



STATISTICS DIRECTORATE

National Accounts and Economic Statistics - International Trade Statistics

Item 12: OECD Revisions Database and Application to Merchandise Trade and Current Balance Aggregates

**7TH OECD INTERNATIONAL TRADE STATISTICS EXPERT MEETING ITS
and OECD-EUROSTAT MEETING OF EXPERTS IN TRADE-IN-SERVICES STATISTICS (TIS)**

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This information note introducing the Main Economic Indicators Original Release and Revisions Database has been prepared by Mr Richard McKenzie, OECD. Delegates are invited to take note and comment (item 12 of the draft agenda).

For further information, please contact:
Richard_Mckenzie@oecd.org

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**OECD INTERNATIONAL TRADE STATISTICS EXPERT MEETING (ITS)
OECD-EUROSTAT MEETING OF EXPERTS IN TRADE-IN-SERVICES STATISTICS (TIS)**

Introducing the Main Economic Indicators Original Release Data and Revisions Database

An information note prepared by Richard McKenzie, OECD Statistics Directorate

First releases of official statistics are often revised in subsequent releases, sometimes substantially. Such revisions can impact on policy decisions, as revisions to first published data may alter the previous assessment of the state of the economy. This may occur through a changed interpretation based on the revised data itself or the impact the revision may have on econometric models which may incorporate several statistics, each subject to revision. Whilst this is a recognised issue of key importance, most producers of official statistics do not quantify expected revisions to their data and economists do not have the required data to test the sensitivity of their econometric models to revisions in input data. This important gap in knowledge required to effectively use official statistics and demands from central banks motivated the OECD to develop a unique new product: the *Main Economic Indicators Original Release Data and Revisions Database*, now freely available at: <http://stats.oecd.org/mei/default.asp?rev=1> .

Accessing this source of originally published data will enable analysts to test the likely effectiveness of econometric models in simulated real-time. It will also enable producers of official statistics to study the magnitude and direction of subsequent revisions to published data which can lead to a better understanding of the statistical compilation process, enabling problems to be identified and improvements to be made. The OECD has already exploited this database through undertaking comprehensive revisions analyses across a range of OECD Member countries and selected non-member economies for Gross domestic product (GDP), Index of industrial production (IIP) and Retail trade volume. The results of these studies have been presented in 2005 and 2006 at the OECD Working Party on National Accounts meeting and the OECD Short-Term Economic Statistics Working Party meeting. These presentations have generated substantial discussion amongst national statistical institutes (NSIs) on the importance of performing revisions analysis studies and the associated development of transparent revisions policies in the publication of official statistics.

The Main Economic Indicators Original Release Data and Revisions Database

The *Main Economic Indicators (MEI) Original Release Data and Revisions Database* is a user friendly web-interface¹ providing access to a wide range of data, information and automated programs. Its main features can be described in the following points.

- Contains full time series as far back as 1960 in some cases for 21 key economic variables as originally published in each monthly edition of the OECD Main Economic Indicators (MEI) CD-Rom from February 1999 onwards for OECD countries, the Euro area, China, India, Brazil, South Africa and the Russian Federation. This database is updated on a monthly basis and provides the

¹ <http://stats.oecd.org/mei/default.asp?rev=1>

raw data needed by economists to test the performance of their econometric models in simulated real-time.

- Provides access to comprehensive revisions analysis studies performed by the OECD for Gross domestic product, Index of industrial production and Retail trade volume.
- Contains automated programs and a detailed user guide allowing both producers or users of official statistics to perform their own revisions analysis based on the OECD methodology for any country and variable combination available in the database. Alternatively producers of official statistics can use the automated programs to perform revisions analysis on their own data for any variable, provided they have access to their own source of vintage datasets.
- Provides information on reasons for revisions, together with recommended practices to aid producers of official statistics in establishing a transparent revisions policy for economic statistics.

The following variables are included in the database: GDP and its expenditure components; Industrial production and Production in construction; OECD Composite leading indicators; Retail trade, Consumer price index; Standardised unemployment rate; Civilian employment; Hourly earnings in manufacturing; Monetary aggregates; International trade in goods and Current account balance. This list of variables was based on feedback from a survey of central bank contacts to determine which economic variables were the most important to include in such a database – based on the restriction that they had been published in the MEI. Market based financial variables also published in the MEI² (e.g. interest rates, exchange rates) which are often part of econometric models were not included in the database as they are not revised – and thus originally released data will be the same as that in currently available MEI time series.

Analysis of revisions by national statistical institutes

Analysis of revisions for key economic variables such as those included in the database enables national statistical institutes to evaluate their performance against a key dimension of statistical quality – accuracy. Ultimately this can lead to a better understanding of the statistical compilation process and enable problems to be identified and improvements to be made. This is one of the reasons why the International Monetary Fund's Special Data Dissemination Standards (SDDS) encourages countries to undertake revisions analysis and gives considerable prominence to the need for NSIs to develop a revisions policy that is both transparent (as to the underlying cause(s) of revisions) and consistent across the range of economic statistics (both structural and short-term) compiled.

Despite this recognised importance, to date few national statistical institutes perform detailed revisions analysis on an ongoing basis for their key economic statistics as obtaining the necessary data and developing the programs required is a resource intensive task. However this new OECD facility provides the opportunity for NSIs to easily and quickly undertake such analyses. Consequently the OECD has launched a publicity campaign for the database to make NSIs aware of its existence and reiterate the importance of undertaking such analyses to better understand and identify improvements that can be made in the compilation of their official statistics.

Main findings from revisions analysis studies undertaken by the OECD

Three comprehensive revisions analysis studies using the data available in the *MEI Original Release Data and Revisions Database* were undertaken by the OECD in 2005 and 2006. These were for Gross domestic product (DiFonzo 2005, Tosetta 2006), Index of industrial production (McKenzie & Park 2006)

² A wide range of these market based financial variables can be downloaded at <http://stats.oecd.org/mei/default.asp>

and Retail trade volume (McKenzie 2006). The detailed results from these studies and data used can be accessed through the database interface. For each of these studies detailed revisions analysis spreadsheets and a wide range of summary statistics were produced for each country³ based on the methodology established by DiFonzo (2005).

Figure 1 below shows the mean absolute revision between first published estimates of GDP quarter-on-previous-quarter (QoQ) growth rates and estimates published 1 year later, 2 years later, 3 years later and latest estimates as at June 2006. In order to present comparable data from all eighteen countries included in the study and to allow up to 3 years of revision to each data point, Figure 1 relates to estimates for the reference periods from quarter 2 1997 to quarter 4 2002.

³ The key for country acronyms included in the graphs is:

AUS = Australia; AUT = Austria; BEL = Belgium; BRA = Brazil; CAN = Canada; CHE = Switzerland; CZE = Czech Republic; DEU = Germany; DNK = Denmark; EMU = Euro area; ESP = Spain; FIN = Finland; FRA = France; GBR = United Kingdom; GRC = Greece; HUN = Hungary; IND = India; IRL = Ireland; ITA = Italy; JPN = Japan; KOR = Korea; LUX = Luxembourg; MEX = Mexico; NLD = Netherlands; NOR = Norway; POL = Poland; PRT = Portugal; RUS = Russian Federation; SVK = Slovak Republic; TUR = Turkey; USA = United States; ZAF = South Africa.

Figure 1: Mean absolute revisions (%) to first published estimates of quarter-on-previous-quarter GDP growth rates at different intervals⁴

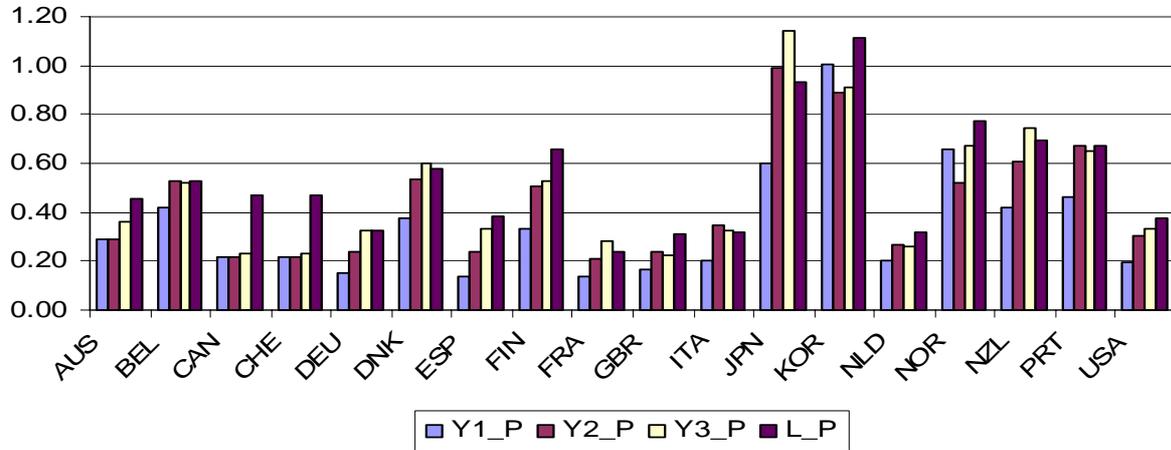
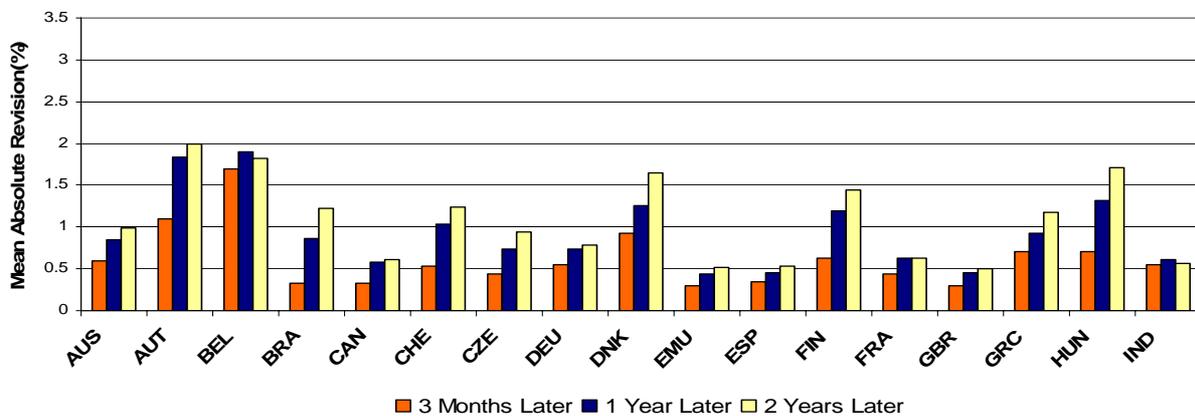


Figure 2 below shows the mean absolute revision between first published estimates of IIP year-on-year (YoY) growth rates and estimates published 3 months later, 1 year later and two years later for all OECD countries (except Iceland), Brazil, India, the Russian Federation and South Africa. The analysis is derived from data published in each successive monthly edition of the MEI from February 1999 to February 2006.

Figure 2 Mean absolute revision to first published estimates of year-on-year growth rates for the IIP



⁴ Y1_P indicates the mean absolute revisions between first published estimates and those published one year later. Similarly for Y2_P and Y3_P. L_P compares the current (i.e. latest) estimates to first published estimates.

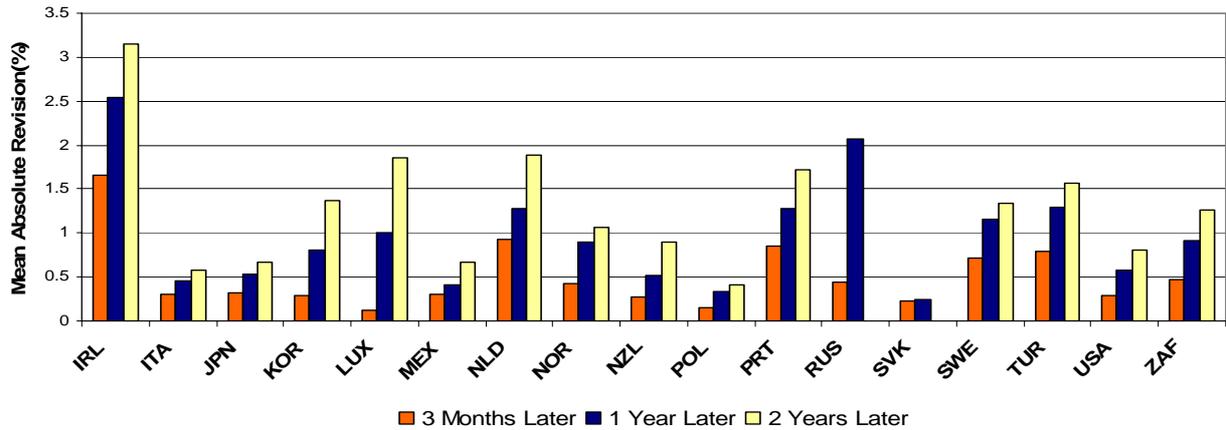
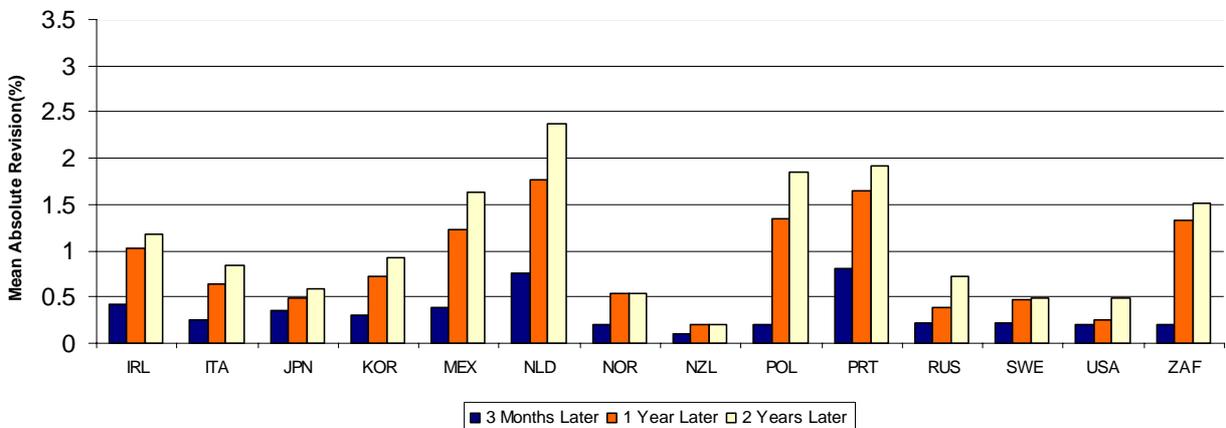
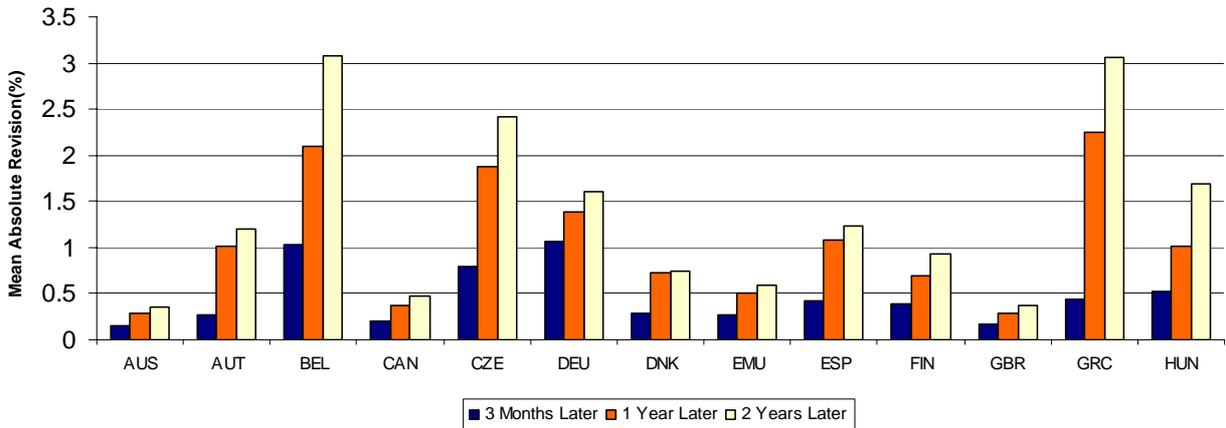


Figure 3 shows the mean absolute revision between first published estimates of Retail trade volume month-on-previous-month (MoM) growth rates and estimates published 3 months later, 1 year later and two years later for twenty five OECD countries, the Russian Federation and South Africa. The analysis is derived from data published in each successive monthly edition of the MEI from February 1999 to May 2006.

Figure 3 Mean absolute revision to first published estimates of month-on-previous-month growth rates for Retail trade volume



In almost all countries included in the revisions analysis studies the size of mean absolute revisions to first published estimates of quarter-on-previous-quarter (for GDP), month-on-previous-month and year-on-year (for IIP and Retail trade volume) growth rates are non-ignorable and increase the longer the interval from the first estimate. It is relatively difficult to distinctively group countries into those with say high, medium or low mean absolute revisions as there appears to be a degree of similarity across a large number of countries and the ordering of the size of mean absolute revisions across countries can differ depending on the revisions interval considered (e.g. revisions after 3 months, 1 year, 2 years etc.). Nonetheless, it is apparent in each of the studies that some countries have noticeably higher revisions than the majority of others. In particular, Japan and Korea stand out as having high revisions to GDP, Belgium for IIP and Belgium, Greece, Czech Republic and the Netherlands for Retail trade volume.

Assessing the statistical significance of mean revisions

Ideally, revisions should have a tendency to be random; that is, equally likely to be positive or negative and centred around zero. Therefore an important output of a revisions analysis study are the tests to determine whether mean revisions (calculated at a range of different time lengths from the first estimate) are statistically significantly different from zero. In the case where mean revisions are statistically significant, this implies that data have a significant tendency to be revised in a particular direction (i.e. up or down) which may suggest that a bias exists in the compilation of early estimates. This is just one good example of how revisions analysis studies can be very useful as a catalyst for identifying problems with compilation practices which require investigation by the producers of official statistics.

Mean revisions to GDP (for QoQ growth rates), IIP and Retail trade volume (for MoM and YoY growth rates) between first estimates and those published one⁵ year later were assessed for statistical significance for all countries included in the respective studies. Those countries found to be statistically significantly different from zero in the case of GDP were the United Kingdom and Denmark; in the case of IIP Greece, Belgium and India for MoM growth rates and Belgium, India, Russia, Turkey, Germany, Euro area, France, United Kingdom and Korea for YoY growth rates; in the case of Retail trade volume for Canada (MoM growth rates) and Germany, Czech Republic, Korea and the Netherlands for YoY growth rates.

Assessing the robustness of first published estimates of MoM growth rates

Analysts often refer to the latest available (i.e. first published) estimates of the month-on-previous-month growth rate of seasonally adjusted IIP as an indicator to assess the current state of the economy – in regards to expansions and contractions in production activity and the general state of the business cycle. Similarly for Retail trade volume these estimates are used as an early indicator of consumer demand. However, the degree of reliability to which users should place on this statistic depends largely on the extent to which this initial estimate is likely to be revised in future months such that the subsequent revisions may paint a different picture of the current state of industrial activity (IIP) or consumer demand (Retail trade volume). If first estimates of month-on-previous-month growth rates for a country have a

⁵ Assessing the statistical significance of mean revisions between first published estimates and those published one year later was considered the most appropriate interval to detect any possible systematic bias in compilation procedures for first published estimates. This is because revisions may have a greater tendency to be in a particular direction the longer the revision interval (e.g. after 3 years) if, for example, there is a systematic impact of major methodological changes applied to the entire time series.

history of being largely revised, then users would be advised to focus on a more robust statistic such as the year-on-year growth rate or some other measure⁶ for short-term analysis.

One way to assess the relative robustness of first estimates of MoM and YoY growth rates is to calculate the relative mean absolute revision. This statistic compares the mean absolute revision to the mean absolute size of later estimates. Results from such an analysis (McKenzie 2006) show that in the majority of countries first estimates of MoM growth rates for the IIP and Retail trade volume should not be considered as reliable early indicators of the magnitude of short-term changes in the volume of industrial output or consumer demand respectively. This is due to the fact that on average across all countries, first estimates of MoM growth rates for both the IIP and Retail trade volume are revised by approximately two thirds of their initial value within one year. On the other hand, first estimates of year-on-year growth rates are shown to provide a more robust measure in terms of magnitude, being revised on average across all countries by only 24% (IIP) and 22% (Retail trade volume) of their initial value with one year.

Extending the OECD studies to other variables

The OECD intends to update its revisions analysis studies for GDP, IIP and Retail trade volume on an annual basis. OECD is also likely to undertake a study for the OECD Composite Leading Indicator. These variables have been chosen because they are of most interest to the international working groups coordinated by the Short-Term Economic Statistics Division who manages the database interface. However, other areas of the OECD are encouraged to undertake similar studies and report the results to their relevant working groups. This would seem particularly appropriate for the International trade in goods and Current account balance data available in the database, as it is well known that the compilation of these variables is subject to considerable revision.

Future work – exploiting the tools available in the interface

The *MEI Original Release Data and Revisions Database* provides the tools needed for countries to undertake their own revisions analysis for a wide range of short-term economic indicators. This will allow them to assess an important dimension of quality for their published statistics, and may provide opportunities for improving their compilation practices. In addition it will enable them to present information to users on the robustness of their indicators. The OECD encourages National Statistical Institutes to undertake and publish the results of these analyses, and to clearly stipulate a revisions analysis policy for the range of short-term indicators they produce.

The OECD also intends to distribute the database interface to as many networks of economists, central banks and academic researchers as possible. As this facility represents the first continuously updated (at monthly frequency) database containing first published data for such a wide range of countries and variables, the OECD hopes it will become the main international reference source for real-time analysis and associated research.

For more information on this unique new product, contact Richard.mckenzie@oecd.org.

⁶ For example, the United Kingdom's Office for National Statistics encourages users to focus on the growth rate of the three month moving average of the IIP which is the headline indicator for their press release, although their press releases also quotes figures of the month-on-previous-month growth rate.

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