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Impact of the 2014 revision and transition to ESA 2010 on the Swiss QNA

On 30 September 2014, the Swiss Federal Statistical Office (SFSO) and SECO publish revised annual and quarterly figures of the national accounts in compliance with the European system for the national and regional accounts of the EU of 2010 (ESA 2010).[1] This revision has a significant impact on the level of the Swiss GDP and that of different accounting aggregates; the annual and quarterly growth rates of GDP and of several domestic demand components are less affected by this revision. The aggregates reflecting foreign trade (trade in goods and services) have undergone major changes, some of which make the interpretation of the results more difficult than in the past. Accounting aggregates which allow a more straightforward interpretation are calculated and presented in this annex. Furthermore, the Swis QNA will make in the future a clearer distinction between the time series adjusted for seasonal variations and for calendar effects. This note provides detailed information on these main adjustments and their consequences.

1. Overview and new samples of available data

In 2014, the annual and quarterly national accounts (ANA and QNA) of Switzerland were revised. This major revision (both in terms of concepts, integration of new data and changes in the methodology) has led to the publication of new accounting data, both annual and quarterly. The various reasons for this revision were explained in a note published by the SFSO and SECO in March 2014.[2] The European requirements[3] stipulate that data compliant with ESA 2010 must be published with effect from the year 1995; this principle is also respected by the Swiss National Accounts. However, in order to give users of the Swiss QNA access to data samples covering different business cycles, a retropolation of the main NA

[1] The adoption of this new accounting system was a commitment made by Switzerland when the bilateral agreements were signed with the EU and in particular the agreement on cooperation in the field of statistics. The regulation governing SEC 2010 can be consulted at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013R0549

[2] 2014 revision of the National Accounts: main changes and impacts (available in French and German): http://www.bfs.admin.ch/bfs/portal/fr/index/themen/04/01/new/nip_detail.html?gnpID=2014-500

[3] European accounting system, SEC 2010 data delivery program, http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-01-13-429-3A-C/DE/KS-01-13-429-3A-C-DE.PDF

aggregates to 1980 has been carried out whenever possible.[4] Within this framework, in a first step, growth rates from the old annual data (SEC 1995) were used to calculate new level prior to 1995. For some components of foreign trade, it proved possible to reconstruct historical annual data. In a second step, whenever this was possible, the monthly or quarterly indicators used for the temporal disaggregation of the years 1995-2013 were also applied to estimate quarterly data for the years prior to 1995 for the GDP based on the expenditure and on the production approach. In cases where the quarterly indicators used after 1995 were not available before 1995, alternative indicators were selected and employed.

2. Revision of investments in capital goods

When the transition to ESA 2010 was made, the estimate of investments in capital goods was revised and various indicators were adapted when that proved necessary. The inclusion of research and development investments (R&D) had primarily an impact on investment levels. Overall, the transition to ESA 2010 necessitated a number of changes to the quarterly calculations. As a result, the revision has a more visible impact on the rates of growth against the previous quarter than on the annual rates (quarter compared to the same quarter of the previous year). The high volatility of the quarterly fluctuations experienced within the ESA 95 has been slightly reduced with the transition to ESA 2010.

3. Adjustment of the foreign trade data

The transition to ESA 2010 and also the revision of the balance of payments[5] have implied major adjustments to the definitions of the accounting aggregates which reflect the evolution of foreign trade. Table 1 shows the accounting aggregates made available in ESA 95 and those which are now available following ESA 2010.

In the context of ESA 95, it was still possible to use the terminology of the Swiss Customs Administration (SCA) concerning the inclusion or exclusion of valuables in exports and imports of goods.[6] Since the transition to ESA 2010, the use of this terminology has become delicate because of a number of definition changes. Within the framework of ESA 2010, the balance of trade is now based on a concept of transfer of economic ownership of the goods that are traded. However, various goods can cross the national border without any change of economic owner, particularly in the case of contract processing traffic or in that of returned

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4 Reminder: the Swiss quarterly accounts are essentially based on the use of methods of temporal disaggregation. The annual values of the national accounts calculated by the SFSO are temporally disaggregated by using quarterly indicators (statistics or administrative data). The methods used imply that the sum of the four estimated quarters in each year for which the annual data are known correspond precisely to the annual value (distribution of a quarterly residual). When the annual data are not known, these same methods enable an extrapolation to be performed. Theoretical reasons (estimate with temporal aggregation constraint) and practical reasons (short lapse of time between delivery of the indicators and publication of the quarterly accounts) justify this choice.

5 Broader basis of the survey (http://www.snb.ch/en/iabout/stat/servbop/id/stat_sbop_act) and adjustment to the new IMF standards (http://www.snb.ch/fr/iabout/stat/bpm6/id/stat_bpm6_uebersichthttp://www.snb.ch/en/iabout/stat/bpm6/id/stat_bpm6_uebersicht)

6 We also used, as did the Swiss Customs Administration (SCA), for the purpose of the quarterly account the terminology "Total 2" and "Total 1" (Total 2: sum of goods exports or imports including precious metals, precious stones and gemstones, works of art and antiques, Total 1: sum of goods excluding the previous values).

goods.[7] Goods are often transferred temporarily from one State to another with a view to further processing. Once the work has been done, the goods are returned to the client who requested the work or transferred to another country. The Swiss Customs Administration (SCA) uses the passage of the goods through customs as the basis for the calculation of exports and imports, whereas the national accounts are now based on the previous mentioned concept of a change of ownership. The transition to ESA 2010 therefore generates new differences between the data in the national accounts and those of the Swiss Customs Administration (SCA) for foreign trade. It is also important to note that goods processing work performed abroad is included in the balance of services, as an imported service and vice versa in the other direction.

In addition to these changes in definition, the incorporation of various further headings in addition to the customs data for the trade in goods according to the national accounts concepts, makes the use of the "Total 1" or "Total 2" terminology delicate[8]. The decision was therefore taken to abandon some quarterly accounting aggregates which had been published previously and to replace them by new aggregates whose definitions are better compatible with ESA 2010. Some of the new accounting aggregates which are calculated and published (for instance exports excluding non monetary gold and merchanting) should be easier to interprete. Foreigh trade aggregates that incorporate transactions in non-monetary gold have no direct influence on GDP and show high volatility between quarters. Since non-monetary gold now is a part of the balance of trade and does not affect GDP, a counterpart is provided by the heading “net acquisition of high value objects” (P.53)", which now also includes net acquisitions of non-monetary gold.

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7 For further details about the concepts of processing traffic and returned goods, the reader may refer to the following SCA site: http://www.ezv.admin.ch/themen/04096/04101/05233/05675/index.html?lang=en.

8 SCA, Foreign trade statistics, Definitions and evaluation criteria: http://www.ezv.admin.ch/themen/04096/04103/04126/index.html?lang=en#sprungmarke40_11

Table 1: Publication of the accounting aggregates for foreign trade, SEC 95 and SEC 2010 (quarterly and annual accounts)[9]

	ESA 1995		y	q
1	**Exports of goods (T2, with valuables) and services**	**P.6**	✓	✓
2	**Imports of goods (T2, with valuables) and services**	**P.7**	✓	✓
3	**Net-import of valuables**	**P.53**	✓	✓
4	Personal consumption non-residents inside Switzerland (exports of tourism)		Ø	✓
5	Personal consumption residents in the rest of the world (imports of tourism)		Ø	✓
6	Exports of services (without tourism)		Ø	✓
7	Imports of services (without tourism)		Ø	✓
8	**Exports of services, total (incl. tourism)**	**P.62**	✓	✓
9	**Imports of services, total (incl. tourism)**	**P.72**	✓	✓
10	**Exports of goods T2**	**P.61**	✓	✓
11	Exports of goods T1 (without valuables)		Ø	✓
12	**Imports of goods T2**	**P.71**	✓	✓
13	Imports of goods T1 (without valuables)		Ø	✓
14	Exports of goods T1 and services (incl. tourism)		Ø	✓
15	Imports of goods T1 and services (incl. tourism)		Ø	✓

	ESA 2010		y	q
1	**Exports of goods and services, incl. non-monetary gold**	**P.6**	✓	✓
2	**Imports of goods and services, incl. non-monetary gold**	**P.7**	✓	✓
3	**Net-import of valuables, incl. non-monetary gold**	**P.53**	✓	✓
4	**Exports of services, total (incl. tourism), without merchanting (trading in raw materials)**	**P.62**	✓	✓
5	**Imports of services, total (incl. tourism)**	**P.72**	✓	✓
6	**Exports of goods, incl. non-monetary gold and merchanting**	**P.61**	✓	✓
7	**Imports of goods, incl. non-monetary gold**	**P.71**	✓	✓
8	Exports of goods excluding non-monetary gold	P.61c	✓	✓
9	Imports of goods excluding non-monetary gold	P.71c	✓	✓
10	Exports of goods excluding non-monetary gold, merchanting and valuables		Ø	✓
11	Imports of goods excluding non-monetary gold and valuables		Ø	✓

[9] In the table, “y” refers to the national annual accounts and “q” to the national quarterly accounts. The terminology Total 2 and Total 1 is that used by the Swiss Customs Administration.

4. Correction of calendar effects in the quarterly accounts

Most of the economic indicators and aggregates of the national accounts are affected, either directly or indirectly, by seasonal and calendar effects (number of working days, effects of public holidays or religious holidays, the dates of which may be either fixed or variable, leap years etc.). The links between purely seasonal effects and calendar effects are sometimes hard to identify. In fact, some of the calendar effects (those which tend to be repeated) are seasonal (number of days in the months; Easter, which falls more often in April than in March…) but other calendar effects follow a less regular (annual) pattern (leap years for instance).

To enable coherent economic interpretations, a distinction must be drawn between seasonal fluctuations, calendar effects and cyclical developments (i.e. the underlying movement of the accounting aggregates). The most widely used programs to eliminate the seasonal effect (X-12-ARIMA, Tramo-Seats, X-13ARIMA-SEATS) incorporate automatic routines to detect and correct the main calendar effects. However, Eurostat[10] recommends the use of national calendars of working days (for instance, 1st August in Switzerland may fall on a weekend or on a weekday). Since the transition to SEC 2010, Swiss quarterly national accounts have made use of a national calendar of working days developed and made available by the SFSO. The new data files published by SECO on the Internet will in future use the extensions indicated in Table 2. The comments in press releases on the results of the quarterly national accounts are, as was already the case in the past, essentially based on the series after correction for seasonal influences and calendar effects (variant 4 in Table 2). The implicit price index (deflators) will continue to be commented on the basis of their variations against the same quarter of the previous year, calculated using raw (unadjusted) data (variant 1). The only difference in the transition to ESA 2010 resides in the use of a Swiss calendar of working days instead of a general calendar, as had been the case until the end of September 2014. The designation of the published data files is now also more precise.

Table 2: publication of the results of the quarterly accounts
extension of the Excel data files published on the Internet after the transition to ESA 2010

Variant		Description
1	...._na.xls	raw data, not adjusted
2	...._ca.xls*	calendar adjusted data
3	...._sa.xls*	seasonally adjusted data
4	...._csa.xls	seasonally and calendar adjusted data

* available on demand

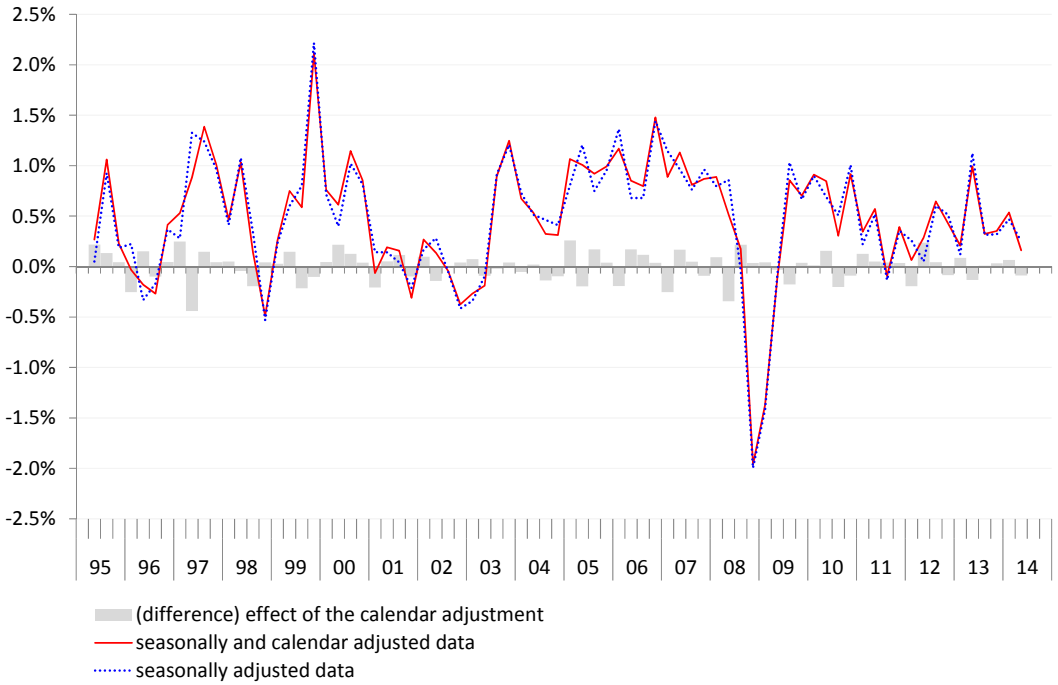
Chart 1 illustrates the importance of the correction of the impact of the number of different working days in each quarter on variations of GDP in volume terms.[11] For the sample data

[10] Guidelines on Seasonal Adjustment, 2009, http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/documents/ESS_Guidelines_on_SA.pdf

[11] Volumes are measured at the prices of the previous year sequentially, the base year always being the previous year so that the reference year chosen to build the sequential series can be adapted without any impact on the rates of variation. With the transition to SEC 2010, the Swiss quarterly accounts now use the reference year 2010 (previously 2005 under the SEC 95 regime).

processed (1995:1 - 2014:2), the most important effects in absolute terms had been estimated at around 0.4 percentage point (contribution to a quarterly variation of GDP).

Chart 1: importance of the correction of calendar effects for GDP in volume terms: variations against the previous quarter after seasonal adjustment and after seasonal and calendar adjustment



sources: SECO, SFSO

On average, the correction of calendar effects seems to have a relatively small effects on the Swiss GDP. The same measure applied to a country such as Germany[12] yields differences up to one percentage point in quarterly fluctuations of German GDP. It is important to realise that the correction of the calendar effects implies new annual values. The sum of four quarters corrected for seasonal influences and calendar effects cannot give the same annual value of GDP without correction for calendar effects. In the context of the Swiss QNA, only the unadjusted quarterly data will sum up exactly to the official yearly figures.

5. Old and new series of quarterly GDP figures

Components of the production account

Swiss quarterly GDP continues to be calculated mainly on the basis of the sum of the added values of the production account. The level of disaggregation and the headings of the quarterly production account did not change with the transition to ESA 2010. Table 3 is a reminder of the components of the production account estimated quarterly and used to calculate the quarterly GDP (sum of the estimated sectors).

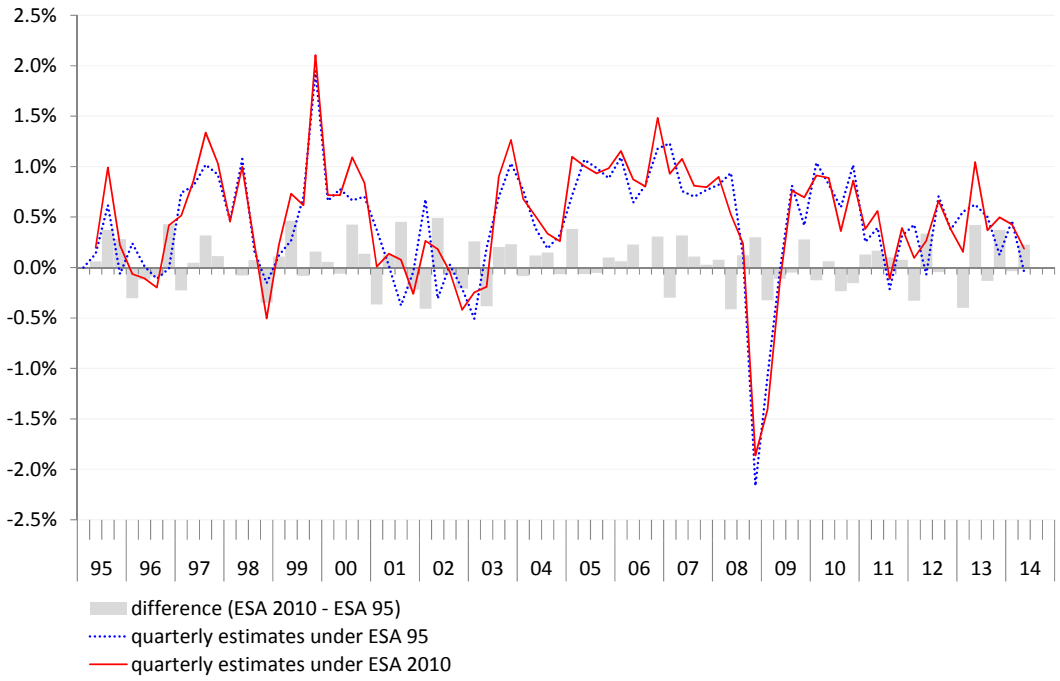
[12] The corresponding data can be found at: https://www.destatis.de/DE/Publikationen/Thematisch/VolkswirtschaftlicheGesamtrechnungen/Inlandsprodukt/InlandsproduktSaisonbereinigt.html

Table 3: quarterly production account
Level of aggregation used within ESA 95 and ESA 2010 (no change during the revision)

Production account by industries, quarterly national accounts			
NOGA		NOGA	
01-03	Agriculture, forestry and fishing	68-75; 77-82	Real estate activities, professional, scientific and technical activities, Administrative and support service activities
05-09	Mining and quarrying	84	Public administration
10-33	Manufacturing	85	Education
35-39	Energy supply, water supply, waste management	86-88	Human health and social work activities
41-43	Construction	90-96	Arts, entertainment, recreation and other services
45-47	Trade; repair of motor vehicles and motorcycles	97-98	Activities of households as employers and producers for own use
49-53; 58-63	Transportation and storage, Information and communication		
55-56	Accommodation and food service activities		+ Taxes on products
64	Financial service activities		- Subsidies on products
65	Insurance service activities		**GDP at market prices**

The new quarterly GDP series (ESA 2010) and the GDP series under ESA 95 (both seasonal and calendar adjusted volume estimates) are presented in **Chart 2**. The fluctuations of the quarterly GDP in volume terms slightly changed with the transition to the new system. New yearly data and the integration of new quarterly indicators explain the modification in the quarterly figures of GDP. Changes in the seasonal adjustment of different components of the production account have also played a certain role for the modifications of the quarter-on-quarter growth rates of real GDP visible in the **Chart 2**[13].

Chart 2: Quarter-on-quarter growth rates of the Swiss GDP (ESA 95 and ESA 2010)
volume estimates, seasonal and calendar adjusted data



sources: SECO, OFS

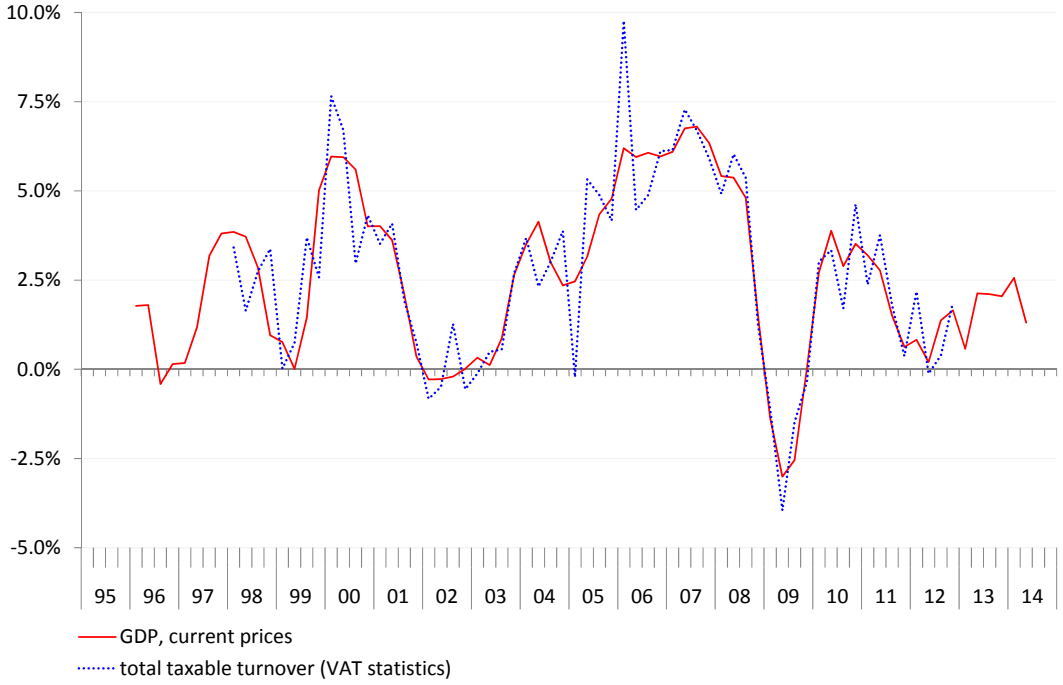
Comparison with VAT statistics

[13] X-13ARIMA-SEATS is now used as a standard for the Swiss QNA (Tramo-Seats was used under ESA 95).

During the revision process to ESA 2010, various checks were made with different short-term indicators. With the transition to ESA 2010, the quarterly figures for the value added tax (VAT) statistics of the Swiss Federal Tax Administration (FTA)[14] were taken into account for the first time as benchmark for various accounting aggregates and for GDP as a whole (within the framework of ESA 95, only taxes and subsidies on products were based on fiscal data). The comparisons of the growth rates (against the same quarter of the previous year and the previous quarter) presented in **Chart 3** and **Chart 4** confirm that in Switzerland, the nominal annual or quarterly GDP follows a very similar trend to that of taxable turnover.

GDP represents the gross production value less intermediate consumption. The gross production value is very close to the concept of turnover. From a theoretical perspective, a close relationship between GDP and the sum of taxable turnovers (VAT statistics) must be expected. From an empirical point of view, taking into account the wide variety of indicators used to calculate GDP, a number of differences may occur because of measuring problems, in addition to those explained by some differences in definition.

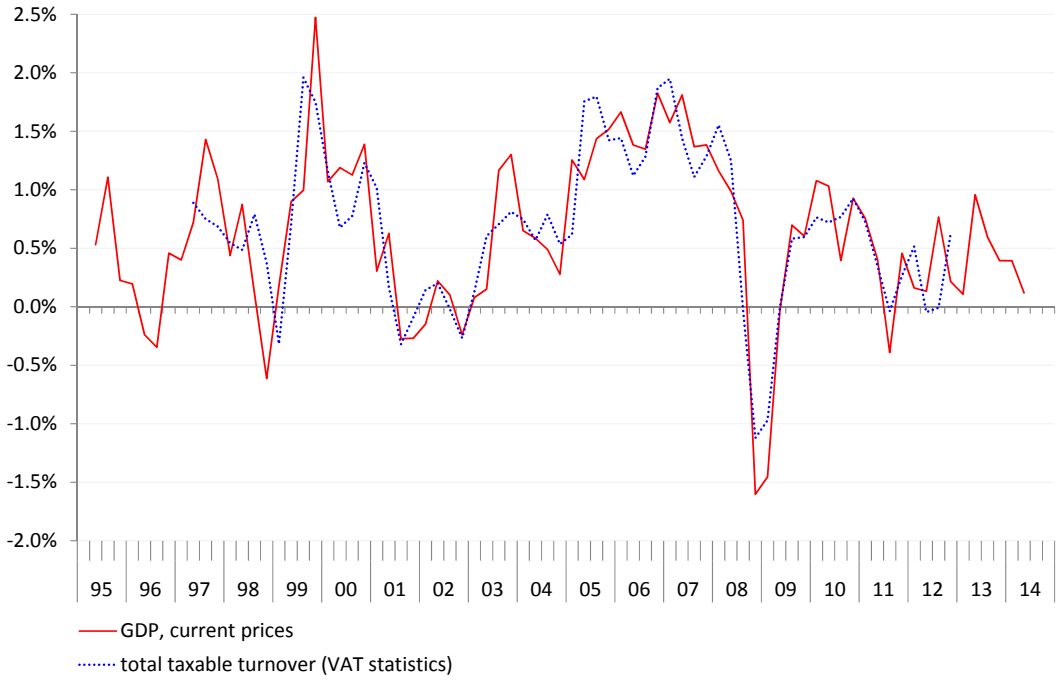
Chart 3: Nominal GDP and total taxable turnover (VAT statistics)
year-on-year growth rates (raw data)



sources: FTA, SECO

[14] Annual data (VAT statistics) are available on the Internet (in German and French, since 2001): http://www.estv.admin.ch/dokumentation/00075/00076/00714/index.html?lang=de. During the transition to ESA 2010, the Swiss Federal Tax Administration supplied us with the corresponding quarterly figures (1st quarter of 1997 to 4th quarter of 2012). These figures are not published.

Chart 4: Nominal GDP and total taxable turnover (VAT statistics)
quarter-on-quarter growth rates (seasonally and calendar adjusted data for nominal GDP, trend-cycle component for total taxable turnover[15])



sources: FTA, SECO

Comparison of the data for VAT (sub-components of the NOGA headings or sum of the taxable turnover data) with the results of the QNA provides interesting opportunities to check the plausibility of the obtained results. The integration of VAT data into the current estimate of the quarterly accounts is, however, not possible at present because of the considerable delays in providing the necessary information (between 6 and 9 months after the end of a particular quarter for the VAT statistics).

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[15] Taxable turnover data display a high volatility on a quarterly basis. To calculate a correlation with the quarter-on-quarter growth rates of GDP, a further treatment of these irregularities is necessary. For the **Chart 4** the trend-cycle component of the taxable turnover data was retained.