



Explanatory note

Cantonal gross domestic product

2026 methodological revision – provisional results

Neuchâtel, 2026

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1 Introduction

The Federal Statistical Office (FSO) first published the gross domestic product (GDP) disaggregated by economic activity for all 26 cantons in 2012. Since then, the Swiss economy experienced many changes. Globalisation, increased sectoral concentration, and innovation in corporate structure all had a profound impact on the business landscape. These changes concern Switzerland as a whole. They are, however, heterogeneous and can be even more pronounced in some cantons. As a result, some assumptions that were underlying the old methodology (FSO, 2016) needed to be revisited. This revision addresses these and other issues. With this note, we publish provisional¹ core results from 2011 to 2024 based on our new model.

The impact of this methodological revision is, even at an aggregated level, large. The underlying patterns of the Swiss regional economies did not change that much. Rather the revision exposes existing structural disparities between cantons. The new data reconcile our data with trends and developments that appear in other data sources not based on national accounting. Further, new experimental results will allow users deeper insight into the economic structure of the cantons. Responding to user needs, these results are calculated at a more granular level, based on micro-level data, and improve the coverage of key sectors.

This explanatory note provides a comprehensive description of the 2026 revision of cantonal accounts. The aspects of the methodology not subject to revision are described in the old methodological report (FSO, 2016). This new model operates internally at a much lower level of aggregation to capture the heterogeneity of the Swiss economy. We expect to publish disaggregated results as part of the experimental statistics series in the first quarter of 2027, as they provide much-needed insight for our users and supplement these provisional official statistics. The appropriate level of disaggregation required to ensure both adequate quality of results and data protection still needs to be assessed. This forthcoming experimental publication also includes an analysis of key sectors and regions. To support longitudinal analysis, we will additionally provide back-casted estimates extending back to 2000; because the granular micro-data required for the new model is not available prior to 2011, these historical estimates inherently carry a wider margin of error.

Our audience is very diverse: from academia to policy experts to the general public. This document must therefore inevitably strike a pragmatic balance. While we aim to provide a widely useful foundation, it is practically impossible to cater exhaustively to the distinct technical and narrative demands of every stakeholder.

1.1 Executive summary

Within our model, cantonal GDP is now calculated at a much lower level of aggregation. This also increases the quality of these aggregated data, as they reflect more accurately the differences between cantons and within economic sectors. These innovations have long been demanded by the users of our statistics, such as cantonal statistical offices, research institutes and political decision-makers. For example, the model can now distinguish between the trend in the construction industry and the trend in the manufacturing industry, which were previously calculated as one activity.

To enable this new level of internal disaggregation, while maintaining the high quality standards of public statistics, value added must be estimated at plant level (local unit). This contrasts with the old method that used a top-down and bottom-up approach designed to estimate at the major region level. We use data on labour productivity at cantonal and industry level (definition Chapter 7), firm specific effects (total factor productivity, TFP), as well as full-time equivalent employment (FTEs) as inputs in this bottom-up estimation. Previously, gross value added (GVA) was distributed top-down from major regions to cantons. This change in model has significant effects on the results and their precision.

Labour productivity is very heterogeneous across industries and Swiss cantons. For example, GVA per FTE (productivity) in the trade sector is significantly larger than GVA per FTE in accommodation and catering; previously the model assigned them the same productivity. By capturing these distinctions, the new model yields more accurate estimates, functioning with greater flexibility and relying on fewer assumptions. However, due to geographic clustering of industry it may also have distributional effects. The model now uncovers clusters of productivity.

Local units of wholesale trade firms are geographically very concentrated. This explains, among other things, the upward revision of GVA in 2022 in Geneva (+ 46.3%) and Zug (+ 48.1%), where these industries are clustered. Further information on this economic activity is available in the report on commodity traders published by the FSO in November 2025 (FSO 1, 2025) as well as the forthcoming experimental statistics. In general, the use of more granular and bottom-up calculations as opposed to using averaged values causes the economic centres of major regions to be revised upwards, while the periphery is revised downwards. For data protection reasons, some results are only published in aggregate form.

Productivity varies not only between sectors but also between companies. A few highly productive companies can have a major impact on a canton's results. For example, GVA in Neuchâtel was revised upwards by 45.7% (2022). This was predominantly due to

¹ Provisional results may change following further verification. As significant changes are still possible before the publication of definite results, provisional results should be treated with caution.

a single, highly productive firm in the manufacturing sector that produced high value added in certain years. These individual effects are difficult for models to estimate; this data is therefore incorporated into the calculation directly from the statistics on production and value added (WS) as individual national accounting data without modelling. These are idiosyncratic firm level effects (TFP). These highly productive companies are a feature of the Swiss economy and are now also appropriately represented in the statistics. They can even have a sizable effect at the national level but are more visible at the cantonal level. The exigency of better understanding corporate internationalisation and obtaining more precise data necessitates the creation of a Large Cases Unit (LCU). This is a team that provides additional information on multi-national enterprises. It sheds light on the effects of globalisation and helps the more precise estimation of international flows. This unit will start its operations in January 2027 and will investigate the structure and economic processes of multi-national corporations.

The old model estimated trends in the cantonal economies as accurately as possible. The old model abstracted from business cycles and yielded, as a consequence, estimates of the trend. To do this, it used truncated means in many steps of the calculation. The effects of single firms or industries (the largest part of business cycles) are more distinct now than they were in 2012. Because firm-level variation is now a significant proportion of the economy, capturing these fluctuations accurately requires the deeper empirical accuracy of firm-level data. This is not a methodological revolution. The model simply evolved. The economy shifted. Our method adjusted accordingly. The changes in the model mirror the changes in the economy.

Due to the increased use of individual data, the results after the revision vary slightly more from year to year than before the

The underlying landscape of the Swiss economy did not shift because of this revision. Rather, our measurement tools have upgraded. If the previous model provided a reliable topographic map of regional trends, the new plant-level model acts as high-resolution satellite imagery capturing the sharp peaks and sudden business cycle fluctuations that were previously smoothed out.

revision. However, this also reflects an economic reality: companies' production fluctuates much more significantly than employment. So does GVA. These increased fluctuations can show, for

example, large shifts in the sector commerce, transport and communication (GHIJ), where, in some cantons, firms increase their GVA rapidly without having a matching increase in employment.

Although the relative levels of the cantons have been revised significantly, comparing the results at major regions with the old aggregation, the changes due to the revision are muted.

With the revision (2011-2022), the FSO also publishes results for 2024 and 2023 also using the new method. These show in 2024, an increase in the cantons of Zug (11.0%) and Schaffhausen (9.0%) compared with the previous year. The canton of Jura has seen a 7.7% decline compared with the previous year.

1.2 Pre-revision method

The calculation of cantonal GDP follows national accounting principles. Both the new and the 2012 methodology try to mimic the steps of calculating national GDP as closely as possible. The estimation of GVA is separate for each institutional sector², reflecting the data availability in each sector. To appreciate the motivation for the changes made in the revision it is crucial to understand the limitations of the 2012 calculation method. Key aspects of these methods are recalled here. For an exhaustive account of the old methodology, please refer to FSO (2016).

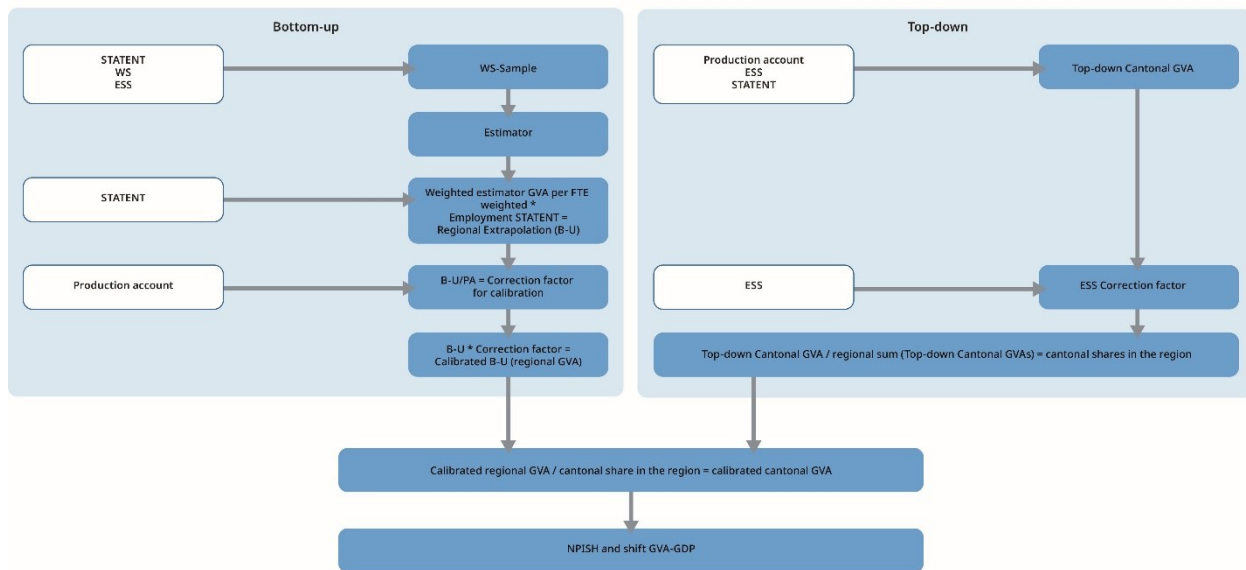
The 2012 method was designed to estimate GDP of the major regions. Depending on the institutional sector, this was done using a bottom-up³, or a top-down⁴ approach, or a combination of the two. The method used, predominantly mimics the production approach. We calculated GVA at basic prices for each individual institutional sector. Then, product taxes are added and subsidies subtracted to derive market-price GDP. The agricultural sector (part of the institutional sectors S11 and S14 – see section 1.3) was notably the only sector calculated exclusively using a bottom-up approach due to data availability. Public administration, banks, insurances, education and health were calculated mostly using a top-down approach to decompose national macroeconomic aggregates, into regional subsets. The distribution mechanism used, for example, the number of employees or pensioners as a distribution key. The method included adjustments for Non-Profit Institutions Serving Households (NPISH), Research and Development (R&D), and large sporting organisations. To calculate the remaining economy, namely the non-financial corporations not in public education, agriculture or health, the old model used a mixed approach. This is where the majority of the revision took place.

² The institutional units are grouped into sectors on the basis of the type of producer they are and depending on their principal activity and function, which are considered to be indicative of their economic behaviour. Criteria used in sector classification include for example: Control over corporations (ownership), control by government and market/non-market distinction. Sectors may be divided into subsectors and each institutional unit belongs to only one sector or subsector. See ESA (2010) for details

³ The bottom-up method starts with basic statistical data (at regional or cantonal level) and, through aggregation enables the compilation of summary statistics at the higher level.

⁴ In the top-down method, national data is broken down by major region or canton using distributional factors.

Calculation method for cantonal gross value added (old, 2012)



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The focus of the 2012 method was discernibly different to our new method. The 2012 method represented the core variation of economic activity across major regions. This was necessary as some data⁵ were only available at the major region level of aggregation. Additionally, some combinations of canton and NOGA section activity class (cell) are small, and “noisy” business cycles exacerbated the difficulty of an already challenging task. Filtering this statistical noise to obtain a stable trend inadvertently smoothed out actual business cycles as a consequence.

The disaggregation from major region to cantonal level in institutional sector S11, was a distinct step after the calculation was completed. This was implemented by first aggregating raw firm and plant level data⁶ to the major region level. The GVA to FTE ratio (roughly labour productivity) was then measured using a truncated mean across groups of economic activity and major regions. To calculate cantonal results from major region data, the GVA to FTE ratio was multiplied with the sum of FTE of all local units in one canton and the local unit NOGA classification. Therefore, in the old model only employment determined the relative share of cantons within the same major region and activity. This mechanism rested on the crucial implicit assumption of intra-branch homogeneity. The model distributed national GVA for each activity via employment shares between the different cantons of the same NUTS 2 region. By doing so, we implicitly assumed that labour productivity and the capital to labour ratio within a specific sub-sector were constant.

This approach ensured also that the presence of outliers did not affect the structure of the core economic development and did not skew the distribution of economic activity. In recent years,

however, this choice became a burden. The economy changed. Due to globalisation and changes to corporate structure, the impact of this choice increased. The very outliers previously filtered by the truncated mean are actually major economic drivers, even at the national level. They are very much the core of the economy. They need to be accounted for. A few productive firms can shape the economy of a city, a whole region, even the country. The new estimation reflects these business cycles in the data.

The above procedure does not guarantee that regional and national results equal. National totals for each economic branch are distributed to the 26 cantons using the cantonal shares of each NOGA implied by the above results as distribution key.

Swiss cantons are small by European standards. They are NUTS⁷ 3 regions. Regional accounts are normally published at the aggregated NUTS 2 or NUTS 1 level. In Switzerland we publish disaggregated results, as policy is largely made at the NUTS 3 level. This is important for the democratic discourse but also increases the volatility of the estimates.

As with the old method, cantonal GDP statistics only measure the relative strength of the cantons in each economic sector. Because regional accounts must scale to the fixed national GDP, these estimates allocate shares of a known national total. A structural upward revision in one canton's share mathematically requires a proportional recalibration of the others, reflecting a more precise geographic mapping of the same national economy.

⁵ Notably, proxies for labour productivity were used to account for regional productivity differences. See Swiss Earnings Structure Survey (ESS)

⁶ from the structural business statistics (STATENT) and the production and value added statistics (WS)

⁷ Standardised European geographic, administrative, statistical regions

1.3 Objectives

The overarching objectives of this project centre on the methodological modernisation of GVA estimations. A primary priority is the enhancement of GVA calculations within the institutional sector of non-financial corporations (S11) and households as producers (S14). This entails evaluating the efficacy of Small Area Estimation (SAE) methods and transitioning away from using cantonal wage data (LSE) used in the previous model as it ties the level of calculation to NUTS 2. Parallel to these efforts, the project seeks to refine cantonal GVA estimations for the financial institutional sector, specifically regarding banking institutions. Furthermore, a comprehensive audit should be conducted to identify potential requirements for methodological improvements within other institutional sectors, including public administration, human health services, and producing households.

In alignment with international regulatory frameworks, we implement Eurostat obligations with our experimental statistics.

Secondary objectives include direct data usage, so the impact of individual inputs remains traceable. The model should make as few assumptions as possible; any assumptions should be as weak as possible.

1.4 Framework

The 2024 – 2027 multi-year programme of the FSO (Art. 9 par.2 let. a FStatA) is the legal basis for producing the core results of the national accounts at a cantonal breakdown.

With the adoption of decision No 2/2019 of the European Union / Switzerland statistical committee of 2 December 2019 replacing Annex A to the Agreement between the European Community and the Swiss Confederation on cooperation in the field of statistics (EU, 2023) Switzerland must submit GVA at basic prices (current prices) at NUTS 2 regional breakdown jointly with a A*10 NACE activity breakdown. According to the decision, results must be available from 2000 onwards.

The cantonal GDP revision policy mimics the national accounts'. A national benchmark revision takes place every five years. Cantonal GDP is revised at the next publication. The last revision adapted cantonal GDP to ensure coherence with the 2019 national accounts results only. As a response to growing user demands for further disaggregation, we launched a larger methodological revision. The revision project started in 2021 and was scheduled to finish in 2025. The publication of the revision of national accounts was delayed due to limited resources. Accordingly, publication of cantonal results was delayed by one year.

This revision was accompanied by an advisory board comprising representatives from cantonal statistical authorities, the Swiss Conference of Regional Statistical Offices (CORSTAT), experts from academia, economists from the private sector as well as members of the federal administration, that are experts in

relevant fields. The cantonal statistical offices were given an advanced copy of this report and the data under embargo to facilitate their analysis.

2 National Accounts Revision

This revision affects many parts of the large machinery that is the estimation of cantonal GDP, both at a methodological and a practical level.

The benchmark revision of the cantonal GDP was timed to coincide with the 2025 revision of the national accounts, so that it can also adopt their updated methodology and be comparable with the results at national level such as the reclassification of education from public administration to the activity of "education". This also ensures efficient use of resources.

The 2025 revision of national accounts had a non-negligible effect on GDP and sectoral GVA. As cantonal GDP is an, admittedly complex, apportionment of national results, the national revision has a direct impact on the cantonal results. For a comprehensive description see (FSO 1, 2025). Key relevant changes are analysed in Chapter 5 of this explanatory note.

In addition to the direct effect through the top-down disaggregation mechanism, the national revision changed the treatment of some data the cantonal GDP calculation uses as input in its bottom-up modelling.

Specifically, we removed the Swiss Radio and Television Company (SRG) from the WS data. This firm is now considered as entity of the general government. SRG is covered by financial statistics.

As will be discussed in detail, many Swiss firms are integrated in a globalised, multi-national enterprise structure. Due to these effects, reported GVA of all foreign branches is removed as part of the editing and harmonisation procedures. The WS data include the entire firm level. A firm may comprise Swiss and foreign units. Only the share of the activity taking place in the Swiss branch forms part of Swiss GDP. Assuming that GVA in Swiss and foreign establishments is proportional to salaries paid to respective employees, the GVA is separated into foreign and domestic. This can have a significant impact on some sectors and cantons. The cantonal GDP is directly linked to national results and therefore mirrors this national treatment.

A direct empirical comparison between the old and new models is invalid because they measure distinct quantities based on differing hypotheses. The old model estimated the implied average GVA as distribution key, whereas the new model predicts total GVA. Also, some firms were allocated to a different NOGA before and after the national revision.

Some key assumptions are not testable⁸. To us, the trade-off between weaker assumptions and higher volatility is in favour of the new method.

In Chapter 4 we nonetheless provide the results of the new method including a comparison to the old method at the aggregation level used so far. Chapter 4 also provides tests of internal predictions of the new model and their uses as further suggestive evidence in favour of its performance.

3 Calculations

The new method retains the core architecture of the 2012 methodology: specifically the sequential calculation of institutional sectors alongside the differentiated treatment of both the primary sector and human health services.

Institutional sectors are defined at the firm level. An entire firm is assigned to a single institutional sector regardless of the activity of its individual plants. Cantonal GDP relies on local unit-level (NOGA) activity classifications for the apportionment. This is not possible for institutional sectors. Also, a state owned school may operate entirely differently to a private school. Different institutional sectors also have different data availabilities. Better data for the main activity outweighs correct local activity classification, especially as it also mirrors the national treatment.

For non-S11 firms, the GVA of any secondary local unit is absorbed directly into the firm's primary institutional sector. For example, the gross value added of a restaurant operated within a bank is allocated to the financial corporations sector (S12) and the relevant economic activity of the firm. The core S11 baseline model processes only firms assigned to the non-financial corporate sector and excludes entities classified under S12 or general government (S13).

Here (S11), the GVA of local unit gets allocated to the activity of the local unit. Some NOGAs (NOGA K) are heavily associated with a specific institutional sector that may not be S11. Therefore there may be little information for NOGA K in S11. Due to regulations these cases are very rare. If there is not enough data, similar activities are grouped.

In addition, however, for some S11 activities there are better external sources. Applying this firm-level aggregation creates edge cases when integrating sector-specific external data sources for Agriculture and Human Health. Production in these areas is calculated directly from external primary sources. Retaining their associated local units within a different primary firm would create double counting. We exclude plants in NOGA A and

in NOGA 86 from both the adjustment of and predictions by the mixed-effect model used in the modelling of part of S11 to avoid double counting.

Education can take place in both S11 (private) and S13 (public). They are calculated separately using the two respective methods.

3.1 Agriculture, forestry and fishing

The calculation of cantonal GVA for the primary sector encompassing agriculture, forestry, and fishing is characterised by a mix of top-down and bottom-up approaches. Detailed regional data on crops, livestock, timber harvest and fish captures ensure robust regional accounts for agriculture, forestry and fisheries. The regional accounts for agriculture cover 90% of the primary sector. This methodology (FSO 3, 2025) relies on granular, component-level data. It enables an accurate reflection of the different geographical and environmental conditions across the Swiss cantons in the national accounts.

3.2 Non-financial corporations and households as producers (except special cases) (S11 S14)

The most extensive revisions relative to the 2012 methodology occurred in institutional sector S11 excluding NOGA A and the health division (NOGA 86). This is the main source for changes to GDP of cantons. The new model functions with as little complexity as possible. This principle ensures that variation in data and economic changes can be traced as easily as possible, enabling a reliable analysis and quality control. Whenever possible, data are used directly and not estimated. In general, data that are used directly and does not need to be estimated through a model account for the majority of the GVA.

One of the main sources of data is the structural business statistics, which is used to define the target population. We also use data from WS⁹, as well as many secondary sources. Due to the frequency of use of WS and STATENT we refer to some of the variables of these statistics by their economic meaning rather than their code-book name (see Chapter 3). This provides easy access to non-expert users.

To enable feature engineering, we define these variables as follows: Referring to GVA, we use variable t029 including the corrections made to harmonise with the national system. The variable t029 is described in (Assoulin, 2016). The corresponding weights are the variable fingew1 (or wh_hochr in previous years). When we refer to FTE at firm level we use the STATENT-variable EMPFTE_DEC_CORR as described in (FSO 2, 2025). When

⁸ For example, we assume that the apportionment of GVA to plants of the same firm is the same as the ratio of GVA these plants would have had as independent firms.

⁹ The structural business statistics (STATENT) provides comprehensive information that is updated every year on the structure of the Swiss economy on the basis of register data. The statistics are created annually on the basis of a sample survey amongst enterprises in the secondary and tertiary sectors (excluding banking, insurance and health).

mentioning FTE and using it at the local level we refer to EMPFTE_DEC_CORR/EMPFTE_DEC*EMPFTE_DEC_LOC. When we refer to NOGA we use the variable NOGA082 as described in the STATENT Code-book. It also describes the definition of local unit/plant and institutional unit/firm in the variable STATENT_UNIT_TYPE. The institutional sector is classified by the variable INST_SECTOR_VGR.

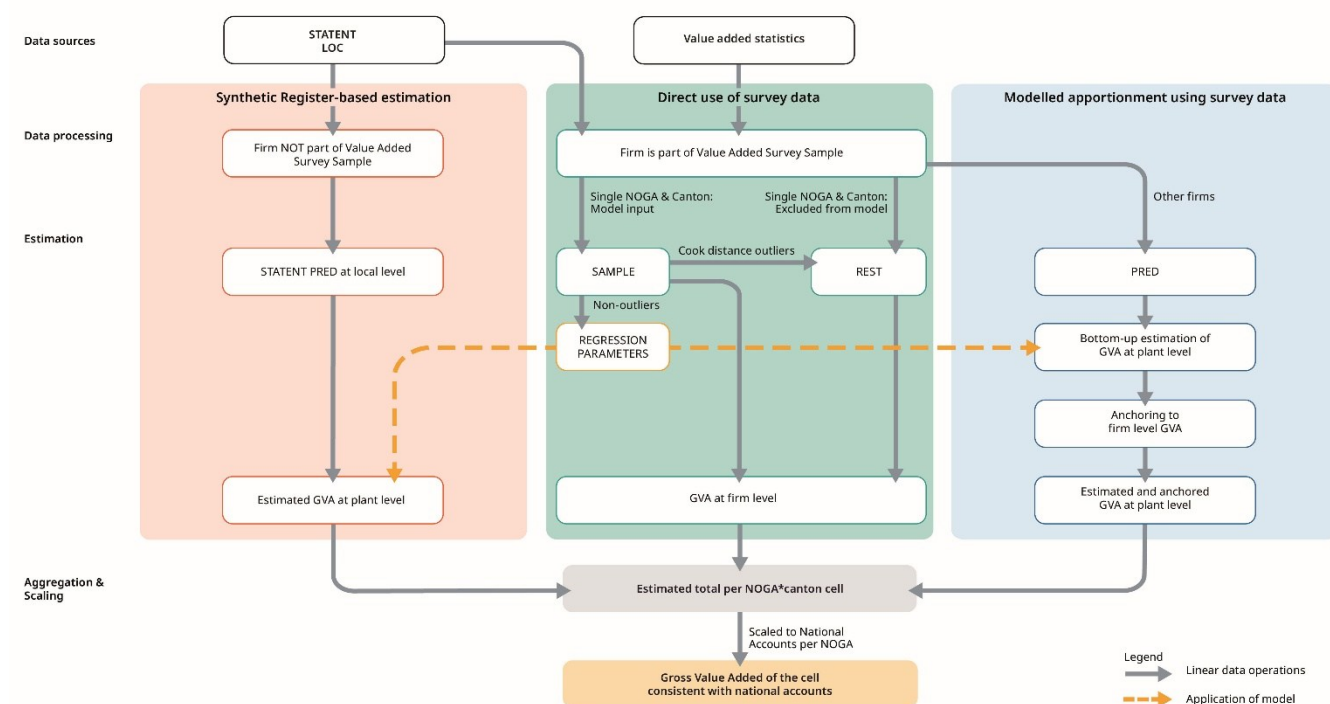
Consider the universe of all firms and plants that are covered by STATENT that are in either S11 or S14 excluding plants in either NOGA A or the health division (NOGA 86). This is the universe of the model. Ideally, we could obtain GVA for each plant in the universe¹⁰ and sum across all plants in a cell. This is not possible, as GVA is collected by WS at firm level. Also, not all firms that are in STATENT are part of the WS sample. We can, however, partition the WS-sample into three groups. This will allow us, analogous to a difference-in-difference estimation, to construct a hypothetical GVA at plant level for firms that cannot use WS data directly assuming these plants are similar to firms in the partition where we can use WS data directly.

Firstly, take all firms that operate in one cell only (single cell firms) and were part of the WS sample. In this case summing across all firms in a cell is equivalent to summing across all plants in one cell. Hence, we do not need plant information to estimate the GVA of the cell. The GVA value can be taken directly from the survey results. Further, a subset of these firms can act as control group to parameterise the model that can predict firms that operate in more than one cell. We call this subset SAMPLE.

Secondly, single-cell firms part of the WS sample but excluded from SAMPLE are assigned to REST. This includes for example, single-cell firms that were treated in the harmonisation process of national accounting or that are otherwise different to other SAMPLE firms due to external processes. This is, for example, the case when the GVA of firms in SAMPLE and GVA of firms in REST have been created by different economic processes. This is rarely the case. Therefore, REST¹¹ is empty in most years¹².

Thirdly, any firm within the WS sample that operates in more than one cell is part of the group PRED. The GVA of the local units of these firms needs to be distributed using a model.

Calculation method for cantonal gross value added (S11 S14)



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¹⁰ Regarding extrapolation, the WS excludes enterprises employing fewer than three employees. We use these truncated macroeconomic data to estimate a statistical relationship, which is subsequently applied to STATENT. This operates on the assumption that firms with fewer than three employees are comparable to larger enterprises.

¹¹ To potentially improve the fit of the model, we considered allocating all single-cell, single-plant firms to REST. This created a trade-off. Using single-plant firms in SAMPLE increases the observation count, which, ceteris paribus, assuming homogeneity, improves estimation precision. On the other hand, restricting SAMPLE to single cell multi-plant firms might yield better estimates by ensuring the sample is more similar to the target firms (which are all multi-plant firms). Empirical tests (see Chapter 5) show that including all single-cell firms in SAMPLE yields the most stable results.

¹² The firms that are filtered by cook distance can be seen as forming part of REST, however, for practical and analytical reasons, they are treated as a distinct group in the code.

The general estimation strategy proceeds as follows: Firms within the SAMPLE and REST subsets do not require estimation; their GVA, as observed in the WS dataset, is attributed directly to the relevant cell. Data from the SAMPLE subset adjust a predictive model linking plant characteristics to GVA. For firms present in PRED, the actual firm-level GVA is already known. Therefore, we employ the adjusted model to generate plant-level GVA predictions, which serve to establish proportional shares for each plant within a firm. These shares are then used to apportion the observed firm-level GVA amongst the constituent plants, after which each plant's allocated GVA is assigned to its corresponding cell. In that way, the known firm-level GVA serves as a benchmark. Finally, for firms absent from the WS dataset (STATENT PRED), plant-level GVA is predicted using the model parameter estimates. In the absence of an observed firm-level anchor to constrain these estimates, the predicted GVA per plant is assigned directly to its respective cell¹³. Following these procedures, we obtain an estimate for GVA for each cell.

The definition of the cell is inherently linked with the choice of the level of aggregation. Using more aggregated groups has the advantage that there are fewer firms active in more than one NOGA section. Therefore, the number of firms in SAMPLE increases and fewer firms need to be estimated. However, the heterogeneity in the cells is higher yielding less accurate estimates.

We also considered an alternative approach. GVA could have been estimated by an extrapolation of the WS data only. Using WS extrapolation weights would have been a uniform approach. It would have further allowed a timelier publication of GDP. It also avoids making an out of sample prediction. However, one key statistic that stakeholders use frequently is the growth rate of GDP. As the WS is a rotational sample and therefore changes each year, the year-on-year growth can be less accurately estimated using WS extrapolation weights only, as compared to using this mixed approach. Also, WS firms do not cover the entire Swiss economy as firms with fewer than three employees are excluded. To adjust for this coverage issue, a model would have been needed. Validation checks show that the extrapolation by WS is more volatile. The WS extrapolation amplifies the effects of the revision.

We also considered using economic rationale to regroup activities. This resulted in a marginal improvement and must be compared to the loss of comparability with other statistics¹⁴.

To model the underlying GVA generating process, labour productivity defined as GVA per FTE is estimated using a linear mixed-effects model on the subset of single-canton, single-activity firms. Within SAMPLE, the firms engage in the same activity in the same canton as the local units. Many firms are single plant firms. The estimated NOGA and cantonal effects apply directly to the plant. The labour input is transformed using a square root, while the fixed-effects specification isolates varying slopes for this transformed labour input across economic sections and size class for large firms. Additionally, part of the model's analytical¹⁵ power stems from the inclusion of random slopes at cantonal level. This model draws inspiration from the core intuition of Small Area Estimation. It allows the model to borrow statistical strength across regions and sectors to capture unobserved localised agglomeration economies, even in narrow geographical strata where data might be sparse. See Chapter 7 for the mathematical description of the model.

The current approach is a unit level SAE model. The chosen model operates entirely at the microeconomic unit level, predicting establishment-specific productivity parameters not to estimate area totals directly, but to serve as an internal distribution key for allocating, firm-level accounting totals when available.

To ensure the stability and reliability of these baseline parameters, which are used e.g. to predict GVA of firms that are not in the WS sample, the methodology integrates a unit-level robustness check prior to the final adjustment of the model. Economic microdata is inherently prone to skewness, driven by for example, idiosyncratic internal transfer pricing or the presence of "super-star" firms with very high TFP. To prevent such extremes from distorting the baseline production function estimation, an initial, non-robust mixed model is estimated, from which Cook's distance is calculated for every SAMPLE enterprise. This statistical metric flags extreme values that could disproportionately skew the results. The standard threshold, defined as four divided by the sample size, is then applied to identify and trim¹⁶ highly influential observations. The mixed-effects model is then re-estimated exclusively on this restricted, robust subset. By systematically discarding these heavily leveraging outliers, the parameters reflect a stable baseline of local productivity, ensuring that the final allocation of GVA for multi-establishment firms and firms not in WS is driven by fundamental economic relationships rather than by a few outliers.

Here it is important to note that the Cook's distance removes these firms when adjusting the model but as part of SAMPLE their GVA is still included in the calculation. Their GVA does not need to be estimated and is taken directly from the WS. The GVA

¹³ Firms that have plants in NOGA A or NOGA 86 are assigned to STATENT PRED. This excludes the plants that are in NOGA A or NOGA 86 since the part of these firms which is in NOGA A or 86 is excluded from the universe considered in the mixed effect model. Hence the firm-level GVA cannot serve as a benchmark for these cases.

¹⁴ To increase sample size in small NOGA sections the fixed but not the random effect of NOGA B and E were calculated jointly. For this reason, we use the division information as random effect at the firm level as further information.

¹⁵ The location choice of firms does not only depend on location characteristics but also on the type of activity.

¹⁶ We limit the influence of very large and productive firms on the estimation. The GVA of these firms as part of SAMPLE is still included in the calculation as their GVA does not need to be estimated and is taken directly from WS.

of these firms is thus still reflected in the total GVA but does not affect the estimation of GVA of other firms. These firms often have GVA with a high year-to-year variance.

The estimation is done separately for each year. This ensures that outliers from one year do not affect the following year. Due to the increased data requirements this will not be the case for the retropolation. To ensure data protection the results are published aggregated. We consulted REGIOSTAT, who advised us that they had no objection publishing results at a more detailed level of disaggregation for larger cantons, even if this results in an unequal aggregation for the cantons. This will be explored for the experimental statistics. We ensure that the GVA of a local unit in a cell does not exceed 75% of total GVA and that there is a minimum of 5 firms per cell.

The calculations described above, yield estimates of the total GVA for each NOGA by summing the redistributed (PRED) as well as the predicted GVA of all local units (STATENT PRED) and the GVA in SAMPLE and REST within a cell. These intermediate results show the distribution of economic activity for each NOGA across cantons as well as the structure of economic activity within each canton.

However, at the national level the total GVA per NOGA division is calculated using the *"firm concept"*. This concept posits a fiction, where all local units of a firm produce the same good; use the same production process, hence being part of the same NOGA division. The motivation for using the *"firm concept"* nationally is that data availability is superior, specifically it minimises the amount of estimation of production processes. This is internationally very common and considered an A-method according to ESA 2010.

Total GVA by NOGA according to the *"firm concept"* and the *"local concept"* do not need to equal one another. Some activities such as "accommodation services" are mostly main activities of firms with auxiliary activities at some local units. The total GVA according to the firm concept will be larger than that of the local concept. In contrast, scientific research and development can take place both as an auxiliary activity in a small local kind of activity unit or be the main activity of a firm. Here the GVA according to the local concept is likely to be larger.

From a scientific point of view, it would be ideal to publish two separate statistics: one for each concept. According to the ESA 2010 national and regional accounts aggregates must add to the same total values. So, this point is moot. We must scale regional results to match national aggregates. We are therefore faced with a trilemma.

First, the aim of the cantonal results is to reflect the regional economic structure. Secondly, we want to be completely coherent with national results. Finally, publishing two results would be against the advice of ESA 2010. For this we would need to reflect all activity at the legal location of the firm. This removes the economic structure we are interested in. This is for us the most

important negative factor. Keeping the local NOGA concept, however, introduces a bias in the result as we are scaling. Specifically, the bias is an attenuation bias towards the mean national distribution of economic (NOGA) activity.

The local concept we chose may introduce a minor attenuation effect towards the national mean, however, this choice explicitly fulfils the FSO Charter's mandate for relevance and accuracy, as it captures the true regional economic structure far better than adhering strictly to the firm concept. Our choice is robust to corporate restructuring. If a pharmaceutical corporation acquires an independent regional research facility, the plant's GVA artificially shifts to the pharmaceutical sector. This occurs despite local activities remaining completely unchanged. Our plant-level model abstracts from these corporate fluctuations. We historically allocated GVA using the FTE of local units. The input-output Tables also use this approach.

We consulted the advisory group on this matter. Most members agreed with our assessment that estimating the regional economic structure as accurately as possible is the most important factor. These inherent scaling biases strictly preclude using these data for cantonal "rankings". The cantonal GDP's primary strength resides in evaluating cantonal economic structures, proportional NOGA shares, and longitudinal trends.

We apply an affine transformation to correct outliers in the cantonal value-added shares. This is necessary when scaling factors become large. Such distortions occur only for small economic activities or cantons, especially in the presence of negative value added. This represents an edge case, observed in only five cells across the entire time series.

We constrain all values within a bounded interval. The national total must equal one hundred per cent thus rectifying scaling anomalies while minimising distortion to the relative economic structure. We evaluate the data in each cell. If we detect no anomalous shares, the data remains untouched. If an outlier (more than 100% of NOGA) exists, we apply the transformation to all cantons in this cell. We first proportionally compress the data. We use the minimum compression necessary to bring the extreme share into the allowed boundary. Because this reduction breaks the required national sum, we subsequently apply a uniform linear shift.

To calculate GDP from this estimated GVA product taxes are added and subsidies subtracted.

3.3 Education

Public education used to be part of NOGA O. It now is part of NOGA P. Public education continues to be calculated as in the previous methodology. NOGA P (private education) is calculated using the S11 model.

3.4 Health

The health sector continues to be estimated according to the previous method.

3.5 General Government (S13)

General government comprises federal, cantonal, and municipal sub-sectors. Baseline GVA estimations use regional labour costs as top-down distribution key. This revision substantially alters three specific allocations.

It is important to distinguish between the institutional sector of the General Government (S13) and specific economic activities, such as core public administration (NOGA 84). Previously, the General Government sector was predominantly conflated with these core administrative functions. The revised methodological framework clarifies this structure, establishing that the General Government encompasses core administration alongside public education services, which were formerly subsumed within the administration division, social insurance, as well as state-funded broadcasting, which was previously categorised within the private sector. Furthermore, the new method distributes military expenditures not according to institution but according to use.

Modelling the Swiss Radio and Television (SRF) transfer between institutional sectors S11 and S13 inherently presents a Hobson's choice. The cantonal revision reflects the national revision.

To fulfill the FSO Charter's requirement for statistical accuracy representing actual economic reality, the military GVA estimation has been revised. Historically, administrative registrations artificially concentrated military personnel within Bern. The revised methodology introduces a top-down approach utilising FTE and actual physical workplace locations. This assumes resource usage and thus value creation proportionally mirrors actual activity distribution. This fundamental change aims to capture where the military genuinely generates economic value, yielding a realistically broader geographic distribution.

The traditional approach created a dominant position of Bern in S13; this reclassification and change in method mutes this status.

3.6 Financial sector: financial institutions and insurance companies (S12)

The S12 method for the banking sector disaggregates national account aggregates using both allocation keys that are based on employment as well as on the structure of the banks. For banks not part of the Big Bank group (second-tier banks) the

method first scales enterprise-level data of GVA components (e.g. net commissions) to the national total GVA by banking category. The enterprise data is then aggregated to the cantonal level. We convert this data to the local concept by reallocating GVA across cantons proportional to the net employment transfers between the two concepts. Big Banks are spatially disaggregated using the structure of second-tier banks and the per-head component intensities. This is then calibrated to national Big Bank aggregate GVA. Finally, the remaining financial units are distributed across cantons using employment shares, nominal and previous-year-price estimates are assembled.

The regional apportionment method for insurance companies remains untouched by the revision 2026.

3.7 R&D and non-profit institutions serving households

The R&D data are geographically disaggregated using cantonal results of the R&D survey.

The GVA allocated to NPISHs is apportioned among the relevant cantonal NOGA codes, predicated upon the spatial structure present at this computational stage.

4 Results

To disseminate results, we need to ensure that we chose a level that provides users with the most disaggregate results, while maintaining data protection and quality standards. Here, the choice of aggregation is inherently linked to the calculation¹⁷. The set of firms that are part of SAMPLE in S11 changes, as the NOGA disaggregation changes. This is because disaggregation affects what firms are considered "single cell". As a result, any future revision of aggregation level will revise the entire timeseries. Aggregation levels ensure data protection of individual firms.

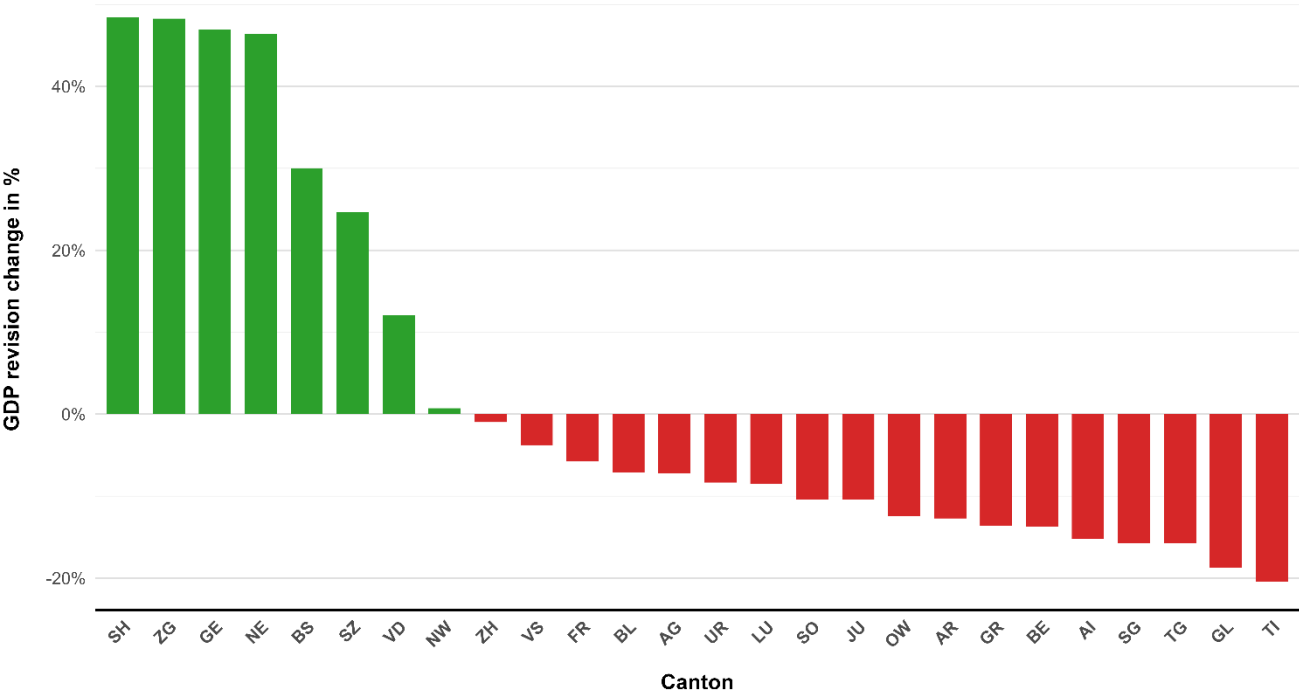
With the consent of REGIOSTAT, member of the advisory group, we decided to make possible the use of different additive aggregations for different cantons and to publish the most disaggregated data possible. As the first results of a newly established LCU emerge and other input data are revised and updated this aggregation could change.

Overall, changes at cantonal level are drastic. Most cantons face a revision in GDP that exceeds 10 percentage points (in 2022). Many face larger revisions of up to 47.9%. These changes can sometimes be traced to a single firm. On other occasions the economic structure of one canton might be very different to its major region.

¹⁷ While most accurate results are obtained when the level of calculation matches the level of publication, the use of individual level could have enabled further disaggregation.

Comparison of the effect of Revision on cantonal GDP

Reference year 2022



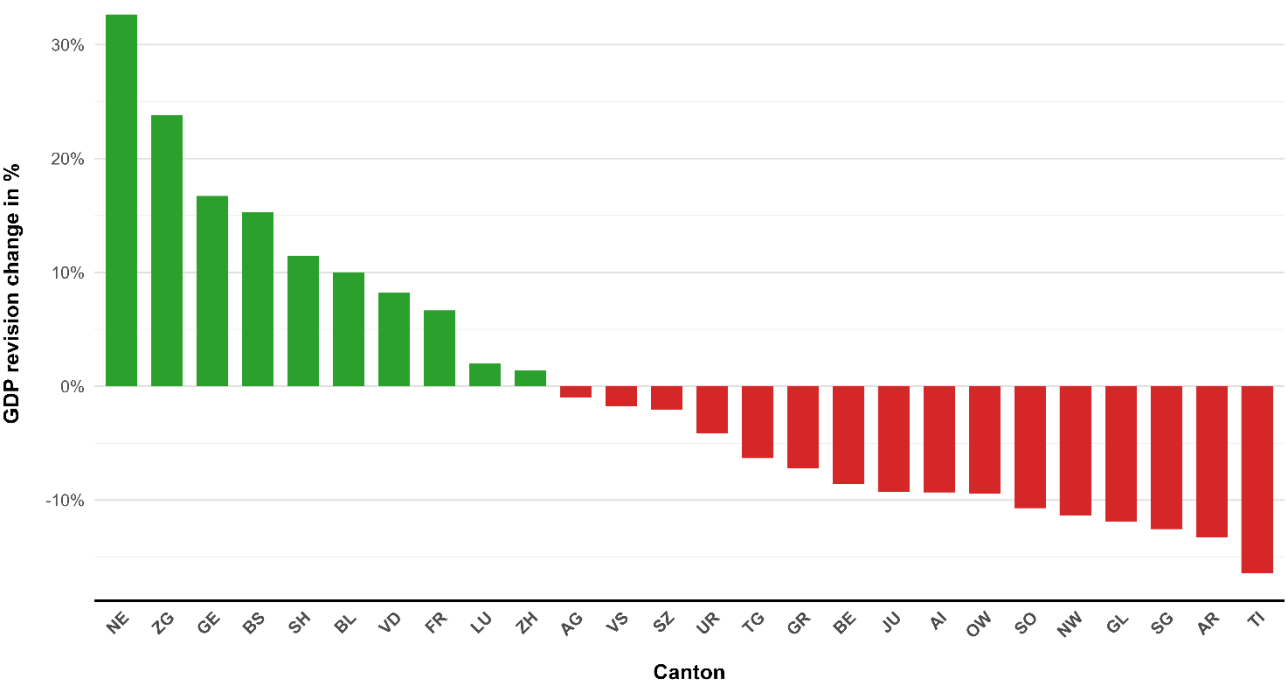
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These changes are larger in 2022 than they were in 2011.

Comparison of the effect of Revision on cantonal GDP

Reference year 2011



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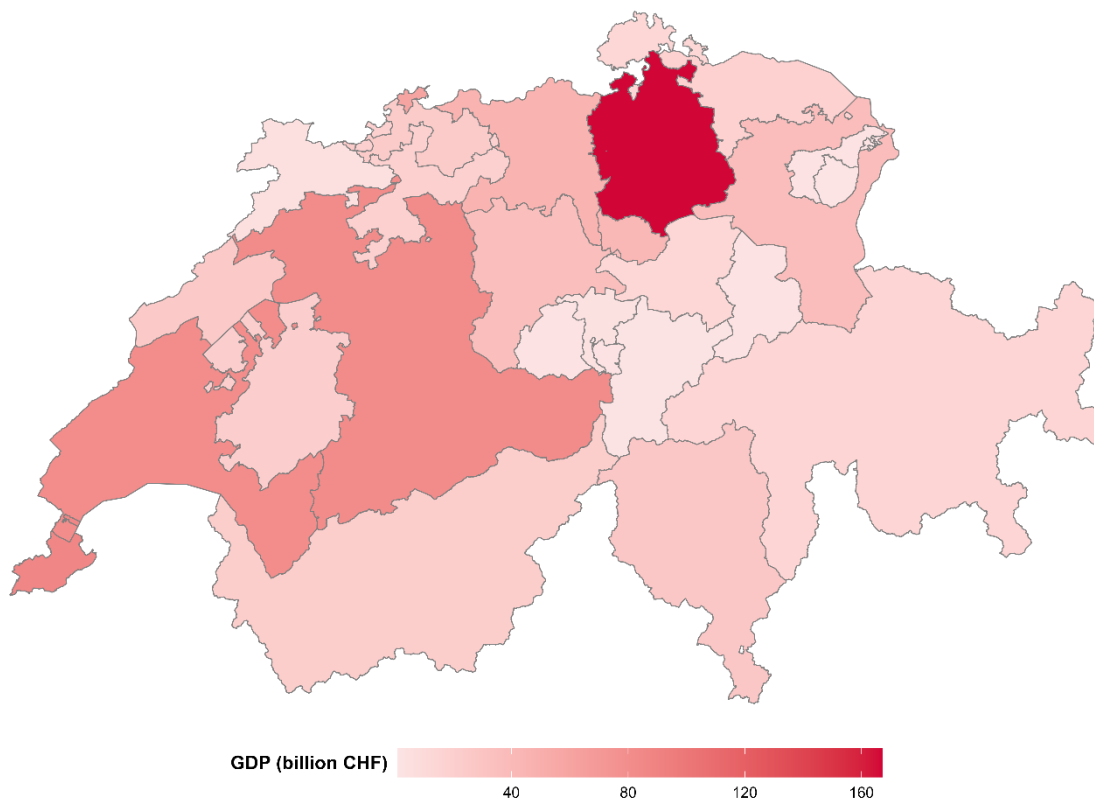
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In general, we find that regional hubs of economic activity are revised upwards, while cantons in the economic and geographic periphery are revised downwards. This change is related to the cantonal economic structure and the prevalence of productive sectors. While some weak correlations are present, the data does

not suggest a link between linguistic region or urbanisation rate and the effect of the revision. We will rely on the extensive work of researchers to investigate, if there is any causal relationship in these data, that may inform our future work.

Gross domestic product (GDP) by canton

Reference year 2024



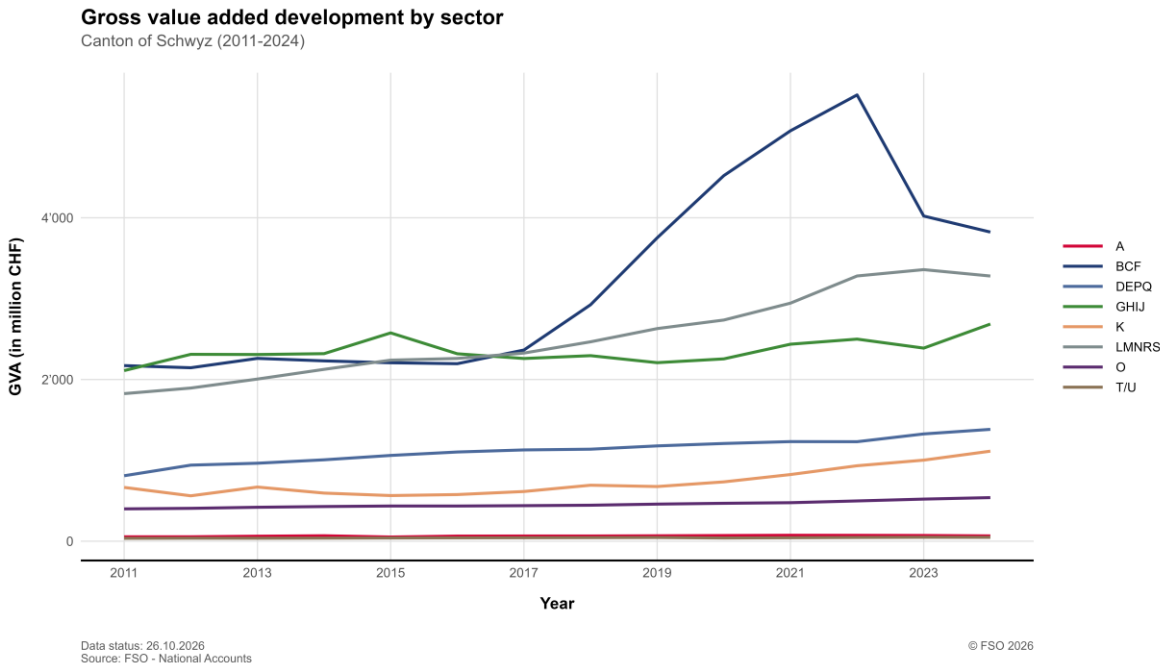
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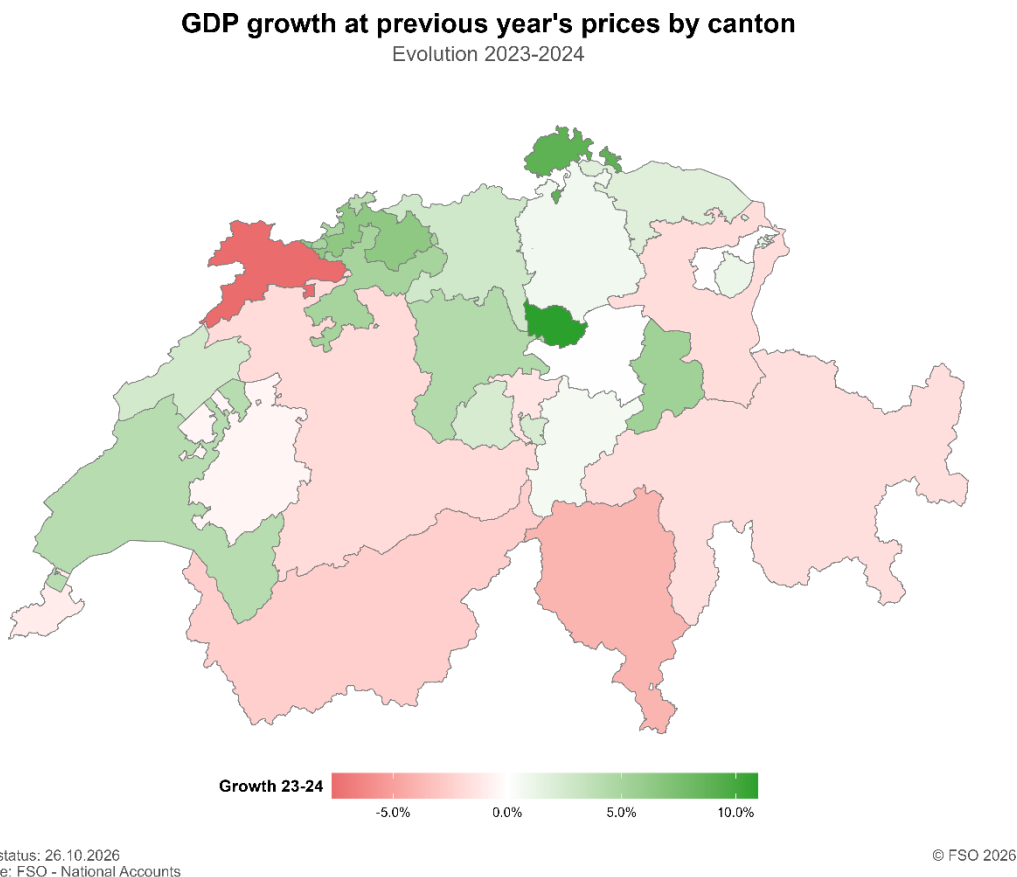
Driven by the forces of globalisation, evolving corporate structures, and idiosyncratic productivity gains, economic outliers have gained unprecedented importance. Because it is precisely these highly influential entities that dictate regional economic development, their accurate representation is crucial. As a result, the revised estimation methodology prioritises granular data; the model inherently captures higher statistical fluctuation. Whilst

this heightened sensitivity may occasionally obscure smoother, long-term economic trends, it delivers a superior reflection of actual business cycles. Users will observe this primarily through pronounced spikes in activity, which accurately mirror major corporate events within a specific sector.

This can be visible at the activity level¹⁸



and sometimes even at the cantonal level through elevated growth rates



¹⁸ (here Schwyz, where a specific NOGA division within manufacturing is the driver of this spike. This data underlying this spike is not subject to estimation or modelling and uses only national accounting rules)

Here, it is important to note the contribution of different components to cantonal GVA. The contribution of the data that is produced through modelling within the sector S11 is comparatively small. Consider first only the firms that are part of the WS, are single cell firms, that are in S11 and not in NOGA A, P or Q. Their results do not need to be estimated or modelled. This corresponds to SAMPLE

In many cells, these firms alone, which are only a small sub-sample of the economy, are larger than the results according to the old method. Without any modelling, we know there is an upward revision in these NOGAs.

View Annexe 1 for details.

This lists the cells where the revised GVA stemming from single cell (SAMPLE) firms exceeds the old, published results. This effect increases further if we consider the contribution taking account of the extrapolation weights of the WS. These firms proxy for other firms as well.

We can now also consider data on NOGA A, O, P, Q and K that are also not estimated through modelling but use an accounting / a statistical approach. We refer to SAMPLE and A, O, P, Q, K as "unmodelled data". In some cases, this unmodelled data alone is larger than the results of the old model for the entire canton.

Year	Canton	Old published Total (CHF)	New Total (CHF) – unmodelled data only
2013	ZG	18'119'970'340	18'626'983'016
2014	ZG	17'548'521'580	19'441'651'584
2015	SH	6'532'478'640	6'533'155'881
2016	NE	14'771'772'860	15'107'244'731
2016	SH	6'621'189'230	7'250'460'922
2018	SH	6'949'852'850	7'300'285'595
2019	NE	16'142'432'340	18'714'394'327
2019	SH	7'092'874'970	7'700'238'220
2020	NE	14'944'567'850	17'397'122'112
2020	SH	7'049'068'960	7'910'145'937
2020	SZ	9'748'456'490	9'930'755'442
2021	GE	54'768'520'580	55'126'185'972
2021	NE	17'220'050'980	20'623'948'953
2021	SH	8'066'739'090	8'900'488'934
2021	SZ	10'583'407'400	11'325'207'113
2021	ZG	21'781'157'110	23'106'448'827
2022	GE	59'643'461'600	65'571'201'621
2022	SH	8'310'962'890	9'454'378'327
2022	SZ	11'318'769'660	12'985'370'243
2022	ZG	24'245'117'130	25'559'699'827

We then look at the contribution of these data per canton and per year. We see that the contribution of these (often superstar) firms is geographically concentrated. These shares are relative to the new revised results.

Canton	Share SAMPLE Firms (%)	Share SAMPLE Firms weighted (%)	Share unmodelled data (%)	Share unmodelled data (weighted) (%)
AG	17.87	39.41	44.82	66.36
AI	14.36	35.33	50.78	71.75
AR	14.98	37.35	47.75	70.12
BE	14.95	33.87	54.10	73.03
BL	29.37	44.82	55.68	71.13
BS	23.48	30.26	42.99	49.77
FR	20.24	37.88	53.43	71.07
GE	30.20	41.56	57.45	68.81
GL	21.49	46.20	50.79	75.50
GR	11.67	33.39	46.39	68.11
JU	21.08	44.15	47.43	70.50
LU	17.39	40.18	48.63	71.42
NE	38.89	50.06	55.40	66.57
NW	23.81	41.58	53.29	71.06
OW	22.21	46.84	50.25	74.88
SG	19.63	41.65	51.71	73.73
SH	41.94	56.87	57.17	72.09
SO	15.97	34.04	44.04	62.10
SZ	22.85	47.80	50.98	75.92
TG	17.19	43.18	54.19	80.18
TI	15.75	35.18	47.93	67.36
UR	11.25	31.01	45.05	64.80
VD	21.32	36.55	53.60	68.84
VS	11.03	35.06	47.02	71.04
ZG	34.82	51.63	50.30	67.10
ZH	15.30	30.16	56.06	70.92

We further see that the importance of these data grows over time.

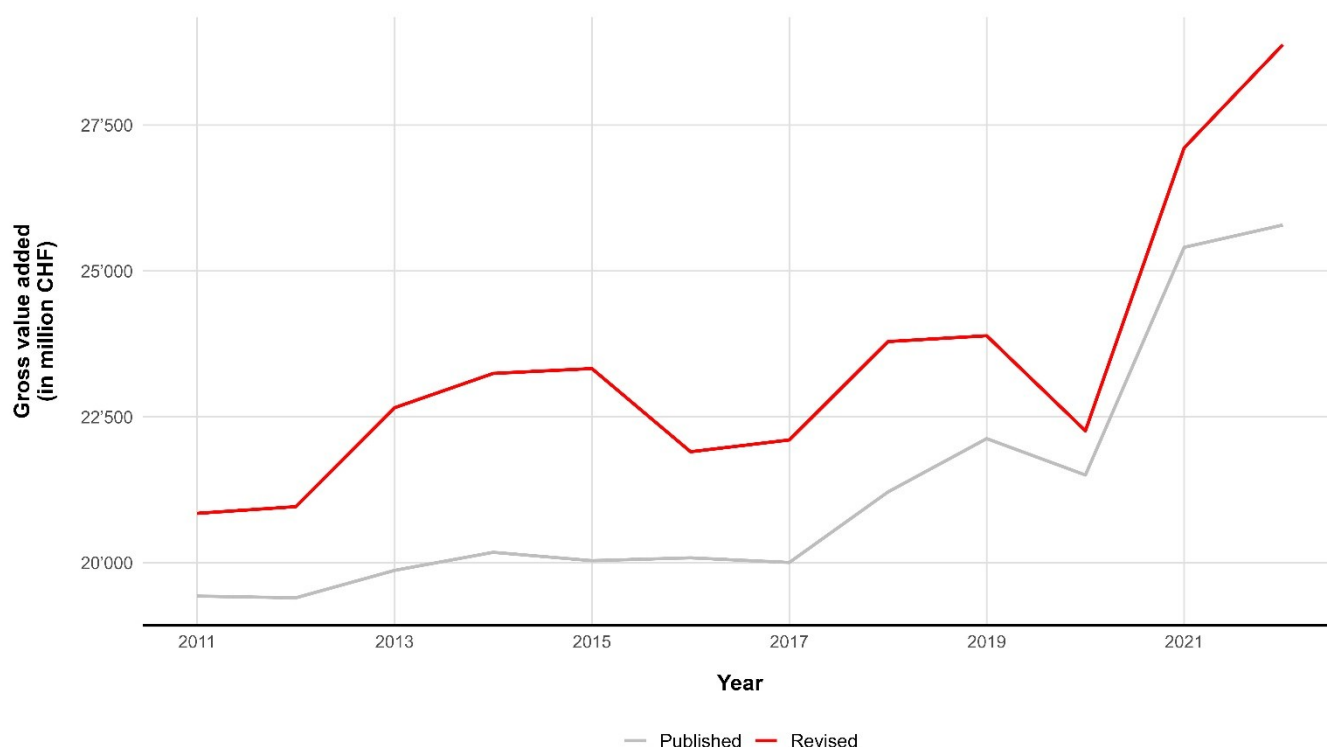
Can- ton	Share SAM- PLE Firms (%)	Share SAM- PLE firms weighted (%)	Share unmo- delled data (%)	Share un- modelled data (weighted) (%)
2011	18.08	37.78	47.17	66.87
2012	18.84	37.25	48.05	66.45
2013	18.86	39.09	48.38	68.61
2014	19.78	39.75	49.11	69.08
2015	20.42	40.41	49.77	69.76
2016	21.20	40.11	50.90	69.81
2017	20.43	40.12	50.47	70.16
2018	21.89	40.30	51.36	69.78
2019	22.26	41.44	51.89	71.07
2020	22.48	41.50	52.99	72.02
2021	24.76	42.16	54.31	71.70
2022	24.41	42.86	53.53	71.98

Recall that not all remaining firms are fully modelled. Firms that are active in more than one cell but part of WS have the firm-level GVA anchored. It is only the firms that are not in WS that are fully predicted through a model.

Changes are less pronounced when considering a higher level of aggregation. Post revision results aggregated to major regions (the basis of calculation of the old method) differ much less than those at the cantonal level. Specifically, while there is a tendency for major regions, where economically more productive activities take place, to be revised upwards, this revision at major region level is much less pronounced than that of cantons. This is because the old method was based on major regions. Most upward revisions within a major region must therefore be associated with a downward revision. This is visible in the data: Some cantons are revised upwards while some are revised downwards. The absolute totals for major regions change little. Instead, the cantons shift relative to one another. While policy is made at the cantonal level, the major regions are statistically the much more reliable unit of analysis. This corresponds with Eurostat, where regional accounts are produced at the NUTS 2 (major region) or even NUTS 1 (e.g. Bundesländer in Germany) level.

This underlines that the core of the old model, and the core of the economy was and continues to be estimated accurately (see the Lake Geneva Region, BCF).

Industry and construction (Lake Geneva Region)



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It is clear that there are changes but if they are compared at the major regions and NOGA letter group level these changes are muted, both in a cross-section as well as in a time-series analysis. Most methodological changes took place at the major region to cantonal apportionment. Therefore, it is no surprise that the major changes also take place at this level.

The breakdown by NOGA activities changes in the major regions before and after the revision. Most cantons see NOGA O to be less important and NOGA DEPQ to be more important. This is mainly due to the reclassification of education and changes made to the regional calculations of public administration.

Year-on-year volatility of GVA increased only slightly post revision. We expected that the lower level of aggregation in the model combined with more intense use of individual data would result in higher fluctuations. While on some cells these are present, this is not a characteristic phenomenon of this revision.

4.1 Retropolation

These results are extended back in time using a retropolation for each institutional sector. STATENT data, including specifically local FTE data is only available from 2011. The business census is only available three times per decade. Details of the retropolation method will be provided in the forthcoming publication.

5 Analysis

This analysis focuses on the structural shifts caused by the revision. It also assesses the model performance by comparing aggregated plant-level predictions against WS benchmark data.

It is in the nature of national accounting that “true GDP” cannot be observed. Our internal mechanism to assess the results therefore relies both on an analysis of the results as a whole and of individual units and their predicted GVA. We defined a threshold for outliers. We define for each cell the influence of observations. If their influence is greater than 40% of the cell, the firm is treated manually. For cells in NOGAs that have particular importance in a canton, this threshold was lowered to 20%. The analysis is as much economic in nature as it is statistic. We scrutinise the microdata intensely. Extreme outliers undergo basic manual verification. This process is still highly resource-intensive. Verifying whether these extreme spikes reflect real production or merely the internal relocation of corporate assets would demand forensic data analysis. This treatment is not yet possible. This will change after the LCU is operational.

Our conclusions from this analysis are presented here. In our analysis we cluster the effects into different cases. Especially when the revision effect is not systematic but appears to be due to idiosyncrasies at the individual firm or plant level, we cannot, for data protection reasons, provide details on the firms. These make up a significant number of cases.

5.1 Effect of the national revision

During the 2025 Swiss National Accounts benchmark revision, the FSO refined its production and expenditure methodologies. Production-side GDP was updated using revised non-financial corporate data and a new calculation method for investment funds, explicitly excluding foreign branch operations from domestic output. Structurally, public education and real estate investment funds were reclassified.

These changes increased nominal GDP by 1.1 to 3.8 per cent between 1995 and 2023. Supply-side growth stemmed almost entirely from non-financial and financial intermediary updates. The FSO notes a widening gap between the production and expenditure approaches, appearing as a positive bias in 'changes in inventories and statistical discrepancies' (roughly 49 per cent higher in 2021). While contributing minimally (-0.1 per cent) to long-term real growth, this discrepancy highlights statistical uncertainties from complex globalisation, necessitating an intensification in tracking of multinational enterprises.

The revision had a significant impact at the national level and is even more apparent in regional totals. Nationally, the adjustments amount to a 15 billion CHF change for 2023, an effect that is even more pronounced at the regional level. The transition of public education from NOGA O to NOGA P creates substantial structural shifts when comparing pre- and post-revision results even at the usual level of aggregation. The marked increase in the aggregate group “DEPQ” across most cantons corresponds directly to a drop in the NOGA O level. Importantly, regional comparisons reveal that general trends and growth rates remain unaltered; this is a level revision driven by the reclassification of education.

5.2 Truncated mean / individual firms

The purposes of the old and new method are discernibly different. The old method aimed to represent the core variation of economic activity across major regions and cantons. As some cells are small the aim was to capture the economic trend and filter short term business cycles to increase the accuracy of the estimates. To this end productivity was measured using a truncated mean across groups of economic activity and major regions. This approach ensured that the productivity of outliers did not affect the structure of the core economic development and skewed the distribution of economic activity. The new estimation approach therefore focusses on granular detail and tolerates higher fluctuations, making long term economic trends less visible to users but reflecting business cycles in the data. This effect is visible mainly through spikes in activity when an influential firm in a cell faced a major event. This could be, among others, bankruptcy, relocation of intellectual property, restructuring or a change of macroeconomic conditions. There are many notable examples of

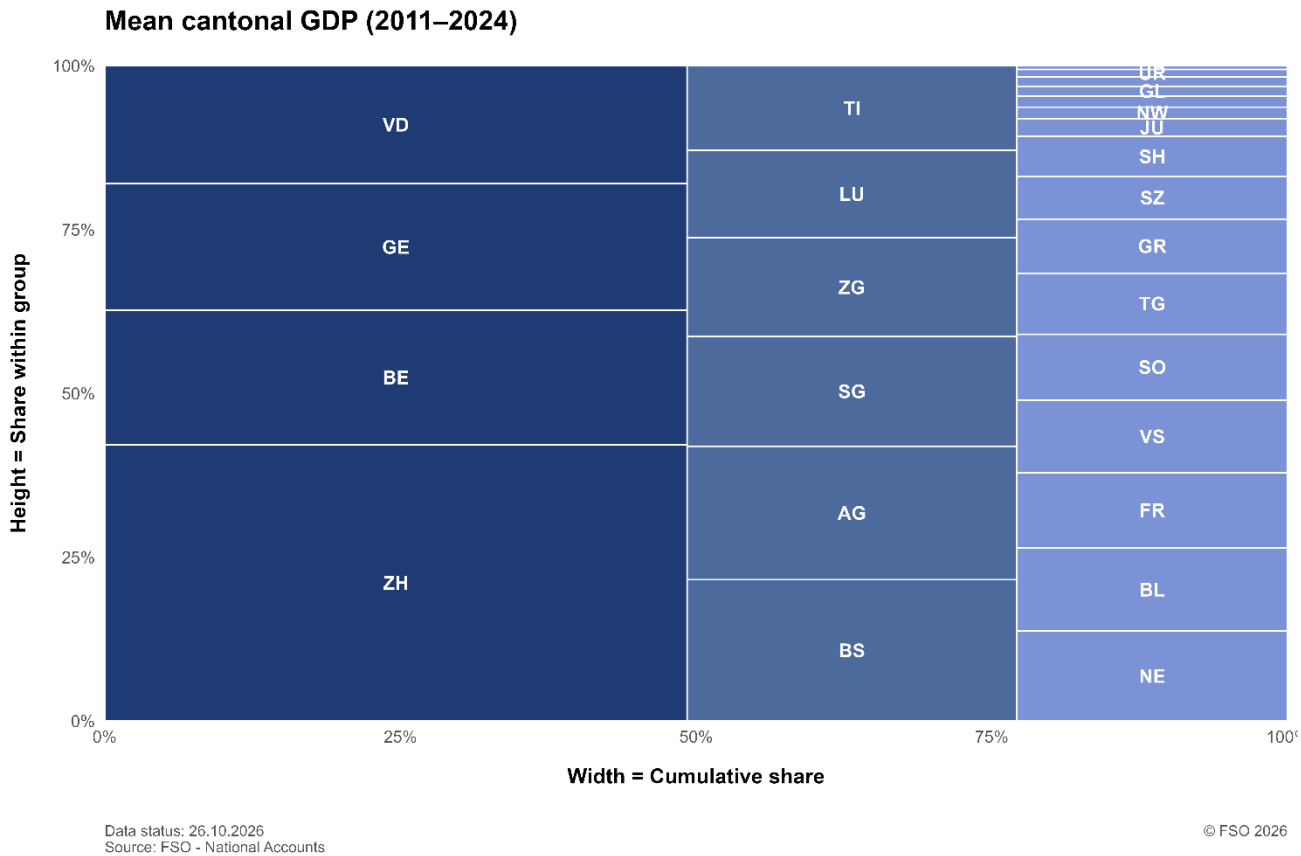
firms with an unexpectedly high GVA and without information from an LCU we are working with incomplete data.

The large variance and very high GVA per FTE can have many origins. This is not a Swiss phenomenon. For example, Ireland publishes a modified GNI. Depreciation associated with IP is substantial; due to the intangible and highly mobile nature of these assets, their relocation can trigger artificial fluctuations in GNI. Moreover, while a portion of intellectual property supports domestic activity such as pharmaceutical manufacturing patents the majority is held by foreign-owned corporations, meaning its impact on the domestic economy is disproportionately narrow. (CSO 2025).

Ultimately, these fluctuations highlight a conceptual challenge: What constitutes value added? Does it encompass only physical activities, or does it also include virtual operations? While these questions were answered by international standards,

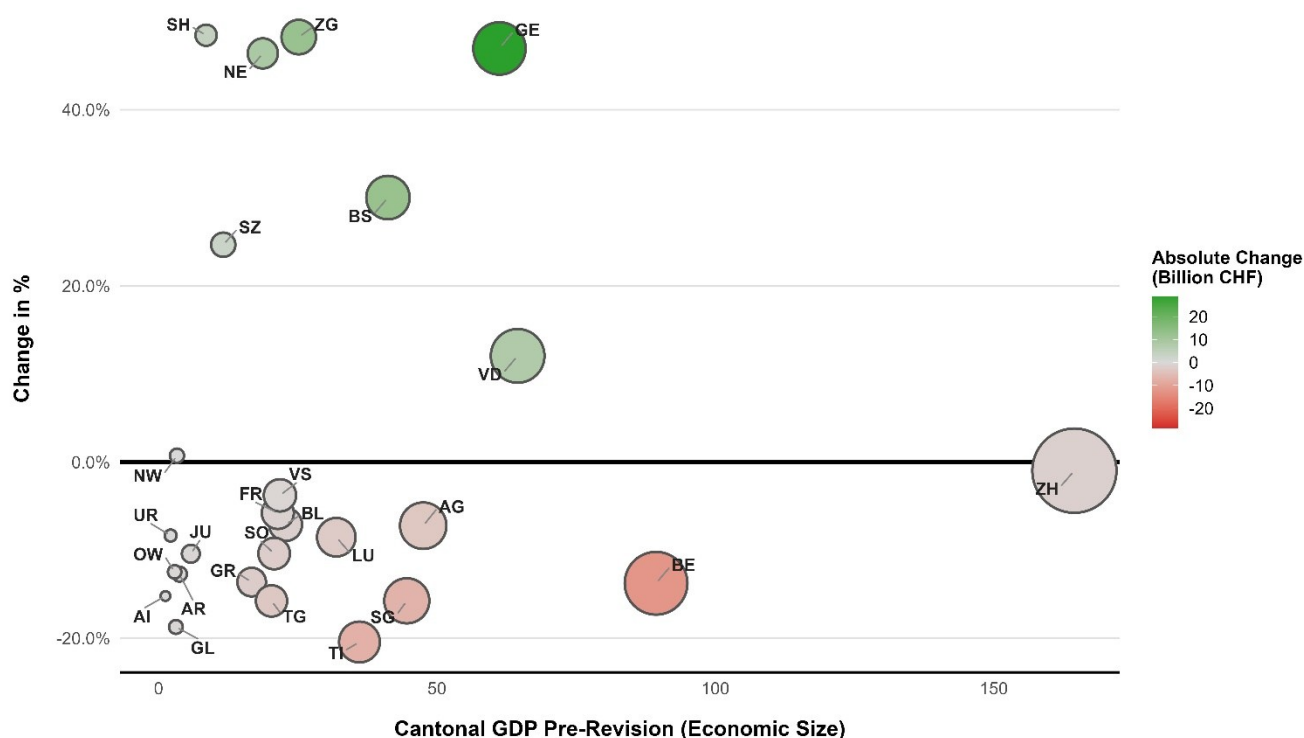
dealing with measuring and interpreting the resulting statistical spikes in data requires caution. In discussions, people use terms such as profit shifting, high idiosyncratic productivity, or concentrated innovation. However, these descriptions act as arbitrary placeholders that mask a lack of knowledge regarding the true causes. If names were just arbitrary signifiers, using any label would be harmless. But because these terms carry economic significance, applying a specific label without fully understanding the underlying business processes is analytically dangerous and simply acknowledges our current lack of detailed information.

That said, looking not at the more volatile year-on-year results but long term patterns, such as the mean cantonal GDP below, we find the structure of the economy before and after the revision have not changed as much as the year-on-year data would suggest. About half of the Swiss economic activity is located in only four cantons, while the next six cantons make up only a quarter.



To view this comparison, readers can consult for example the FSO illustration gr-d-04.02.06-ct-202, that show the same results before the revision for the years 2008-2022. This is, in large parts due to the fact that, with some notable exceptions, the percentage effect of the revision was larger in smaller cantons than economically larger ones.

Revision Effect Relative to Cantonal Size (2022)



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5.3 Effects of using more disaggregated data within the model

Using individual-level data rather than a truncated mean significantly impacts the estimation. Furthermore, an additional mechanical effect arises from lowering internally the level of aggregation. It is a mechanical consequence of the top-down scaling to the national production account of S11. Some NOGAs are more productive (GVA per FTE) than others according to the production account. In the old model NOGAs were aggregated. Cantons that have a higher share of productive NOGAs are revised upwards, Cantons that have fewer productive NOGAs are revised downwards. Even if we used a truncated mean and no individual data, we would see this shift. Its direction is likely to be the same as the effect described in 5.2. Firms that are very productive and thus likely to be subject to exclusion by the truncated mean are more likely to be in these productive NOGAs.

5.4 Fewer assumptions

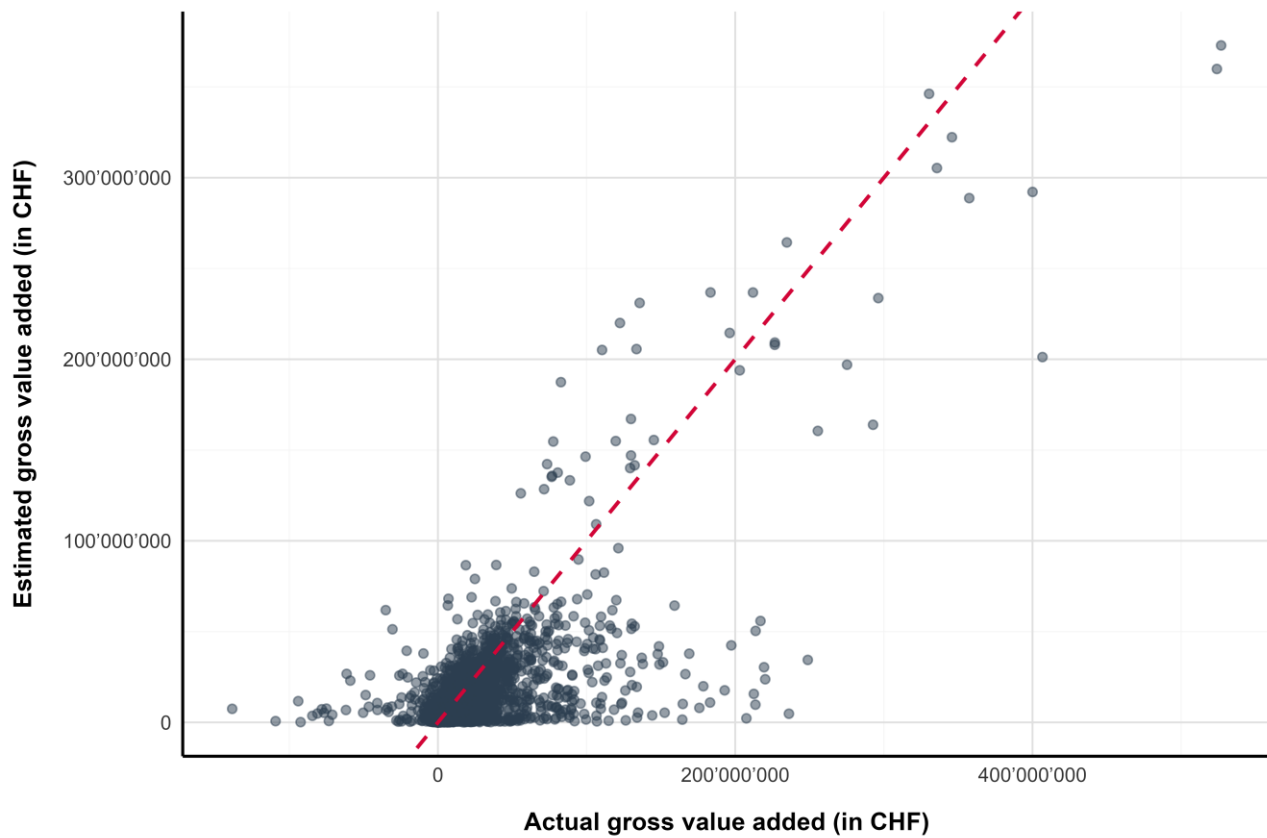
Finally, even if we continued to exclude very productive firms and if cantons had the same NOGA structure we would see a change. We no longer assume that the productivity is identical between cantons and NOGA. We cannot test the validity of the old assumption directly. We can merely test if our new model provides a good fit for SAMPLE.

5.5 Analysis of Prediction Errors and Time-Series Stability

Recall the calculation procedure of the institutional sector of non-financial corporations. There are three groups of firms within the WS Sample. It is for these firms that we have GVA data. SAMPLE, PRED and REST. The GVA of plants in PRED can be predicted through a model. This naturally introduces a prediction error, which will affect results. To test these, we compare the predicted to realised GVA for firms in SAMPLE. For each firm in PRED, we further compare the sum of predicted GVA to the realised GVA. While there is a lot of idiosyncratic variance, representative of the economy as a whole, the results appear symmetric along the 45° line when fitted GVA is plotted against actual firm-level GVA. Especially in SAMPLE there are some few firms that have very high GVA, where the prediction is low. These firms have only a few FTE. They are the superstar firms. While the model cannot fully capture their production process, we can still represent them in total GVA as we use their data directly from WS. The majority of data is along the 45° line at a much lower firm-level GVA. Without loss of generality, we display 2024 SAMPLE data excluding observations that were filtered by cook's distance. We also show 2024 PRED data.

Calibration dataset (SAMPLE): Estimated vs actual gross value added

Reference year 2024. Outliers filtered using Cook's distance.

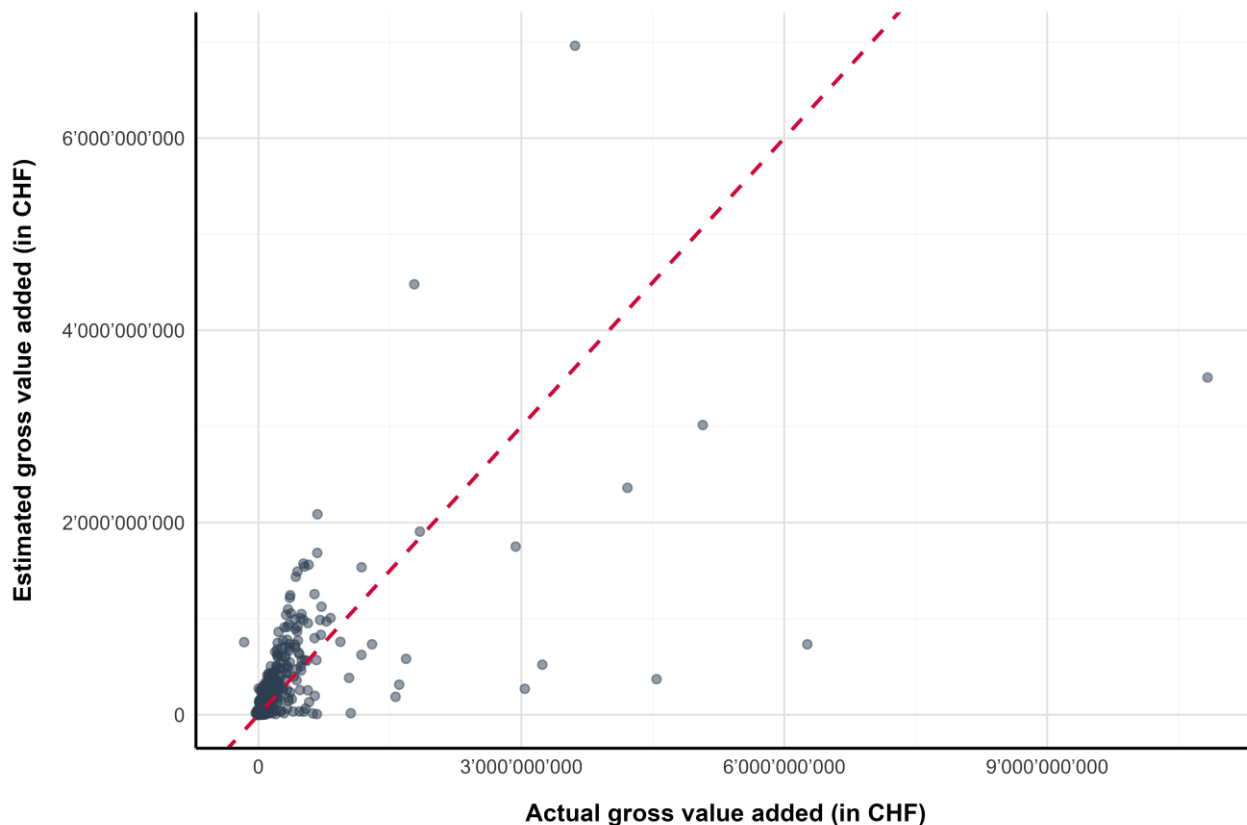


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Prediction dataset (PRED): Estimated vs actual gross value added

Reference year 2024



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We cannot test the breakdown by firms. We further test the coefficients of the model, which are statistically different to zero, suggesting, that there is a differentiated productivity by NOGA and cantons.

To guarantee stability in the time-series, the model is adjusted independently for each reference year. New annual data is exclusively used to estimate that specific year, preventing any retroactive revisions to published data. This procedure will vary for the retropolation in the forthcoming experimental publication. By processing a fixed annual data volume and isolating estimations, structural scalability is guaranteed, preventing future computational bottlenecks.

6 Conclusion and next steps

The next revision of methodology is planned for 2030, following the benchmark revision of national accounts. This revision will ensure that cantonal GDP continues to be aligned as much as possible with national principles and methodology. The performance of this model will be continuously assessed. Further ad-hoc revisions of the implementation of the method may be necessary to accommodate the new NOGA 2025 classification. Further, when first insights of the new LCU are available we will evaluate the need for an ad-hoc revision. We are working further to learn more about the lifecycle and timeseries trends of business groups using the REFLEX data platform for the Swiss Commercial Registry.

7 Technical appendix

This section outlines the computational steps, data segmentation, and specifications used to estimate the GVA at the plant level for non-financial corporations (S11), establishing the final cantonal distribution shares.

The universe of local units is derived from the structural business statistics, and firm level data are derived from WS. The full-time equivalent employment variable is non-linearly transformed such that $FTE_{reg} = \sqrt{FTE}$. The target variable, labour productivity, is defined as $prod = \frac{GVA}{FTE_{reg}}$. Economic activities are evaluated at the NOGA section level. To ensure sufficient observation density, specific sections are logically regrouped prior to estimation, with section Q merged into P and B into E. Divisions A and 86 are excluded, as they are calculated using separate top-down models. Furthermore, a binary indicator is assigned to firms with an FTE greater than 500 to flag large enterprises.

Following this, the data is partitioned into non-overlapping groups. SAMPLE consists of single-canton, single-activity firms present in WS, which forms the baseline training dataset. PRED contains plants of multi-canton or multi-activity firms present in the WS survey data. Their total institutional GVA is known but must be distributed among local units. GVA of local units present in the administrative registry (STATENT) but not covered by the survey sample also need to be predicted.

To estimate the underlying productivity-generating process, denoted 'prod' below, a linear mixed-effects model is adjusted on the SAMPLE dataset, independently for each reference year.

To isolate spatial agglomeration economies the model specifies fixed interaction effects for economic activity and firm size, alongside a random slope for labour input grouped by canton. The structural equation for productivity, denoted as Y_i , for firm i in canton C and economic section n is defined as

$$Y_i = \sum_n \beta_{1,n} (NOGA_{i,n} \times \sqrt{FTE_i}) + \beta_2 (Large_i \times \sqrt{FTE_i}) + \zeta_c \sqrt{FTE_i} + \epsilon_i$$

where $\beta_{1,n}$ represents the fixed-effect slope parameter for the transformed labour input specific to the economic section, and β_2 represents the fixed-effect slope parameter for large enterprises. The term $\zeta_c \sim \mathcal{N}(0, \sigma_c^2)$ is the normally distributed random slope for the transformed labour input specific to the canton, whilst ϵ_i acts as the idiosyncratic error term. The model is weighted using the survey weights provided by WS.

Because economic microdata inherently features severe skewness, a two-stage estimation routine is used to prevent influential outliers from distorting the baseline production function. The model is initially estimated on the full SAMPLE group. Cook's distance, denoted as D_i , is then calculated for every unit to quantify

its leverage on the fitted values. Units exceeding a threshold are discarded from the calibration sample. This threshold is defined as

$$D_{crit} = \frac{4}{N}$$

where N represents the number of observations in the initial sample. The mixed-effects model is subsequently re-estimated exclusively on the remaining robust subset.

The resulting estimated parameters are then applied to predict unit-level GVA for all datasets. The final values are derived using a hybrid allocation logic. For pure administrative registry (STATENT) units that fall outside the WS survey sample, the model's prediction is used directly as the absolute GVA, calculated as

$$GVA_{final} = \widehat{prod} \times \sqrt{FTE}$$

For multi-plant firms within the prediction group, the model's predictions are used as a proportional distribution key to allocate the known institutional GVA among the firm's constituent plants. This preserves the deterministic macroeconomic aggregate. The share for a specific plant j is calculated as¹⁹

$$Share_j = \frac{\widehat{prod}_j \times \sqrt{FTE_j}}{\sum_{k \in Firm} \widehat{prod}_k \times \sqrt{FTE_k}}$$

This allows the final allocated value to be determined by

$$GVA_{final,j} = Share_j \times GVA_{observed}$$

$GVA_{observed}$ may be negative at the firm level. However, in practice the sum of GVA by NOGA is not negative. Finally, these plant-level results are aggregated by year, economic division, and canton to calculate the final cantonal distribution shares

¹⁹ No negative predicted productivity occurs within the analysed timeframe.

8 Abbreviations/Glossary

Cell	A defined level of observation representing the intersection between a specific NOGA economic activity and a specific canton.
CSO	Central Statistics Office (Ireland)
ESA	European System of Accounts
FSO	Federal Statistical Office
FTE	Full-Time Equivalent
GDP	Gross Domestic Product
GNI	Gross National Income
GVA	Gross Value Added
CORSTAT	Konferenz der regionalen statistischen Ämter der Schweiz (Swiss Conference of Regional Statistical Offices)
LCU	Large Cases Unit
NA	National Accounting / National Accounts
NOGA	Nomenclature Générale des Activités Économiques (General Classification of Economic Activities)
NPISH	Non-Profit Institutions Serving Households
NUTS	Nomenclature of Territorial Units for Statistics
R&D	Research and Development
REFLEX	Registry of Firms' Life and Exit
REGIOSTAT	Regional Statistics (Statistique régionale)
STATENT	Statistik der Unternehmensstruktur (Structural Business Statistics)
TFP	Total Factor Productivity
WS	Wertschöpfungsstatistik (Value Added Statistics)

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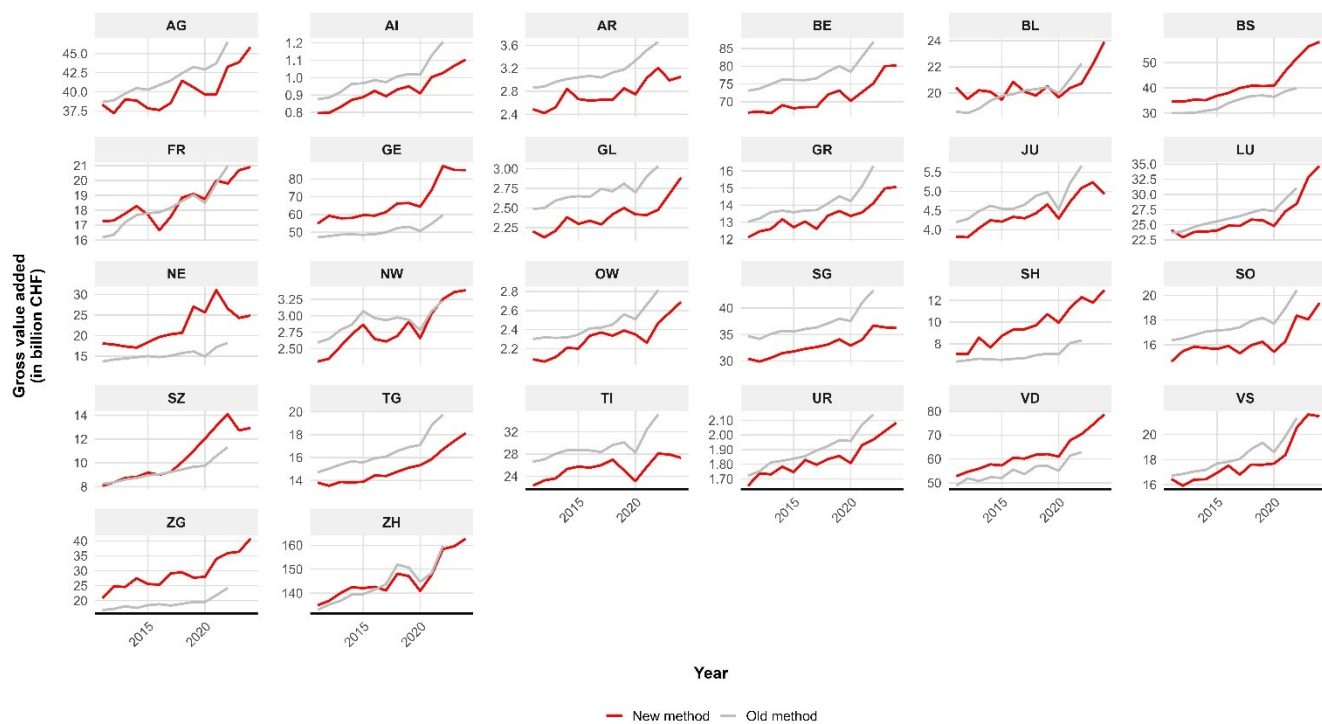
Annexe 1

Year	Canton	NOGA Grouping	Old Published (CHF)	GVA SAMPLE FIRMS (CHF)	GVA SAMPLE FIRMS (Weighted) (CHF)	Minimum Excess (CHF)	Minimum Excess Weighted (CHF)
2011	SH	GHIJ	1'523'730'730	1'440'458'948	1'748'049'061	-83'271'782	224'318'331
2012	SH	GHIJ	1'568'180'830	1'369'826'936	1'652'392'304	-198'353'894	84'211'474
2012	ZG	GHIJ	6'101'981'700	4'829'463'773	6'900'313'550	-1'272'517'927	798'331'850
2013	SH	GHIJ	1'574'164'820	2'226'892'252	2'734'563'892	652'727'432	1'160'399'072
2013	ZG	GHIJ	6'240'970'050	4'793'403'450	8'262'511'278	-1'447'566'600	2'021'541'228
2014	SH	GHIJ	1'541'238'100	1'517'280'032	2'586'328'801	-23'958'068	1'045'090'701
2014	ZG	BCF	4'155'831'170	3'626'441'043	4'169'585'484	-529'390'127	13'754'314
2014	ZG	GHIJ	6'372'085'020	7'202'281'129	8'964'215'786	830'196'109	2'592'130'766
2015	NE	BCF	6'877'777'060	6'821'740'803	8'061'780'775	-56'036'257	1'184'003'715
2015	SH	GHIJ	1'475'547'660	2'424'131'750	2'769'944'197	948'584'090	1'294'396'537
2015	SH	LMNRS	1'180'800'790	883'675'100	1'616'575'972	-297'125'690	435'775'182
2015	UR	GHIJ	274'168'790	41'411'160	371'508'981	-232'757'630	97'340'191
2016	NE	BCF	6'676'651'750	7'939'492'699	8'980'807'705	1'262'840'949	2'304'155'955
2016	SH	GHIJ	1'492'780'700	2'993'750'865	3'441'255'118	1'500'970'165	1'948'474'418
2016	SH	LMNRS	1'151'836'870	891'525'288	1'370'134'400	-260'311'582	218'297'530
2016	UR	GHIJ	275'574'970	43'338'900	386'261'963	-232'236'070	110'686'993
2016	ZG	GHIJ	6'832'736'180	5'663'465'045	7'736'872'201	-1'169'271'135	904'136'021
2017	GE	GHIJ	16'268'803'120	12'286'637'036	16'442'692'642	-3'982'166'084	173'889'522
2017	NE	BCF	6'949'934'190	8'184'568'510	9'166'336'841	1'234'634'320	2'216'402'651
2017	SH	GHIJ	1'514'764'290	2'328'087'313	2'875'103'088	813'323'023	1'360'338'798
2017	ZG	GHIJ	6'716'766'900	7'101'511'884	9'984'801'663	384'744'984	3'268'034'763
2018	NE	BCF	7'515'412'030	8'113'385'829	9'601'755'566	597'973'799	2'086'343'536
2018	SH	GHIJ	1'559'725'100	2'658'020'194	3'228'437'154	1'098'295'094	1'668'712'054
2018	ZG	GHIJ	7'072'665'460	7'240'693'582	9'561'091'028	168'028'122	2'488'425'568
2019	GE	GHIJ	16'570'107'600	14'793'433'252	17'407'337'831	-1'776'674'348	837'230'231
2019	GL	GHIJ	551'576'680	120'210'807	573'146'823	-431'365'873	21'570'143
2019	NE	BCF	7'569'627'910	11'204'606'030	12'658'616'017	3'634'978'120	5'088'988'107
2019	SH	GHIJ	1'492'796'240	2'174'079'925	2'796'926'312	681'283'685	1'304'130'072
2019	SH	LMNRS	1'222'167'160	1'695'719'398	1'965'866'777	473'552'238	743'699'617
2019	SZ	BCF	2'564'345'500	2'106'467'120	3'352'492'858	-457'878'380	788'147'358
2019	UR	GHIJ	299'935'560	51'756'880	320'254'245	-248'178'680	20'318'685
2019	ZG	GHIJ	6'996'714'910	5'970'498'460	8'233'906'792	-1'026'216'450	1'237'191'882
2020	AI	BCF	349'677'380	88'702'460	454'460'840	-260'974'920	104'783'460
2020	GE	GHIJ	14'461'939'190	15'912'723'304	18'243'731'422	1'450'784'114	3'781'792'232
2020	NE	BCF	6'851'460'690	10'825'654'972	11'686'775'588	3'974'194'282	4'835'314'898
2020	SH	GHIJ	1'388'995'200	1'826'354'232	2'648'466'555	437'359'032	1'259'471'355
2020	SH	LMNRS	1'340'367'960	1'903'669'634	2'313'287'660	563'301'674	972'919'700

2020	SZ	BCF	2'629'661'750	2'973'081'431	3'892'809'910	343'419'681	1'263'148'160
2020	ZG	GHIJ	7'827'690'470	6'518'456'808	8'558'538'088	-1'309'233'662	730'847'618
2021	GE	GHIJ	15'886'777'330	19'293'664'389	23'511'175'761	3'406'887'059	7'624'398'431
2021	NE	BCF	8'579'199'650	13'630'083'357	14'737'275'095	5'050'883'707	6'158'075'445
2021	SH	GHIJ	1'561'514'720	2'279'353'927	3'576'821'051	717'839'207	2'015'306'331
2021	SH	LMNRS	1'490'080'040	1'806'963'341	2'231'499'028	316'883'301	741'418'988
2021	SZ	BCF	2'971'729'880	3'592'360'394	4'572'743'107	620'630'514	1'601'013'227
2021	ZG	GHIJ	9'014'980'490	7'913'551'552	10'773'113'705	-1'101'428'938	1'758'133'215
2021	ZG	LMNRS	4'885'237'350	4'005'315'971	5'467'424'873	-879'921'379	582'187'523
2022	GE	GHIJ	18'434'446'560	27'332'620'402	31'396'715'485	8'898'173'842	12'962'268'925
2022	NE	BCF	9'018'145'720	9'268'205'421	11'320'736'117	250'059'701	2'302'590'397
2022	SH	GHIJ	1'763'286'640	3'249'300'542	4'211'175'235	1'486'013'902	2'447'888'595
2022	SH	LMNRS	1'566'660'590	1'790'588'673	2'219'260'501	223'928'083	652'599'911
2022	SZ	BCF	3'073'425'700	3'936'154'416	5'290'128'794	862'728'716	2'216'703'094
2022	ZG	GHIJ	10'453'382'000	9'826'782'892	12'269'797'861	-626'599'108	1'816'415'861

Annexe 2

Method comparison: Total gross value added



Data status: 26.10.2026
Source: FSO - National Accounts

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Annexe 3

Gross domestic product and growth by canton

Reference year 2024

Canton	GDP (billion CHF) 2024	Growth rate (PYP) 2023-2024	GDP per capita (CHF)2024
 Aargau	46.9	2.7%	64'013
 Appenzell Ausserrhoden	3.1	0.1%	54'642
 Appenzell Innerrhoden	1.1	1.2%	67'414
 Basel-Landschaft	24.4	6.4%	81'193
 Basel-Stadt	60.3	3.9%	300'128
 Bern	82.0	-1.9%	76'747
 Fribourg	21.3	-0.5%	61'791
 Geneva	87.4	-1.0%	165'459
 Glarus	2.9	5.4%	69'822
 Graubünden	15.4	-1.7%	74'679
 Jura	5.0	-7.7%	67'176
 Lucerne	35.6	4.4%	81'675
 Neuchâtel	25.6	2.6%	142'993
 Nidwalden	3.5	-1.4%	76'840
 Obwalden	2.7	2.3%	69'602
 Schaffhausen	13.3	9.0%	151'492
 Schwyz	13.3	0.1%	78'794
 Solothurn	19.8	5.0%	68'511
 St. Gallen	37.0	-1.8%	68'688
 Thurgau	18.5	1.9%	62'163
 Ticino	27.9	-3.9%	77'707
 Uri	2.1	0.6%	55'133
 Valais	21.8	-2.6%	59'186
 Vaud	80.7	4.1%	94'739
 Zug	42.4	11.0%	317'725
 Zurich	167.0	0.8%	103'442

Data status: 26.10.2026
Source: FSO - National Accounts

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Annexe 4

Gross domestic product: Comparison before and after revision

Reference year 2022

Canton	GDP in 2022 (billion CHF)			GDP per capita in 2022 (CHF)		
	Old method	New method	Revision	Old method	New method	Revision
 Aargau	47.5	44.1	-7.2%	67'224	62'162	-7.5%
 Appenzell Ausser rhoden	3.7	3.3	-12.7%	67'341	58'527	-13.1%
 Appenzell Inner rhoden	1.2	1.0	-15.2%	75'526	63'797	-15.5%
 Basel-Landschaft	22.8	21.2	-7.1%	77'693	71'922	-7.4%
 Basel-Stadt	41.2	53.6	+30.0%	209'782	271'612	+29.5%
 Bern	89.4	77.1	-13.8%	85'151	73'181	-14.1%
 Fribourg	21.4	20.2	-5.8%	64'502	60'557	-6.1%
 Geneva	61.2	90.0	+47.0%	119'644	175'175	+46.4%
 Glarus	3.1	2.5	-18.7%	75'430	61'088	-19.0%
 Graubünden	16.7	14.4	-13.6%	82'817	71'288	-13.9%
 Jura	5.8	5.2	-10.4%	78'546	70'102	-10.8%
 Lucerne	31.9	29.2	-8.5%	75'544	68'862	-8.8%
 Neuchâtel	18.7	27.4	+46.4%	106'165	154'894	+45.9%
 Nidwalden	3.3	3.3	+0.7%	74'952	75'245	+0.4%
 Obwalden	2.9	2.5	-12.5%	74'902	65'357	-12.7%
 Schaffhausen	8.5	12.7	+48.5%	100'959	149'323	+47.9%
 Schwyz	11.6	14.5	+24.7%	70'739	87'897	+24.3%
 Solothurn	20.8	18.6	-10.4%	73'803	65'913	-10.7%
 St. Gallen	44.6	37.6	-15.8%	85'320	71'633	-16.0%
 Thurgau	20.3	17.1	-15.8%	70'504	59'198	-16.0%
 Ticino	36.1	28.7	-20.4%	102'190	80'997	-20.7%
 Uri	2.2	2.0	-8.3%	58'392	53'332	-8.7%
 Valais	21.8	21.0	-3.8%	61'387	58'890	-4.1%
 Vaud	64.5	72.3	+12.1%	78'021	87'114	+11.7%
 Zug	25.2	37.3	+48.3%	192'958	285'102	+47.8%
 Zurich	164.5	162.9	-1.0%	104'620	103'243	-1.3%

The population figures before and after the revision have changed as a result of the reclassification of residents with protection status S.

Data status: 26.10.2026
Source: FSO - National Accounts

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