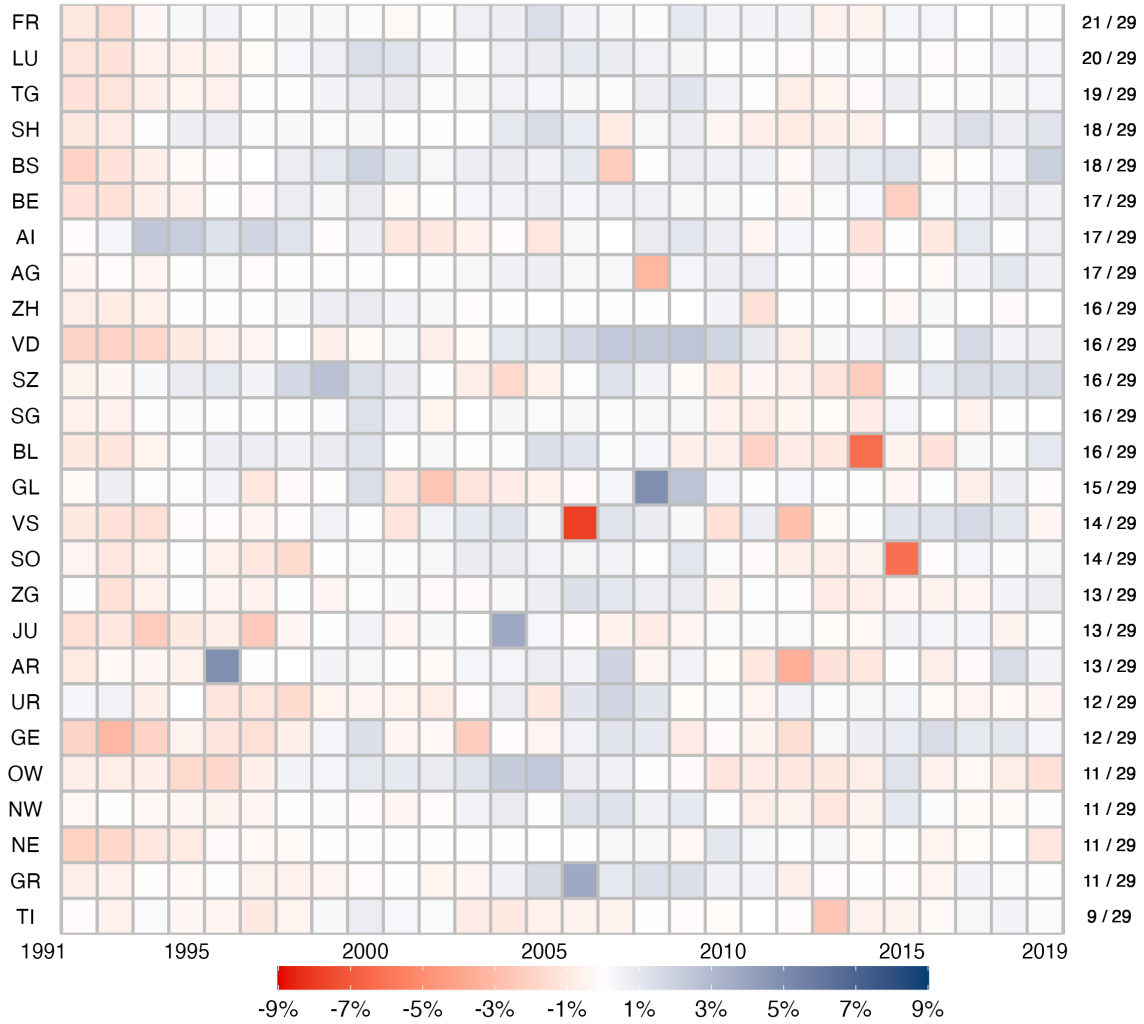
Note: The figure shows the proportion of sustainable years depending on whether real GDP growth is positive or negative. Roughly three quarters of the observations have positive growth. The left figure shows the preferred method which compares the cyclically-adjusted primary balance (CAPB) to the debt-stabilizing primary balance (DSPB). The one on the right is based on the non-adjusted primary balance.

Figure A.5: Cantonal net debt, 1990 and 2019, in percent of GDP



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

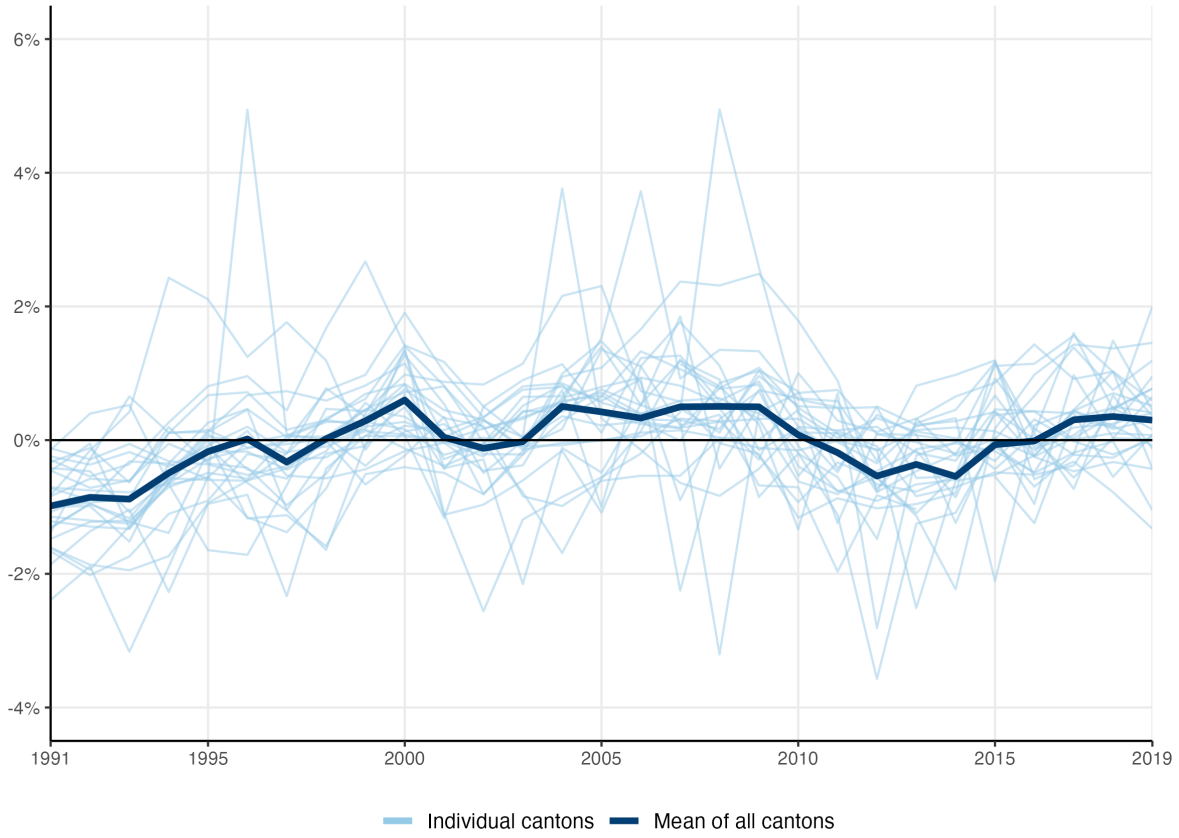
Figure A.6: Differences between the cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 1991 to 2019 per canton, in percent of potential GDP



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

Note: The results are obtained by accounting for interest revenues as well as net debt.

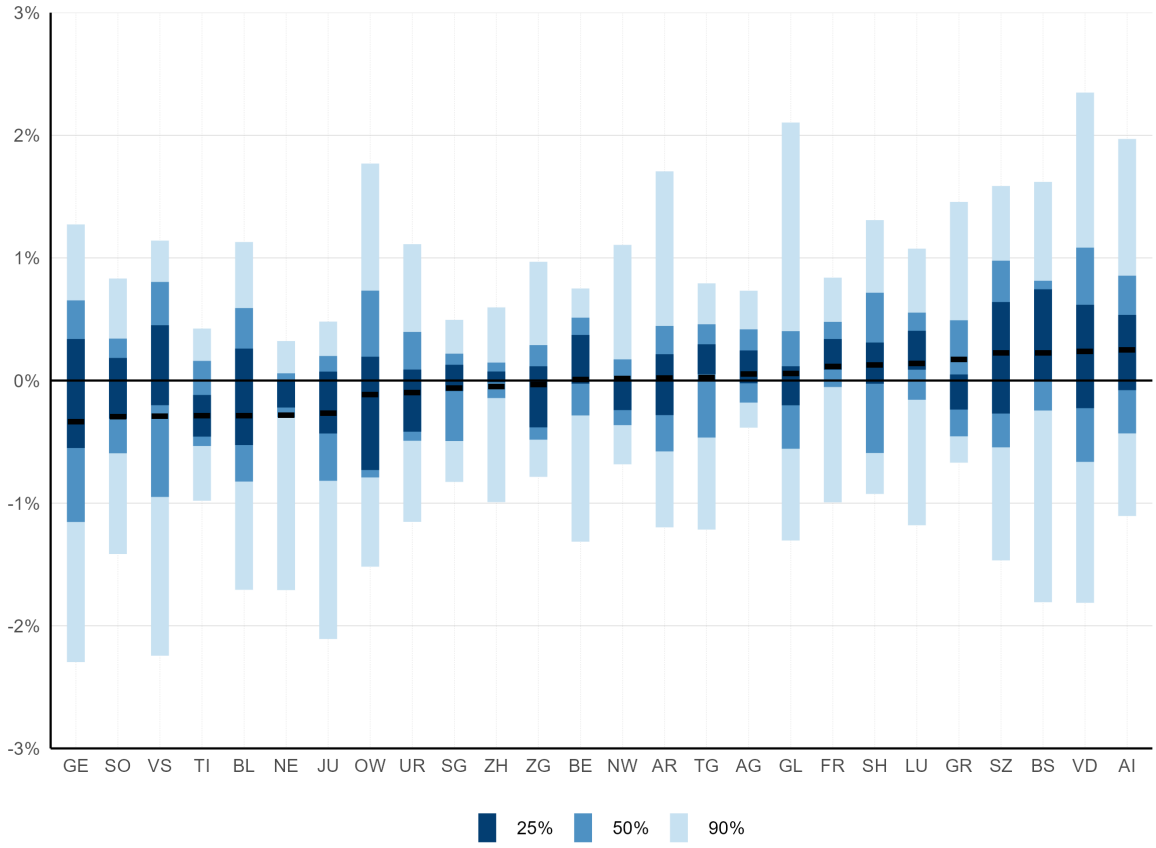
Figure A.7: Differences between the cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 1991 to 2019, in percent of potential GDP



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

Note: The results are obtained by accounting for interest revenues as well as net debt.

Figure A.8: Distributions of the differences between the cyclically-adjusted primary balance (CAPB) and the debt-stabilizing primary balance (DSPB), 1991 to 2019, in percent of potential GDP



Data sources: BAK Economics (2022), Federal Statistical Office (2022), Federal Finance Administration (2022c), State Secretariat for Economic Affairs (2022), own calculations

Note: The results are obtained by accounting for interest revenues as well as net debt.