| Quality Measure and Calculation Method QMCM_C_3 | |
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| **Name of the quality measures/ indicators** | **(Change of) sign, size, bias and variability of revisions and discrepancies** |
| *General information* | |
| Quality dimension | Accuracy (reliability) and coherence |
| Type(s) of error | Any type of error |
| Multisource data configuration | Macrodata |
| Design | The quality indicators/measures are applicable when (i) revisions of earlier estimates are calculated and (ii) discrepancies between statistics from similar domains are calculated. For convenience, in this document we will refer to both revisions and discrepancies as revisions unless noted otherwise. |
| Source of data | For instance, quarterly National Accounts and industrial production survey |
| Keywords | Revision, revision indicators, seasonal adjustment, trade-off between timeliness and accuracy, categorical data, numerical data |
| *Quality measure & computation method in general* | |
| Definition of the quality indicators/measures | (Change of) sign due to a revision, size (mean of absolute revisions, median of absolute revisions, mean of relative absolute revisions), bias (revision mean and its statistical significance, revision median) and variability (root mean square revision, range, min, max, …) of revisions and discrepancies. |
| Interpretation & target value | • Revision: as small as possible (the smaller the size, bias and variability, the more reliable the estimates statistics) <br> • Discrepancy: as small as possible (the smaller the smaller the size, bias and variability, the more reliable, the more coherent the domain estimates) <br> A change of sign due to a revision indicate a potential quality problem. |
| Information on estimates/parameters | In principle, revisions can be obtained by any revision method. In this note we will assume that revisions are obtained by taking seasonal adjustments into account. This is not necessary, however. |
| Computation method | The effect of revisions on statistics is calculated, taking seasonal effects into account. The size, bias and variability of the revisions are then measured. A change of sign (or absence of such a change) due to a revisions is noted. |
| Main assumptions of the method | The main assumption of the method is that the latest figure $L_t$ (see "Description of the method to calculate the quality measures & calculation formulae") is close to the true value. |
| Advantages and disadvantages | • An advantage is that the quality indicators/measures are easy to compute and analyse. <br> • A disadvantage is that null revisions may not imply accuracy, as in the case of fixed seasonal factors (see guidelines on seasonal adjustment) |
| Costs / benefits | Benefits of the quality indicators/measures are that they allow the national statistical institute to: <br> • build and maintain of real time databases <br> • monitor of revisions of official statistics |
| *Situation & computation method in detail* | |
| Situation | The quality indicators/measures are applicable when (i) revisions of earlier estimates are calculated and (ii) discrepancies between statistics from similar domains are calculated. Seasonally adjusted estimates may be taken into account to calculate indicators/measures. <br> **Example:** The quality indicators/measures have, for instance, been applied in the situation where monthly seasonally adjusted data of industrial |

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| | production indices are estimated through a direct approach at each NACE rev. 2 level, and quarterly seasonally adjusted output of the industrial sector requires the use of disaggregation techniques on annual data with seasonally adjusted industrial production indices. In this case two strategies are available in Quarterly National Accounts (QNA): (1) using the quarterly averages of the disseminated seasonally adjusted indices (this has to advantage of maintaining coherence) and (2) using seasonally adjusted quarterly averages of the unadjusted monthly indices (this has the advantage of fitting QNA revision policy and calendar). The quality indicators/measures help to choose between these two approaches. |
| Description of the method to calculate the quality measures & calculation formulae | First of all, revisions are calculated $$R_t \;=\; L_t - P_t$$ where $R_t$ denotes the revision for moment $t$, $P_t$ a preliminary released figure (for instance, for the period-on-period growth rate), and $L_t$ a later calculated figure (for the quarter-on-quarter growth rate in our example). This later calculated figure $L_t$ is considered more reliable than the preliminary figure $P_t$. Seasonally adjusted figures may, for instance, be taken into account applying seasonal adjustment software (JDemetra+, X13-Arima-Seats or Tramo-Seats) on the unadjusted data. Given the calculated revisions $R_{i,t}$ for several statistics $i$, the quality indicators/measures are calculated: (change of) sign due to a revision, size (mean of absolute revisions, median of absolute revisions, mean of relative absolute revisions), bias (revision mean and its statistical significance, revision median) and variability (root mean square revision, range, min, max, …). |
| Summary of quality measure and method to compute it | A revision is obtained as the difference between a preliminary released figure and a later calculated figure that is considered more reliable. Similarly, discrepancies are obtained as the difference between an estimated figure for one domain and an estimated figure for a similar domain. Given calculated revisions (or discrepancies) quality indicators/measures such as the (change of) sign due to a revision, size (mean of absolute revisions, median of absolute revisions, mean of relative absolute revisions), bias (revision mean and its statistical significance, revision median) and variability (root mean square revision, range, min, max, …) are computed. |
| **References** | |
| References | Di Fonzo T. (2005), *The OECD Project on Revisions Analysis: First Elements for Discussion*. http://www.oecd.org/std/fin-stats/35010765.pdf<br>Eurostat (2013), *ESS guidelines on revision policy for PEEIs*. http://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-RA-13-016<br>Eurostat (2015), *ESS guidelines on seasonal adjustment*. http://ec.europa.eu/eurostat/documents/3859598/6830795/KS-GQ-15-001-EN-N.pdf<br>McKenzie R. and M. Gamba (2008), *Interpreting the results of Revision Analyses: Recommended Summary Statistics*. http://www.oecd.org/std/recommendedstatisticalmeasuresforinterpretingtheoutputsofrevisionanalyses.htm |