Central Administration of Statistics

How GDP for 2020 and 2021 was estimated

Beirut, May 2024

Introduction

Compiling national accounts in a small, open economy with limited resources is always challenging, especially so in the context of a serious economic crisis. In Lebanon, a balanced supply-use table was used to establish the level of GDP in 2011, including estimates of the "non-observed" economy. A system was set up to estimate GDP for subsequent years, as described in the document *Data Sources and Compilation Methods*. Essentially the system extrapolates the total output, intermediate consumption and hence the gross value added of each kind of activity on a quarterly basis. Expenditure components are also extrapolated, except for household final consumption expenditure which is derived as a residual.

The financial crisis that began at the end of 2019 had significant effects both on the sources of data and on the assumptions and methods used for estimating GDP. The existence both of widely differing exchange rates and of hyper-inflation made valuation particularly difficult in the years 2020 and 2021. During these years foreign currency could only be obtained at the official rate in very limited circumstances but was available on the parallel market at rapidly increasing rates.

A separate note explains how unitary exchange rates were derived from these multiple exchange rates for the purpose of converting estimates of GDP (and other aggregates) from Lebanese pounds into US dollars.

This note starts with a warning about percentage changes. Then it sets out the main changes that were introduced to take account of these effects in 2020 and 2021. Some of the changes that were introduced to produce the 2020 estimates were modified when compiling the 2021 estimates. These modifications affected both years but had little impact on the overall estimates of GDP for 2020.

Beware of large percentage changes

The year 2020 was characterised by very large falls in the values at constant prices of many components of GDP, followed in some by a degree of recovery in 2021. For example, in 2021 the estimated increase in private gross fixed capital formation of 124% (more than double) followed a fall of 70% in 2020. This does not mean a return to a level higher than before. The level remained 33% below what it was in 2019. It is better to look at the volume indices, based on 2019=100. In this case the sequence was 100, 30, 67.

A similar consideration applies to the changes in price. The table shows the price levels in the three years for key aggregates. The margin of error in some of the estimates could be 20 per cent. A more accurate assessment may be possible when stability returns. Aside from government, relative price levels were lowest for GDP, highest for foreign trade and between the two for household final consumption expenditure.

	2019	2020	2021
Gross domestic product at market prices	**100**	**161**	**416**
Total final consumption expenditure	**100**	**170**	**497**
by households	100	186	587
by government	100	105	133
Gross capital formation	**100**	**271**	**697**
Net exports	**100**	**239**	**883**

Imports and exports

The value of imports and exports of goods and services implicitly affect the value added in the economy (the difference between the value of outputs and inputs). Some output is exported, and intermediate consumption will include imported goods.

Imports and exports of goods are recorded by the Customs Administration in both US dollars and Lebanese pounds (LBP). During 2020 and 2021, Customs continued to use the existing official exchange rate of 1,507.5 to convert the USD values into LBP. These values therefore understated the actual value of the goods.

The actual value of exported goods was estimated on the basis that the exporters were able, if they wished, to change their foreign currency receipts into LBP at the parallel market rate. The Customs values of exports were therefore adjusted by the ratio of the average monthly parallel market exchange rate to the official rate. In the case of imports, where importers were obliged, if necessary, to obtain dollars on the parallel market, the Customs values of imported goods were therefore adjusted in the same way.

However certain imported goods were subsidised. For these, the Ministry of the Economy and Trade provided CAS with a list of affected goods, so that their value in USD could be identified. For a proportion (85%, 90% or 100%) of this value, dollars were made available at the original official rate (1,507.5), or at another official rate (3,900) introduced halfway through 2020. From this information, the Customs value of these imports were adjusted to reflect their actual value. Halfway through 2021, this practice stopped for several types of goods, but continued in modified form for wheat, petroleum and medicaments. The estimates were corroborated by data from the Banque du Liban (BdL) on the concessionary sales of foreign exchange.

For imports and exports of services, quarterly data in USD from the BdL were converted into LBP using the average quarterly parallel rate.

In the expenditure measure of GDP, imports and exports are however valued at unitary rates of exchange, obtained by adding or subtracting the implicit taxes and subsidies, as appropriate.

Gross fixed capital formation (GFCF)

Also on the expenditure side, a refinement was introduced to the method of estimating GFCF. The benchmark estimates had been extrapolated in line with indicators based on the imports of machinery and equipment. The calculation of the indicators was improved from 2016 onwards by deducting exports of the same type.

Total output at current prices

For a majority of economic activities, indicators of total output are derived from sales data provided by VAT traders on their quarterly VAT returns. During 2020 and 2021, the valuation of these sales became more and more uncertain, depending on the extent to which receipts from sales were in foreign currency and the exchange rate used to convert the latter into Lebanese Pounds. The method initially adopted for the 2020 estimates was refined as follows. First, estimates of exports of goods and services were matched with the zero-rated sales of enterprises with the associated activity. Extra value was calculated each quarter by comparing the trend in exports (converted at the parallel market rate) with the trend in zero-rated sales as recorded in the VAT returns. However, it was also clear that some domestic sales would also take place in dollars, for example in hotels and restaurants. A general allowance was therefore made for this. For specific activities, the VAT turnover data was further adjusted using other proxy indicators, such as the imports of raw materials for manufacturing and of consumer goods for retail sales.

Intermediate consumption

For most economic activities, the indicators of total output in volume terms are also used as volume indicators for their intermediate consumption (IC) and hence for their gross value added (GVA). Except where direct estimates of IC at current prices are readily available, these volume indicators of IC are then inflated to current prices using price indices for the IC of each activity. These are derived using input-output coefficients to combine the implied price movements of products, based on the total supply of goods and services, both imports and local production.

To mitigate the effects of the multiple exchange rates and high rates of inflation, this model was refined in two ways. First, in deriving the prices of imports it had been assumed that the rates of tax on imports had remained stable over time. However, in 2020, this was no longer the case, as they were calculated using the official rate of exchange, thus reducing the effective rates when measured against the actual value of the imports. Indicators of the value of imports were therefore adjusted accordingly. The second refinement was to offset the effect of export prices implicit in the total supply data.

Despite these refinements, the variability of price movements (combined with possibly inappropriate coefficients) meant that, for some activities, the process led to implausible input-output ratios in 2020 and 2021. In these cases, the 2019 ratios were retained.

Gross domestic product

The GVA at current "basic" prices is calculated before adding the taxes and deducting the subsidies on products, including the net subsidies implied by the existence of multiple exchange rates. The method adopted for calculating these implied taxes and subsidies is described in a separate note. The results of this calculation were used to derive GDP on from the GVA on the production side. Exactly equal (and opposite in the case of imports) adjustments were made to the exports and imports (initially based on actual valuations) on the expenditure side. This ensured a correct balance of supply and demand at current prices. Volume changes, based on prices of the previous years (2019 and 2020 respectively), were not affected by these adjustments.

Conclusion

The changes described above were an attempt to mitigate the effects of the financial crisis on the data sources and compilation methods used in estimating GDP.

The overall internal consistency of the estimates suggests that the value of the GDP is a reasonable estimate. However, the more detailed estimates of value added are only indicative and should be used with caution.