

# Implementation of the ESA-95 in Turkey and the 1998-2006 Historical Revision

## I. INTRODUCTION

Turkish Statistical Institute (TurkStat) published the new national accounts figures according to the *European System of Accounts 1995 (ESA 95)*, including a full scale revision of the quarterly GDP series for the period 1998 to 2006 in current and constant prices on March 8, 2008. Adopting the new standards provide a more relevant conceptual basis for measuring Turkey's economic and financial conditions and also ensures that Turkey's statistics are comparable with those of other countries. In a nutshell, the revised national accounts represent a major improvement in the measure of economic activities, in the understandability of the accounts and in their harmonization with other international standards. This achievement is the result of a major undertaking that is referred to, in statistical terms, as an historical revision. This historical revision, which represents the accumulation of several years of intense efforts, involved restating the accounts according to new statistical standards, incorporating a broad range of new and better source data and adopting updated statistical techniques.

Generally historical revisions are expected to improve national accounts in terms of exhaustiveness and comparability, entailing production process with three phases as follows:

- Institutionalization of the methodological knowledge
- Production of the robust source data harmonized with the internationally accepted classifications
- Aggregation and balancing the estimates on the basis of consistency and reliability

During the revision process, in order to improve the human capital, technical assistance program provided by the international institutions such as EUROSTAT and IMF and institutional training program were conducted concurrently.

In order to improve coverage and consistency of the GDP estimates, new source data, including 2000 Building Census, 2002 Census of Industry and Business Establishments were integrated. Moreover, methodological improvement in compilation of GDP estimates bringing about new developments in the estimates (e.g.: chain linked volume index, FISIM) were introduced by replacing SNA-68 with ESA-95.

Benchmark year of revised GDP estimates, for the first time for TurkStat, were based on supply and use tables (SUT) of 2002 which was the first table compiled by the concepts, definitions and classifications of the ESA-95, resulting in relatively a more integrated and consistent GDP estimates.

Since TurkStat has recently endeavored to set up business register together with the regular updating process based on results of 2002 Census of Industry and administrative registers, comprehensive revisions were generally realized in order to ensure the exhaustiveness after the censuses, bringing about, due to long time period between the censuses, relatively big amount of changes in the estimates.

## II. OVERVIEW OF MAJOR IMPROVEMENTS TO TURKEY'S NATIONAL ACCOUNTS

The historical revision may come from three broad sources of changes: more comprehensive data sources, adoption of updated statistical standards and improved estimation techniques.

The measure of economic activities was rooted into more robust data sources which include the abovementioned censuses, improved tax and employment estimates, as well as annual household budget surveys from 2002 onwards. The general effect of these more extensive data sources was to increase the level of the nominal GDP.

Turkey's national accounts were compiled on the basis of the *1968 SNA* before the revision. The national accounts were restated according to the *ESA 95* which comprises a more comprehensive and integrated set of accounts than the *1968 SNA*. In particular, it includes integrating the SUTs (already carried out), the capital and financial accounts and the balance sheet accounts (yet to be carried out). In addition to the structure of the accounts themselves, changes to concepts and definitions, such as the new measurement for the Financial Intermediation Services Indirectly Measured (FISIM) and calculating value added at basic prices, were introduced.

A major component of the updated estimation methodology consisted in updating the Supply and Use tables (SUTs) for 2002 (from the previous 1998 SUTs) by integrating major new and improved data sources, such as the 2002 Census of Industry and Business Establishments. As well, the 2002 SUTs used the Statistical Classification of Economic Activities in the European Union (NACE Rev. 1) and the Statistical Classification of Products by Activity in the European Union (CPA). The SUTs are a very powerful validation instrument to confront source data at details of industries and commodities. The updated SUTs results were also integrated in the quarterly GDP estimates for 2002.

Another important initiative was to adopt chain-linking method in constant price estimation, giving more accurate aggregate volume growth rate. Moreover base year is updated from 1987 to 1998. Finally, estimates for the non-observed economy were recalculated using more robust data sources, and the results integrated into the quarterly GDP estimates for 2002.

### III. IMPROVEMENTS TO SELECTED COMPONENTS OF GDP

#### A. The 2002 Census of Industry and Business Establishments

The results of the 2002 Census of Industry and Business Establishments improved markedly the coverage of economic activity in a number of areas, notably in manufacturing, as well as in mining, and services. In manufacturing, both the coverage and the exhaustiveness of production were sharply increased, reflecting the significantly larger number of establishments now being covered.

In terms of coverage, the number of establishments with 10 or more employees more than doubled to 28,059. These findings led to expand the coverage of the Structural Business Survey (SBS) for 2003 and 2004 and to update the business register of Turkstat, thereby improving the results of sample surveys that heavily rely on an accurate and exhaustive register of establishments.

#### B. Adjustment for the Non-Observed Economy using the Labor Force Survey (LFS)

The Labor Force Survey (LFS) has been conducted monthly since 2000 (with data disseminated quarterly). The difference in employment levels estimated in LFS and SBS was used to adjust the reported data for the production by using average production per worker in the small-size manufacturing enterprises. This method for adjusting national accounts estimates for the un-recorded activity is often referred to as the “labor input method” and is described in more detail in “Measuring the Non-Observed Economy – A Handbook” jointly published by the Organization of Economic Cooperation and Development, International Monetary Fund, International Labor Organization and the Commonwealth of Independent States in 2002. The increased sample size of the LFS and its resulting increase in accuracy strengthened the method for measuring the non-observed economy (NOE).

For the year 2002 the employment data in the manufacturing sector reported by enterprises (SBS) and collected from households (quarterly LFS) were 2,1 million and 3,5 million respectively. The adjustments to the manufacturing production is smaller than the difference in employment levels, since the output per worker for non-recorded employment is assumed to correspond to the output per worker of the small-scale enterprises, which is smaller than the average for all sizes of enterprises.

#### C. The 2000 Building Census

The historical revision of the national accounts provided the opportunity to incorporate some of the major findings of the 2000 Building Census. In particular, it was found that the number of dwellings from the Building Census data, both rented and owner occupied dwellings were significantly larger than the ones used for national accounts purposes. As for owner-occupied

dwellings, a value for rental services is imputed to production on the basis of the number of owner-occupied dwellings and the average actual rent value of dwellings of similar size and quality. As part of the historical revision, the prices of both paid and imputed rents were corrected upwards to more appropriately reflect the market price of rented and owner-occupied dwellings. The resulting new series, based on the data from the 2000 Building Census and the number of electricity subscribers, is significantly larger than the old one. For the year 2000, the stock of dwellings used in the revised estimates was increased by 24,5 % based on the census and the number of electricity subscribers as compared with the stock used for old one.

#### D. Improvements to the commodity flow system

The historical revision significantly improved the details of the components of the commodity flow system. The commodity flow system was first introduced in 1993 to provide an indirect measure of selected components of GDP by the expenditure approach, particularly private household consumption and gross fixed capital formation in machinery and equipment.

The system measures the production of the commodities using detailed commodity information from the quarterly Industrial Production Survey. The commodities are classified according to the BEC. The commodities are further classified as being intermediate consumption, private household consumption, or gross fixed capital formation. The commodity flow data are estimated at current and constant prices.

The main improvements to the data made on the basis of the commodity flow system are as follows.

#### Improvements to the measurement of construction activity

The commodity flow system was used to adjust the output for the construction activity for the undercoverage of the source data on construction. The private sector construction activity is measured using administrative data on building permits and occupancy permits together with work-put-in-place coefficients for construction (adjusted by seasonal trends from LFS data on construction workers). The construction activity for the general government is measured using data from the public accounts, while estimates are made for other minor components (such as farm construction). While using administrative data on building and occupancy permits certainly improved the estimates, it was found that the administrative data underestimated the construction activity; the supply of building material derived from the commodity flow system was much larger than the uses implied by the administrative data. Using the input-output coefficients from the 2002 SUTs, the construction activity was adjusted upward by 33,5percent for the year 2002.

## Improvements to private household consumption

The commodity flow system is one of the main data sources for the estimation of the private household consumption (PHC). This is an indirect method for estimating the GDP by expenditure, derived from information on the supply side. In the “TurkStat’s Strategic Plan for 2007-2011”, it is foreseen to replace this indirect method with independent estimates of PHC, which would rely on the newly introduced quarterly retail trade turnovers survey. Notwithstanding the limitations of this indirect method, the improved commodity flow system provides very detailed information in support of the compilation of PHC according to the Classification of Individual Consumption by Purpose (COICOP). For the PHC on services, the data are largely derived from the supply side information and from HBS data.

### E. Financial services and the imputed services measured according to ESA 95

Under the methodology recommended by *ESA 95*, the value of the production of the financial services by the financial intermediaries is measured by the sum of two components: by the value of the fees charged explicitly for the services procured and by imputing a value of service for the financial intermediation activities the financial intermediaries procured by taking deposits and providing loans. In *ESA 95*, the value of the financial intermediation services indirectly measured (FISIM) is estimated using a “reference rate”.

The new FISIM estimates differ from the published estimates, as the latter were calculated as total interest received minus total interest paid, while the explicit charges for financial services were measured using the income approach. In addition to a new method for estimating FISIM, *ESA 95* recommends to allocate the value of the production between final demand and intermediate consumption on the basis of the stocks of loans and deposits of the various sectors of the economy (government, corporations, households, non-profit institutions serving households, and rest of the world). In the past, there were no requirements to allocate FISIM between intermediate consumption and final demand. In addition to the other improvements, this latter recommendation increased the GDP by the amount of FISIM allocated to final consumption, including private household consumption (approximately between 28 and 38 percent of FISIM, depending on the years).

### F. Improvement in volume measurement

Instead of base year price, over-the-year chain-linking method in constant price estimation which gives relatively more accurate aggregate volume growth rate as compared with the base year price was used. According to Quarterly National Accounts Manual, the over the year technique requires compiling estimates for each quarter at the weighted annual average prices of current year in addition to estimates at the average prices of previous year.

As part of the historical revision, the base year for the constant prices estimates was also updated from 1987 to 1998.

#### G. Measurement at basic prices (GDP by Production Approach)

In the past, the components of GDP by industry were published at producer prices including all product taxes except for the import duties, which were shown as a separate component of GDP by the production approach. The *ESA 95* recommends to measure the value added by industry at basic prices, that is to exclude any tax payable on the products, and therefore not to show them as a component of the value added by industry. As recommended by *ESA 95*, taxes and subsidies on products are now shown as a separate component in the GDP by production. The values shown under “taxes minus subsidies” are therefore significantly higher than the values that were shown before for “import duties”, and the estimates of value added by industry are reduced by the amount of the taxes that are now shown as a separate component.

#### H. Classification systems based on ESA 95 and other international standards

One of the key aspects of the historical revision of Turkey’s national accounts is the implementation of international classification standards, in particular those recommended in *ESA 95*. The Classification of Activities of the European Communities (NACE)<sup>1</sup> is used when compiling and disseminating GDP by industry. The new classification provides greater detail of services activities. It is also important to note that, in the classification previously used when producing the national accounts, all the productive activity of the general government sector was grouped under a single heading. In *ESA 95*, the productive activity of the government is to be classified to the activity where the production belongs. For example, the government has three types of productive activity according to the NACE one-digit classification, which are (i) Group “L” public administration and defense, compulsory social activity; (ii) Group “M” education; and (iii) Group “N” Health and social work. The new classification has the advantage of facilitating international comparison, and it meets EU standards. However, this new classification makes it difficult to compare the old series with the new ones. An important part of government production of goods and services are related to the production of education and health care services. In the old national accounts series, the production of these services by the government was recorded under “Government services” and that of the private sector was grouped under a much larger heading called “Business and personal services”. The revised series “education” and “health care” now cover the production of both the government and the private sectors. Conversely, the new

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<sup>1</sup> The acronym is derived from the French name for the classification, which is “Nomenclature des Activités de la Communauté Européenne.”

series on “public administration and defense” is smaller than the previous series, which was called “Government services”, as it does not include government production of education and health care services.

### III. Comparison of the two series

If the revised GDP estimates are required to compare with the previous one generally, it may be reasonable to compare levels in current prices and volume growth in constant prices.

In the first table, the levels of the both series are given in the current prices together with the percentage differences. It can be seen that percentage differences between two series differ between 26.3 % and 35.1 % through years 1998-2006.

Table 1: Comparison of old and new GDP series at current prices

GDP Current Prices	1987	1998	1998 / 1987 Difference (%)	1987	1998
	GDP Million NTL	GDP Million NTL		Current Growth Rate (%)	Current Growth Rate (%)
1998	52.225	70.203	34,4		
1999	77.415	104.596	35,1	48,2	49,0
2000	124.583	166.658	33,8	60,9	59,3
2001	178.412	240.224	34,6	43,2	44,1
2002	277.574	350.476	26,3	55,6	45,9
2003	359.763	454.781	26,4	29,6	29,8
2004	430.511	559.033	29,9	19,7	22,9
2005	487.202	648.932	33,2	13,2	16,1
2006	576.322	758.391	31,6	18,3	16,9

Volume growth rates of the two series are given in the second table below. Regarding the volume growth of the both series, Turkish economy grew through years 1998-2006 34,1 % and 37,8 % according to previous and new estimates respectively.

Table 2: Comparison of old and new GDP series in real terms

GDP Constant Prices	At 1987 prices GDP		1987 Constant Growth Rate (%)	1998 Constant Growth Rate (%)
	GDP Thousand NTL	GDP Million NTL		
1998	116.114	70.203		
1999	110.646	67.841	-4,7	-3,4
2000	118.789	72.436	7,4	6,8
2001	109.885	68.309	-7,5	-5,7
2002	118.612	72.520	7,9	6,2
2003	125.485	76.338	5,8	5,3
2004	136.693	83.486	8,9	9,4
2005	146.781	90.500	7,4	8,4
2006	155.732	96.738	6,1	6,9

#### IV. WAY FORWARD

As noted earlier, the historical revision, notably implementing *ESA 95*, is a first step in improving the data quality and will be followed by a number of further initiatives.

It is planned to compile annual GDP estimates based on the SUTs . The SUTs for 2002 were published by TurkStat together with the revised estimates. TurkStat will produce annual SUTs for the years 2003 and 2004 and the plan is to commence using them to benchmark the quarterly GDP estimates (the compilation of the quarterly GDP is currently carried out independently from the SUTs, except for 2002). As well, the implementation of the Strategic Plan will allow reducing the remaining data gaps for the national accounts in other areas. For instance, the business register system will be updated, leading to improved sample surveys and many new surveys will be introduced and existing ones improved to meet EU standards.

The impact of the historical revision and further anticipated adjustments from the Strategic Plan's implementation underline the importance to inform users of the timing and the type of revisions. As much as revisions are an integral part of good international practices, so is a stable policy to inform users about when and what types of revisions to the data they can expect. With the release of the 1998-2006 historical revision, the national accounts revision policy adopted by TurkStat is to publish the preliminary quarterly GDP estimates approximately 70-90 days after the reference quarter, to revise the quarters of the current year, while data for the previous years will remain frozen until the next annual revisions. Revisions will be conducted once a year for the most recent 3 to 4 years based on the availability of annual SUTs. From time to time, TurkStat will conduct historical revisions to correspond to the major updates to the international standards and/or availability of new data sources.