



Benchmark Revision 2020

**National Accounts
Economic Statistics Directorate**

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Executive Summary

Most macroeconomic data is revised to update initial estimates and provide a more accurate reading of economic developments. There are two types of revisions: routine revisions and major revisions. Routine revisions occur regularly, in many cases with each new data vintage that is published, and generally involve updating estimates with more accurate, although less timely data. Major revisions can be further subdivided into major ad hoc revisions and major regular revisions, with the latter also referred to as benchmark revisions.

Major ad hoc revisions take place when the need arises, generally resulting from methodological changes, such as the introduction of a new European System of Accounts (ESA) and changes in classifications, or special events, such as a European Union enlargement. Major regular revisions, on the other hand, occur recurrently, generally every five to ten years, to incorporate changes in data sources or estimation techniques.

In August 2020, the National Statistics Office (NSO) carried out a benchmark revision in National Accounts data for the reference period 1995Q1 to 2020Q2. Prior to this, the last benchmark revision was held in October 2014 and was integrated with a major ad hoc revision which saw the introduction of ESA 2010.¹

The 2020 benchmark revision will continue to improve the accuracy of National Accounts data and will harmonise further the data with that of other countries, thus allowing for better international data comparability.

This benchmark revision has led to a number of enhancements, the most notable of which are: the publication, for the first time, of GDP data in chain-linked volumes from the production approach; Supply, Use and Input-Output Tables (SUIOT) for 2013, 2014 and 2015; the implementation of recommendations emerging from the ESA 1995 and ESA 2010 verification cycles; the incorporation of new data sources, including the last Household Budgetary Survey; the adoption of refined estimation methods; and the cross-classification of fixed assets by industry and by asset (stocks), and the non-financial assets Balance Sheet by institutional sector. Routine revisions were also included for the reference period 2016Q1 to 2020Q2, most importantly, the incorporation of the Structural Business Statistics survey results of 2016.

As a result of these enhancements, annual nominal GDP has increased, on average, by 1.3 per cent between 1995 and 2019. With regard to growth rates, GDP growth in nominal terms has been revised by 0.0 percentage points (i.e. upward revisions have broadly offset downward

¹ For further details, see National Statistics Office (2014), 'A New Framework for National Accounts', available at: https://nso.gov.mt/en/nso/Sources_and_Methods/Documents/National_Accounts/A_New_Framework_for_National_Accounts.pdf.

revisions), on average, between 1995 and 2019. Revisions to GDP growth in volume terms averaged 0.0 percentage points between 2000 and 2019.

The scope of this report is to provide detailed methodological information on the different enhancements incorporated in this benchmark revision.

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² Users should note that the data presented in this document might not match exactly the data that was published due to different cut-off dates.

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List of Abbreviations

AOP	Agricultural Output Price
AOT	Annual Overlap Technique
CCI	Construction Cost Index
B.1g	Gross Value Added
B.1n	Net Value Added
B.2	Operating Surplus
BMP5/6	Balance of Payments Manual, Version 5/6
BNI	Balance National Income
BOP	Balance of Payments
BR	Business Register
CATI/CATI survey	Computer-Assisted Telephone Interviewing
CBM	Central Bank of Malta
CFC	Consumption of Fixed Capital
CLV	Chain-Linked Volumes
COICOP	Classification of Individual Consumption by Purpose
CPH	Census of Population and Housing
D.1	Compensation of Employees
D.7	Other Current Transfers
D.31	Subsidies on Products
DMBs	Deposit Money Banks
ECB	European Central Bank
ELS	English Language Schools
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
EONIA	Euro Overnight Index Average
ESA 1995/2010	European System of Accounts 1995/2010
ETC	Employment and Training Corporation
Eur (€)	Euro
EURIBOR	Euro Interbank Offered Rate
EUROPAP	European Network for HIV, STD, Prevention in Prostitution.
FIs	Financial Institutions
FISIM	Financial Intermediation Services Indirectly Measured
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GNI	Gross National Income
GVA	Gross Value Added
GWI	Government Wage index
HBS	Household Budgetary Survey
HFCE	Household Final Consumption Expenditure
HICP	Harmonised Index of Consumer Prices
IBIs	International Banking Institutions
IPS	Index of Production in Services
IRR	Internal Rate of Return
K.1	Consumption of Fixed Capital
LCI	Labour Cost index
LIBOR	London Interbank Offered Rate
MFIs	Monetary Financial Institutions
N5	Registered Entrepreneurs Not Surveyed
NA	National Accounts

List of Abbreviations

NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne / Statistical Classification of Economic Activities in the European Community
NAU	National Accounts Unit
NSO	National Statistics Office (Malta)
P.1	Output
P.2	Intermediate Consumption
PFU	Public Finance Unit
PPI	Producer Price Indices
PYP	Previous Year's Prices
R&D	Research and Development
RoW	Rest of the World
RPPI	Residential Price Property Index
S.13	General Government Sector
SBS	Structural Business Statistics
SPEs	Special Purpose Entities
SPPI	Services Producer Price Index
STS	Short-Term Statistics
SUIOT	Supply, Use and Input Output Tables
VAT	Value Added Tax

1. Introduction

The National Statistics Office (NSO) carried out a benchmark revision of the National Accounts in August 2020, which was published alongside the Gross Domestic Product news release for the second quarter of 2020. Below are the main characteristics of this benchmark revision. The sections below represent the main characteristics of this benchmark revision.

1.1 Household Budgetary Survey

This revision will incorporate the results of the Household Budgetary Survey (HBS) of 2015³, which has a direct impact on the production approach, primarily in Education, Human health and Social work activities and Other services, as well as on the expenditure approach. The HBS is the main source used for the compilation of Household final consumption expenditure and its integration will have an impact on reference years 2009 to date, since the last HBS was carried out in 2008. Consequently, HBS 2015 was extrapolated backwards to 2009 in order to derive a consistent time series. For certain products the whole time series from 1995 or 2000 onwards had to be revised. Further details on the integration of the HBS 2015 in the National Accounts series are available in Section 2.

1.2 Reservations and action points

This benchmark revision will incorporate three reservations addressed after the European System of Accounts (ESA) 2010 benchmark revision of September 2014 and which resulted from the ESA 1995 verification cycle. Further details on reservations and actions listed below are available in Section 3.

The revision will incorporate improvements to the National Accounts Statistics, which were identified by several action points during the first ESA 2010 verification cycle. These include:

- Action point A2: Financial leasing;
- Action point A5: Value the output of activities of households as employers of domestic personnel;
- Action point A6: Separately identify costs of ownership transfers on non-produced assets as Gross Fixed Capital Formation (GFCF);
- Action point A11: Withdrawals of income from quasi-corporations ("holiday homes");
- Action point A13: Changes in inventories to be measured net of holding gains and losses (partly related to the ESA 1995 and to the ESA 2010 verification cycles);
- Action point A21: Include the expenditure on Expenditure on R&D by Scientific research and development activities in the calculation of Research and Development when the Supply Use Tables 2008 and 2010 are finalised;

³ See National Statistics Office (2018), 'Household Budgetary Survey Malta 2015', available at: https://nso.gov.mt/en/publicatons/Publications_by_Unit/Documents/C1_Living_Conditions_and_Culture_Statistics/HBS%20Publication%202015.pdf

- Action point B1: Decommissioning costs;
- Action point B2: High share of Gross Value Added (GVA) in agriculture produced within the institutional sector S.13;
- Action point B3: Inclusion of acquisitions or disposals of non-monetary gold, platinum, silver, etc. in Acquisitions less disposals of valuables (P.53).

Following the integration of the above-mentioned action points resulting from the ESA 2010 verification cycle, Gross National Income (GNI) will, on average, increase by 0.4 per cent between 2010 and 2018. The impact of these action points can be viewed in the table below.

Table 1.1 Estimated impact on GNI (in percentages) for the years 2010-2013 (ESA 95) and 2014-2018 (ESA2010)⁴

Action points	2010	2011	2012	2013	2014	2015	2016	2017	2018
a) Action point A2: Financial leasing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
b) Action point A5: Value the output of Activities of households as employers of domestic personnel	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%
c) Action point A6: Separately identify costs of ownership transfers on non-produced assets as GFC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
d) Action point A11: Withdrawals of income from quasi-corporations ("holiday homes")	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
e) Action point A13: Changes in inventories need to be measured net of holding gains and losses	0.5%	-0.8%	-0.3%	0.0%	-0.5%	-0.1%	-0.5%	-0.1%	-0.3%
g) Action point A21: Include the expenditure on CPA 72 by NACE 72 in the calculation of R&D when the Supply Use Tables 2008 and 2010 are finalized	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
h) Action point B1: Decommissioning costs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
i) Action point B3: Inclusion of acquisitions or disposals of non-monetary gold, platinum, silver, etc in Acquisitions less disposals of valuables (P.53)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

⁴ As compared to the GNI as submitted in the GNI Quality Report of 2019

1.3 Other methodological changes

Other methodological changes related to the integration of new data sources, improved extrapolation methods and corrections to past data, will increase the Gross National Income (GNI) by an average of 3.2 per cent between 2010 and 2018⁵.

One of the most important revisions occurred in the Financial and insurance activities, for which a new methodology was applied in the calculation of Financial Intermediation Services Indirectly Measured (FISIM), holding companies, and trusts, as well as the full integration of an administrative source.

Another important revision was made in Real estate activities in relation to residential rentals and non-residential rentals. Residential rentals were already updated with census results of 2011, which were included within the benchmark revision of September 2014 and extrapolated thereafter. In the 2020 benchmark revision, the HBS results of 2015 were integrated in National Accounts statistics and extrapolated backwards to 2012. Residential rentals were revised upwards compared to the previous estimates.

As from 2010 onwards, a methodological change was implemented in the calculation of non-residential rentals. In the past years, the Structural Business Statistics (SBS) questionnaire used to provide a clear distinction between residential and non-residential rentals. Since this distinction is no longer available, a new method has been developed to derive reliable estimates. The new methodology is still based on SBS, however, a thorough analysis of the data at company level is being done in order to derive non-residential rentals.

Additionally, methodological improvements were incorporated in the estimation of the following:

- Quarterly disaggregation of Fishing and aquaculture activities and the integration of an annual census of open sea fishing since 2008;
- A new methodology for Other accommodation activities and the integration of the National Tourism Survey for domestic trips;
- Renewable energy generated by households is being included for the first time;
- Extrapolation of output for Restaurants and mobile food service and beverage activities;
- Full integration of administrative sources for NACE divisions Education [NACE 85], Creative arts and entertainment activities [NACE 90] and Sports activities and amusement and recreation activities [NACE 93];

⁵ As compared to the GNI as submitted in the GNI Quality report of 2019

1.4 Derogations

The following number of derogations were addressed during this benchmark revision:

- Hours worked for 1995 to 1999 were compiled;
- NSO will publish the cross classification of fixed assets by industry and by asset (stocks) for the first time;
- NSO will enhance the data published in the Balance Sheets for non-financial assets;
- For the first time, NSO will for the first time publish GVA by industry, Taxes and subsidies on products and Consumption of fixed capital (CFC) at previous year's prices (PYP), and in chain-linked volumes (CLV). An additional table will be included in the quarterly GDP news release with the results of the production approach in chain-linked volumes.

1.5 Routine revisions

Routine revisions were also undertaken, mainly related to the integration of SBS 2016 and updated estimates for Gambling activities. These updates will have an impact from 2016 onwards.

1.6 Results for Gross Domestic Product and Gross National Income

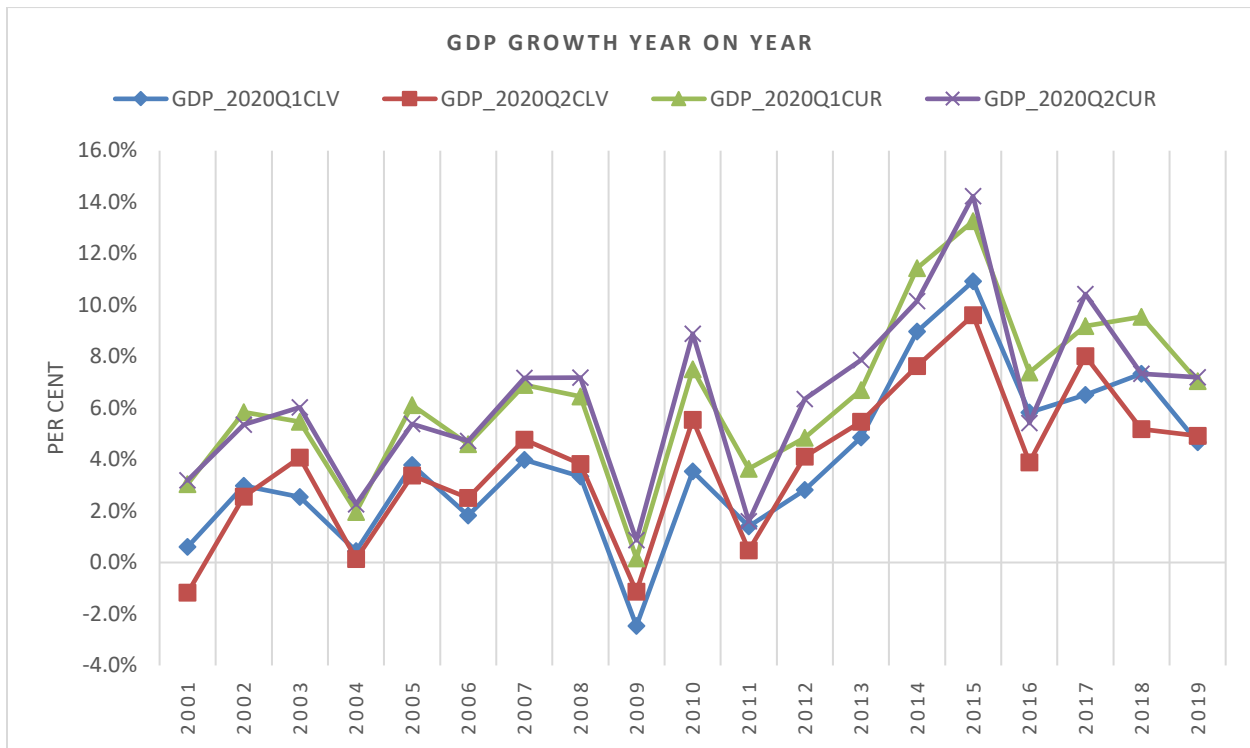
The benchmark revision led to an increase in the nominal GDP by an average of 1.3 percentage points over the whole time series between 1995 and 2019. Revisions in GDP range from 0.1 per cent in 2002 to 3.8 per cent in 2013.

Table 1.2 GDP at current prices and impact of revisions: 1995-2019

€ million	1995	2000	2005	2010	2015	2016	2017	2018	2019
Nominal GDP as per News Release 091/2020	3,041	4,137	5,149	6,600	9,657	10,370	11,322	12,403	13,277
Benchmark revisions	19	16	10	216	340	327	385	421	488
Routine revisions	-	-	-	-	-	-159	-69	-333	-375
Nominal GDP as per News Release 142/2020	3,060	4,153	5,159	6,816	9,997	10,538	11,638	12,491	13,390
Revision in absolute terms	19	16	10	216	340	169	316	88	113
Revision in GDP %	0.6%	0.4%	0.2%	3.3%	3.5%	1.6%	2.8%	0.7%	0.8%

With regard to growth rates, GDP growth in nominal terms has been revised by 0.0 percentage points (i.e. upward revisions have broadly offset downward revisions), on average, between 1995 and 2019. Revisions to GDP growth in volume terms averaged 0.0 percentage points between 2000 and 2019. The new path of GDP confirms the economic cycle displayed by the previous news release of National Accounts data, as can be seen in Figure 1.1.

Figure 1.1 Impact of the benchmark revision: Growth in GDP at current prices and in CLV



The gross national income (GNI) series will be revised upwards by an average of 1.3 per cent, compared to the previous news release. Revisions in GNI range from -1.8 per cent in 2007 to 3.3 per cent in 2013 and 2015.

Table 1.3 GNI at current prices and impact of revisions: 1995-2019

€ million	1995	2000	2005	2010	2015	2016	2017	2018	2019
GNI as per News Release 091/2020	3,054	4,009	4,966	6,321	9,144	9,506	10,310	11,366	12,115
GNI as per News Release 142/2020	3,106	3,997	5,002	6,465	9,444	9,507	10,446	11,551	12,374
Revision in absolute terms	51	-12	36	144	300	2	136	186	259
Revision in GNI %	1.7%	-0.3%	0.7%	2.3%	3.3%	0.0%	1.3%	1.6%	2.1%

2. Integration of HBS 2015

The National Statistics Office (NSO) conducted a Household Budgetary Survey (HBS) between April 2015 and March 2016. Within this benchmark revision, HBS 2015 results will be integrated in the compilation of household final consumption expenditure and in specific NACE Sections – PQRST.

2.1 Impact on the production approach

The HBS is the main source used for the compilation of GVA for NACE sections P, Q, R, S, and T in the production approach. These industries are currently not covered by NSO surveys from the supply side, thus data obtained from the demand side is used to cover part of these activities. In all instances, HBS 2015 has been extrapolated backwards to 2009, and is now being used as a benchmark year for extrapolation purposes from 2016 onwards. HBS results were integrated in Cultural education (NACE 85.52), for instance music schools and music instructors' services; fine arts schools and arts instruction services; other cultural educational services. Other NACE subsections affected by the integration of HBS results are the Medical and dental practice activities (NACE 86.2), Other human health activities NACE (86.90), Fitness facilities (NACE 93.13), Hairdressing and other beauty treatment (NACE 96.02), as well as Physical well-being activities (NACE 96.04).

2.2 Impact on Household Final Consumption Expenditure (HFCE)

The HBS is the main source used for the compilation of Household final consumption expenditure (HFCE) and its integration will have an impact on reference years 2009 to date, since the last HBS was carried out in 2008. Consequently, HBS 2015 was extrapolated backwards to 2009 to derive a consistent time series. For certain products the whole-time series from 1995 or 2000 onwards had to be revised. Table 2.1 provides a snapshot of the revisions in HFCE published in the benchmark revision of 2020.

Table 2.1 Revisions in HFCE (domestic concept) in € million

COICOP code	Item description	2000	2005	2010	2015	2019
	Total	28	69	170	232	484
1	Food and non-alcoholic beverages	2	45	101	149	125
2	Alcoholic beverages, tobacco and narcotics	-	0	-1	1	1
3	Clothing and footwear	0	0	38	73	119
4	Housing, water, electricity, gas and other fuels	8	-4	75	101	134
5	Furnishings, household equipment and routine maintenance of the house	0	0	-1	-101	-142
6	Health	0	-11	-8	27	47
7	Transport	35	32	58	7	67
8	Communication	-41	-15	-18	-26	-12
9	Recreation and culture	22	-20	-39	-44	-17
10	Education	10	15	21	33	59
11	Restaurants and hotels	4	34	43	84	91
12	Miscellaneous goods and services	-13	-7	-99	-71	12

3. Reservations and action points

3.1 Financial Intermediation Indirectly Measured

In 2016, NSO concluded its work on Transversal Reservation II – Financial Intermediation Indirectly Measured (FISIM). The main issues are related to:

- The derivation of internal reference rates (IRR);
- The derivation of the external reference rates (ERR);
- The derivation and distribution of accrued interest among institutional sectors;
- The allocation of FISIM between households and Non-profit institutions serving households (NPISH);
- Imports of FISIM.

3.1.1 The Internal reference rate

Up to 2007, the IRR was being derived using the official interbank interest rates as provided by the Central Bank of Malta (CBM). From 2008 onwards when Malta adopted the Euro currency, the IRR was compiled using the average Euro OverNight Index Average (EONIA) overnight deposit rate and the Euro Interbank Offered Rate (EURIBOR) of 1-week, 1-month and 3-month fixed deposit rate.

In order to address this reservation, NSO obtained the intra-bank transactions (loans/deposits) from the CBM. Data going back to 2005 was provided. When granting a loan to another banking institution, banks in Malta are required to declare the amounts of deposits/loans made by banks with other third-party resident banks, the per annum interest rate charged and the duration of the deposits/loans in terms of days to the CBM.

3.1.2 The External reference rate

The ERR was previously based on the weighted average of the 3-month EURIBOR deposit rate, the Bank of England base rate (BOEBR) and the money market rate of the USA (LIBOR). The weighted ERR was derived based on the stock of loans and deposits in the euro area, United Kingdom and United States of America respectively.

In order to address this reservation, the ERR is being calculated as the ratio of interest on loans plus interest on deposits between resident financial institutions and non-resident financial institutions, to the stock of loans plus the stock of deposits between resident financial institutions and non-resident financial institutions. Data was available from the Income Statements and Balance Sheets of resident banks which is supplied on a quarterly basis by the CBM.

3.1.3 The derivation and distribution of accrued Interest among Institutional sectors

According to regulation 448/98, FISIM should be calculated by user sector, which implies that sector-specific information on both stocks of loans and deposits and the corresponding accrued interest should be employed in the calculation. In the context of the GNI own resources this requirement is particularly important to sectors/users for which the allocation of FISIM impacts GNI, i.e. the General Government sector (S13), Non-profit institutions serving households (S15) and HFCE within the Households sector (S.14). Malta was thus requested to investigate potential data availability on interest flows by sector or detailed interest rates by sector to be used to calculate FISIM by user sectors. This was mainly due to the fact that in the absence of accrued interest by user sector, NSO was splitting total accrued interest by sector according to the stock of loans or deposits before deriving FISIM by sector. Data prior to 2014 on accrued interest was only available for the following categories:

- CBM
- Monetary Financial Institutions
- Government
- Other remaining sectors

As from mid-2014, accrued interest is available at sector level for the following:

- CBM
- Government
- Insurance corporations
- Pension funds
- Non-money market funds
- Other financial intermediaries, auxiliaries and captive financial institutions
- Non-financial companies
- Non-profit institutions serving households
- Households

This means that as from 2015, FISIM could be derived for each user sector. This is also matched with equivalent data classification from the Balance Sheet.

In absence of the required information the split of accrued interest (receivable and payable) by user sector for pre-2014 years was done by using information on the per annum interest rates granted on deposits and charged on loans by user sector. This information was only available for the Non-financial corporations (S.11) and Households (S.14) sectors. Consequently, the interest payable or received by Households and Non-financial corporations was derived by multiplying the average interest rates by the stock of deposits or loans respectively. In absence of data on interest rates for the other user sectors i.e. General government, insurance companies and pension funds, and Other financial intermediaries and Financial auxiliaries, the interest payable and receivable was calculated using the distribution of the stocks by user sector.

3.1.4 The distribution of FISIM allocated to Households

According to ESA 1995/2010 FISIM generated from consumer credit should be allocated to HFCE, while FISIM generated from lending for house purchases and lending to households as sole proprietors should be allocated to intermediate consumption. FISIM generated on household deposits is to be fully allocated to the HFCE.

As from 2007, data for core and non-core banks includes information on Household and NPISH sectors in the following categories:

- Consumer credit;
- Lending for house purchases;
- Sole proprietors;
- Other (residual) lending.

In order to address this reservation, NSO has started to allocate FISIM on loans for consumer credit and 'Other (residual) lending' to HFCE and FISIM charged on for house purchases and sole proprietors is allocated as intermediate consumption. FISIM charged on loans granted for house purchases was allocated to the intermediate consumption of Real estate activities, as this is a charge directly related to imputed-rental output of owner-occupiers. FISIM charged on loans granted to sole proprietors will be distributed across industries.

Despite the full-fledged information on the stock of loans, only the total interest received on loans granted to households is available. For the post-2014 period total interest was distributed among the loan purposes of the Household sector according to the average quarterly Monetary Financial Institutions' interest rates recorded by the CBM on different loans granted to households by purpose. The distribution of interest received for the pre-2014 period, was calculated using the per annum interest rates on deposits and loans to residents of Malta as described in the previous section on the derivation and distribution of accrued interest among institutional sectors. Use was made of specific sub-category interest rates by purpose of lending i.e. house purchases, consumer credit and other lending. The rate for consumer credit was used to derive interest payments by households as consumers; the rate for lending for house purchases was used to derive interest payments by households as owners of dwellings; while the rate for other lending was used to obtain interest payments by households as owners of unincorporated enterprises. FISIM generated on deposits of the Household sector is allocated entirely as HFCE.

3.1.5 Imports of FISIM

Up to 2020Q1, imports of FISIM was being calculated for the General Government sector using readily available data from the Treasury Department on loans and deposits and the corresponding interest paid and received to and from foreign financial intermediaries. No estimates were made for the Non-financial, Households and NPISH sectors. NSO has explored various sources of information and methodologies to come to terms with the instructions specified in ESA 1995/2010 in order to derive estimates for the Non-financial, Financial, Households and NPISH sectors. Balance of Payments data is now being used to derive imports of FISIM by Non-financial and Financial sectors, while administrative data on is partly used to derive imports of FISIM by households.

3.2 Action point A2: Financial leasing

As from 2013, companies involved in financial leasing activities were identified within the Business Register.

3.2.1 Methodology

The balances of loans granted under a financial lease (or hire purchase or factoring) agreement were identified from annual accounts. Similarly, the interest received was also identified from accounts.

The same methodology of FISIM was applied, i.e.

$$F_L = \left(\frac{r_L - rr}{100} \right) Y_L$$

where F_L , r_L , rr and Y_L represent the output of financial services on loans, the lending interest rate, the reference rate and the average stock of loans respectively. Interest rates are expressed in percentage terms.

3.2.2 Effect on GDP and GNI

The effect of FISIM on GDP will be null, as the FISIM generated will be re-charged as intermediate consumption within the economy. Similarly, there will be no impact on GNI, since these are transactions between resident units.

3.3 Action point A5: Value the Output of Activities of households as employers of domestic personnel

As per ESA 2010, (chapter 3, paragraph 3.87), the output of household services produced by employing paid staff is valued by the compensation of employees paid including any

compensation in kind such as food and accommodation. Jobsplus data has been used to identify those employees employed within a household on a full-time or part-time basis from 1995 onwards.

Former estimates for self-employed persons involved in General cleaning of buildings including general cleaning of houses or apartments, were reclassified to General cleaning of buildings (NACE 81.21).

3.4 Action point A6: Separately identify costs of ownership transfers on non-produced assets as Gross fixed capital formation

To comply with the requirements of ESA 2010 (chapter 7, para 7.50 to 7.60); transfer costs are to be estimated separately and are to be recorded under capital formation.

3.4.1 Land (AN.211)

Research on fees charged by real estate agents indicated that the standard brokers' rates range between 3.5 and 5.0 per cent; with the lower rate charged for exclusive agreements and the higher rate for open agreements.

The stamp duty ranges between 0 to 5 per cent, with the zero-rate applicable to first time buyers on the first €150,000 transacted and the 5 per cent rate applicable to non-first-time buyers and for sums in excess of €150,000.

Notary fees range between a minimum of 1 per cent and over of the asset value, with the higher rate applicable for complex notary searches on the root of legal title.

The (non-standard) ranges of applicable transfer costs are listed in Table 3.1 below.

Table 3.1 Transaction cost rates for land transfers

Reference	Category	Per cent rate	
		Minimum	Maximum
1	Brokers' commission	3.5	5.0
2	Stamp Duty	0.0	5.0
3	Notary fee	1.0	More than 1 per cent
4	Total	4.5	11.0+

For the purpose of estimating the transaction cost, specific assumptions are set for brokers' fees. It is being assumed that a third of the property transacted is done outside brokers' agreements, a third is transacted through exclusive broker agreements and a third is transacted through open broker agreements.

Stamp duty rates were not utilised to estimate the applicable stamp duty on transactions as administrative data is available for this transaction cost.

The notary fee is known to range between 1 per cent and over. Under normal conditions, the applicable charge rate is 1 per cent of the asset value; however, this rate may differ depending on search complexity of the root of legal title. No information is held on the maximum charge rate or the incidence of this rate. Given the difficulty in identifying such cases; the standard notary fee was taken as applicable on all transfers.

Table 3.2 Transaction cost for land transfers

€ 000	1995	2000	2005	2010	2015	2016	2017	2018	
Land	Value	22,140	44,265	50,515	106,937	107,158	170,856	138,615	156,118
	Stamp duty	894	1,788	1,988	4,093	3,563	4,176	5,498	5,677
	Notary fee	221	443	505	1,069	1,072	1,709	1,386	1,561
	Real estate (commissions)	621	1,242	1,417	3,000	3,006	4,793	3,888	4,379
Costs of ownership transfer on non-produced assets	1,737	3,473	3,910	8,162	7,640	10,677	10,772	11,618	

3.4.2 Contracts, leases and licences (AN.22); and Purchases less sales of goodwill and marketing assets (AN.23)

For such assets, transacting parties are not bound to register transfers for assets AN.22 and AN.23 and tax is not applicable on such transactions. Consequently, no administrative data is held on such transaction costs. However, the main applicable transfer costs are likely to be notary and legal fees. Such fees should not differ substantially from other contracts for non-produced non-financial assets under land, since the standard notary/legal fees are chargeable for contract drafting and signing irrespective of the asset being transacted. Hence, transaction costs are taken as 1 per cent of the asset value. Table 3.3 provides data related to the gross value of assets AN.211, AN.22 and AN.23.

Table 3.3 Goodwill, concessions, patents, licenses, etc and transaction cost

€ 000	Computation Notes	2010	2011	2012	2013	2014	2015	2016	2017
Asset value	A	2,628	13,180	7,982	10,428	40,216	32,262	54,105	55,045
	B	57	-	7	5,936	33	7,021	4,458	7,035
Transaction cost 1% of transaction Value	1%*A	26	132	80	104	402	323	541	550
	1%*B	1	-	0	59	0	70	45	70
Costs of ownership transfer on non-produced assets	A-B	26	132	80	45	402	252	496	480

3.5 Action point A11: Withdrawals of income from quasi-corporations ("holiday homes")

3.5.1 Holiday homes owned by non-residents:

In order to quantify the rental value from holiday homes owned by non-residents in Malta, reference was made to methodologies used by other countries presented in chapter 12 of United Nations, 'The Impact of Globalization on National Accounts'⁶.

TOURSTAT⁷ data on non-residents staying in their 'own private residence' was extracted for the years 2004 to 2014. This data shows the number of nights stayed by non-residents in own private residences and the number of instances they visited Malta.

To calculate the total imputed rent generated from holiday homes owned by non-residents in Malta, the imputed rent for summer residences owned by residents per night was applied to the nights stayed by non-residents in own private residences. To calculate the total nights stayed per dwelling, it was assumed that, on average 2.5 people stay in each accommodation. Consequently, the total nights stayed were multiplied by a factor of 0.4.

The structure of intermediate consumption and consumption of fixed capital follows that of summer residences owned by residents.

The resulting net operating surplus is recorded as primary income paid abroad to non-residents.

In the production approach, imputed rentals and associated costs generated by non-residents were not being captured, as dwellings owned by non-residents were classified as empty and no rentals are imputed for empty dwellings. Hence, GDP increased accordingly. In the expenditure approach, the imputed rent estimated for non-residents is being shown as exports. With respect to the income approach the increase in GVA is shown as gross operating surplus earned by non-residents on own holiday homes in Malta which is then partly repatriated. The part which is not repatriated is equivalent to consumption of fixed capital.

3.5.2 Holiday homes owned by residents abroad:

The 2011 Census of Population and Housing revealed that from a total population of 417,432 and 152,980 households, only 261 holiday dwellings were owned abroad (Table I.9). Most of these dwellings are owned by immigrants and 62 by Maltese citizens (Table I.10). This means that only 0.2 per cent of the households own a dwelling abroad. In comparison a total of 29,848 dwellings in Malta were identified for seasonal or secondary use. Eurostat confirmed that the 261 holiday

⁶ United Nations (2011), 'The Impact of Globalization on National Accounts'.

⁷For further details see:

https://nso.gov.mt/en/nso/Sources_and_Methods/Unit_C3/Tourism_Statistics/Documents/Questionnaires/Tourst_at_2015.pdf

homes owned abroad by Maltese residents can be considered negligible. Consequently, Withdrawals of income from quasi-corporations for holiday homes owned by residents abroad was not compiled.

3.6 Action point A13: Changes in inventories need to be measured net of holding gains and losses

The prices used to value changes in inventories in the National Accounts are as described in ESA 2010, (chapter 3, paragraph 3.151). Output of finished goods should be valued at current basic prices. Valuation of additions to work-in-progress should be done in proportion to the estimated current basic price of the finished product.

Inventory stocks and changes in inventories (P.52) should be valued at current prices and they should be net of any holding gains and losses. In ESA 2010 (chapter 6, paragraphs 6.28 – 6.29, holding gains and losses are related to an increase or decrease in the value of asset or liability, resulting from a change in price. Whether realised or not, holding gains and losses are recorded in the revaluation account.

Gains and losses are unrealised as long as inventories remain on the Balance Sheet of the company – goods are not yet sold or used, whereas holding gains and losses will be realised when goods leave the inventory, either sold or used. In order to calculate holding gains and losses, stock of assets must be valued in the same way they are recorded in the Balance Sheet. Unrealised gains and losses are not included as part of GDP calculations, so they are excluded from total holding gains and losses. GDP data is only affected by realised gains and losses.

The work on holding gains and losses has also been enhanced following an action point which required the introduction of basic prices adjustments for work-in-progress and finished goods during the GNI mission of 2017.

Data for 1995 to 2003, 2006 and 2007 have been extrapolated. The impact on GVA between 1995 to 2003 was limited to €10 million and €25 million in 2004. The largest revisions occurred between 2008 and 2017. The impact by industry varies and is mostly significant in NACE 03, 10, 21, 26, 27, 32, 35, 41, 46, 68, and 70.

Table 3.4 Impact of holding gains and losses on GVA

		€ million									
	ESA Code	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
PRODUCTION APPROACH											
Output of goods and services (at basic prices)	P1	-21	41	22	-31	-15	-2	-20	-4	-24	10
Intermediate consumption (at purchasers' prices)	P2	14	-10	-11	24	6	-3	20	7	19	19
Gross value added (at basic prices)	B1G	-35	51	33	-55	-21	2	-40	-11	-43	-9
Taxes on products	D21										
Subsidies on products	D31										
Gross domestic product (ESA 95)	B1GQ	-35	51	33	-55	-21	2	-40	-11	-43	-9

Changes in inventories will be transmitted by industry A10 breakdown, at current and previous year's prices in Table 301 of the ESA 2010 transmission programme, thus addressing a derogation which expires in 2020.

3.7 Action point A21: Include the expenditure on Research and Development by Scientific research and development activities in the calculation of R&D when the Supply and Use tables of 2008 and 2010 are finalised

Research and Development (R&D) is now inclusive of the adjustments made in the SUT of 2008 and 2010. Expenditure on R&D by Scientific research and development activities amounted to €340,266 and €103,336 in 2008 and 2010 respectively. This has virtually no impact on GNI. Nevertheless, an estimate will be introduced immediately for each year which will eventually be updated when the SUT is finalised.

3.8 Action point B1: Decommissioning costs

Eurostat's opinion is that the decommissioning costs should be recorded in the years when they take place; as gross fixed capital formation (P.51g), with consumption of fixed capital recorded for the same amount (P.51c)⁸. In light of this, the decommissioning costs of the Marsa power station have been included in the GFCF and in CFC figures of 2015.

3.9 Action point B2: High share of GVA in agriculture produced within the General government sector

An exercise was carried out by the Public Finance Unit to identify any cost centres which could possibly be misclassified under Crop and animal production, hunting and related service activities and Fishing and aquaculture. This revision had no effect on GDP but shifted part of the GVA

⁸ Eurostat C1/NAWG/2020/CN 857

previously shown under these two industries to Public administration and defence; compulsory social security.

3.10 Action point B3: Inclusion of Acquisitions or disposals of non-monetary gold, platinum, silver, etc in Acquisitions less disposals of valuables (P.53)

Net imports of non-monetary gold, silver etc are provided on a quarterly basis by the Balance of Payments Unit. Nil figures are reported in the entire series.

4. Other methodological changes

4.1 Fishing and aquaculture activities

4.1.1 The quarterly distribution of Fishing and Aquaculture activities

The quarterly output of farmed fish has been re-estimated to bring it in line with the requirements of ESA 2010, where output is recorded as being produced continuously over the entire period of production and not when farmed fish is exported or sold. Annual output has been distributed by quarter on estimated quarterly costs, with a mark-up added for operating surplus. Imports and exports by fish farms are the main sources used to distribute intermediate consumption by quarter.

4.1.2 New data sources and other improvements

The results of the annual Census for Open Sea Fishing for the years 2008 onwards, conducted by the Department of Fisheries and Aquaculture, were integrated for the first time IN this benchmark revision.

The National Accounts Unit also reviewed the method used to quantify any underestimation in output of open sea fishing (N6).

4.2 Revisions in Real estate activities including residential rentals and non-residential rentals

The compilation of Real estate activities was updated using Structural Business Statistics and the 2015 HBS. The revisions in actual residential rentals, imputed rentals and non-residential rentals are provided in table 4.1.

Table 4.1 Revisions in Real estate activities

Revisions (€ 000)	1995	2005	2010	2015	2016	2017	2018	2019
Output	12,502	2,374	103,508	134,288	193,851	278,285	246,863	238,659
Residential rentals	0	0	-70	31,988	38,136	41,543	47,323	55,425
Non-residential rentals	0	0	27,765	39,719	67,416	106,576	104,319	112,111
Imputed rentals dwellings	3,156	-9,620	42,140	22,072	46,652	87,145	49,434	22,229
Imputed rentals garages	9,345	11,994	33,673	40,509	41,648	43,021	45,788	48,894
Intermediate consumption	3,327	8,232	76,078	110,424	140,430	183,954	157,150	133,327
Residential rentals	621	2,522	5,288	27,230	25,778	28,426	35,833	37,542
Non-residential rentals	56	386	3,084	11,234	22,764	20,257	18,789	19,956
Imputed rentals dwellings	411	2,751	57,219	58,967	77,675	117,979	86,394	61,104
Imputed rentals garages	2,240	2,574	10,487	12,992	14,213	17,294	16,134	14,725
Gross value added	9,174	-5,859	27,430	23,865	53,421	94,330	89,714	105,332
Residential rentals	-621	-2,522	-5,358	4,758	12,357	13,117	11,490	17,883
Non-residential rentals	-56	-386	24,681	28,485	44,652	86,319	85,529	92,156
Imputed rentals dwellings	2,745	-12,370	-15,079	-36,895	-31,023	-30,834	-36,959	-38,875
Imputed rentals garages	7,106	9,420	23,185	27,517	27,434	25,728	29,654	34,169

4.2.1 Residential rentals

Actual rentals

The 2015 HBS results were taken on board. Published residential rentals including emphyteusis for 2015 amounted to €65,482,579. Of these €55,019,200 related to main and secondary dwellings, and the rest are rentals paid for garages and emphyteusis.

Top-up to HBS due to new population figures

The 2015 HBS results are based on a population figure which was revised upwards at a later stage⁹. The number of households in HBS 2015 stood at 164,815, whereas the number of households for 2015 was revised upwards to 174,862 – an upward revision of 10,047 households. It was assumed that a proportion of these households live in rented dwellings and residential rentals were adjusted accordingly.

The calculation of intermediate consumption was also revised upwards due to the inclusion of commissions on rentals paid to real estate agents.

⁹ National Statistics Office (2018), 'Population Statistics (Revisions): 2012-2016', News release 022/2018 available at: https://nso.gov.mt/en/News_Releases/View_by_Unit/Unit_C5/Population_and_Migration_Statistics/Documents/2018/News2018_022.pdf

Imputed Rentals

The calculation of imputed rentals was improved in a number of ways:

- The number of owner-occupied dwellings is fully aligned with new updated figures on the number of households.
- Imputed rentals of garages attached and not attached to the dwellings are now being calculated separately.
- Spare room lodgers have been linked to the number of English language students staying at host families rather than the total English language students.
- FISIM has been included in intermediate costs and in the output of imputed rentals.
- Imputed rentals earned by residents owning property abroad are now included in the calculations.

4.2.2 Non-residential rentals

From 2010 onwards, a methodological change was made in the calculation of non-residential rentals. In the past, the Structural Business Statistics (SBS) questionnaire used to provide estimates relating to residential and non-residential rentals. However, these estimates are no longer available. Therefore, a new method, which is still based on SBS and entails thorough analysis of the data at company level, was developed to derive reliable estimates.

4.3 Financial and insurance activities

The financial sector is not covered by NSO surveys. Data from the CBM is obtained for banks, funds and insurances. The rest of the sector is now fully covered by administrative data.

4.3.1 Financial service activities, except insurance and pension funding (NACE 64)

The revisions stemming from deposit money banks (DMBs) relate mainly to FISIM which in the economy is shown as output and thus impacts GVA of NACE 64. However, this is then reallocated as intermediate consumption across industries. The methodological improvements made to FISIM have been documented in section 3.

In case of holding companies, coverage was further improved through administrative data and there was also a change in methodology. A substantial part of the revision observed below is also reallocated as intermediate consumption across industries.

Exhaustiveness figures relate to new companies which were previously not captured. This was possible after the full integration of administrative data in National Accounts estimates for the financial sector.

Revisions are generally higher after 2013 as Financial and insurance activities grow at a faster rate compared to previous years.

Table 4.2 Revisions in Financial service activities, except insurance and pension funding

		Total of which:	DMBs	Holding Co	Trusts	Exhaustiveness
2000	€ 000	-4,062	-12,066	1,582	657	540
2005	€ 000	-22,299	-21,964	17,072	-16,604	1,295
2010	€ 000	36,914	14,936	22,091	-3,311	3,577
2015	€ 000	136,512	69,220	38,618	2,083	27,019
2019	€ 000	243,574	172,361	38,503	2,659	30,049

Holding companies and trusts

A methodological change has been implemented with respect to holding companies and trusts.

Holding companies and trusts are organisations which in theory receive no revenue from the sale of services as their intrinsic nature is such that the only activity that should be carried out is specifically reserved to holding the assets (including equity) of a group or subsidiary. Thus, revenue is typically limited to financial income, i.e. property income (interest and dividend from holding financial assets) rather than any market output. As a result, in principle such entities should generate a negative GVA.

Even if a holding unit records market output, this would generally be the outcome of secondary activities. Even though no commercial or market revenue is earned by such entities, it does not necessarily mean that they do not contribute to any economic output. Thus, to account for these 'group supporting services' generated by these kinds of units, the 'sum of costs' approach has been applied. This methodology is in line with that proposed jointly by the United Nations and the ECB.¹⁰

This derived 'group supporting non-market' output would then be charged back to the industries which are benefiting from these supporting services in a form of 'imputed intermediate costs'.

4.3.2 Insurance, reinsurance and pension funding, except compulsory social security (NACE 65)

Following one of the desk audits made by Eurostat during the ESA 2010 verification cycle, it was pointed out that intermediate consumption should be inclusive of premium supplements related to re-insurance business. Premium supplements which must be allocated to reinsurance business were estimated as follows:

(Reinsurance share of technical reserves *divided by* Total technical reserves) *multiplied by*
Premium supplements calculated for S.1

¹⁰ For further details, see United Nations and European Central Bank (2015), 'Financial Production, Flows and Stocks in the System on National Accounts', Studies in Methods Series F No. 113, Handbook on National Accounting.

The underlying assumption is that the rate of return achieved by domestic insurers is also valid for imported reinsurance business. This adjustment has been carried out across the whole series.

Some other improvements were made after obtaining additional information from some companies as financial statements do not always contain the required level of detail.

4.3.3 Activities auxiliary to financial services and insurance activities (NACE 66)

The revisions in NACE 66 are due to the full integration of administrative data in National Accounts estimates for the financial sector.

As mentioned above, revisions are generally higher after 2013 as Financial and insurance activities continued to grow at a faster rate compared to previous years.

Table 4.3 Revisions in GVA; Activities auxiliary to financial services and insurance activities

	2005	2010	2015	2019
Benchmark 2020	€ 000	€ 000	€ 000	€ 000
66.1	11,558	23,894	56,423	98,640
66.2	9,783	18,911	26,172	31,443
66.3	16,855	30,458	57,802	58,657
	38,197	73,263	140,398	188,740
As at 2020Q1				
66.1	31,293	17,240	39,466	95,604
66.2	10,091	14,415	30,198	40,476
66.3				
	41,384	31,655	69,664	136,080
Revision				
66.1	-19,734	6,654	16,957	3,035
66.2	-307	4,496	-4,026	-9,033
66.3	16,855	30,458	57,802	58,657
	-3,187	41,608	70,733	52,660

4.4 Change in methodology for Other Accommodation Activities

Other accommodation activities were previously based on growth rates derived from tourist expenditure surveys. Output is now being derived directly from tourist expenditure surveys in case of non-residents and the National Tourism Survey (NTS) in case of residents. The NTS which provides information on the last three trips (outbound and domestic), and started to be collected via quarterly CATI surveys as from 2014. The results were integrated in National Accounts as from 2014 and extrapolated backwards until 1995.

The following table refers to the revisions in Output (P.1) and Gross value added (GVA) for other accommodation services following the change in methodology.

Table 4.4 Revisions in Other accommodation activities

		2001	2002	2003	2004	2005	2006	2007	2008
		€ 000	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000
P.1	Output	7,911	3,494	25,188	16,928	14,433	11,887	15,080	14,154
P.2	Intermediate consumption	3,464	1,530	11,027	7,410	7,333	6,089	7,780	7,350
B.1g	Gross value added	4,447	1,964	14,160	9,518	7,100	5,798	7,300	6,804
		2009	2010	2011	2012	2013	2014	2015	2016
		€ 000	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000
P.1	Output	11,804	13,438	11,366	10,288	13,472	14,029	17,249	19,300
P.2	Intermediate consumption	6,583	7,494	6,991	6,592	7,643	8,627	8,390	10,916
B.1g	Gross value added	5,221	5,944	4,375	3,696	5,829	5,403	8,859	8,384

4.5 Renewable energy generated by households

In this benchmark revision, renewable energy generated by households was included in Electricity, gas, steam and air conditioning supply (NACE 35) for the first time. Estimates are compiled from administrative data for years 2010 onwards and are supplemented by data on solar farms from the Structural Business Survey. Output for own final use has been also integrated in HFCE.

Table 4.5 Renewable energy generated by households

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		€ 000	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000	€ 000
P.1	Output <i>at basic prices</i>	7	461	2,446	3,859	9,062	11,464	14,036	15,980	16,096	18,082
P.11	Market output	6	426	2,230	3,501	8,538	10,845	12,814	14,865	14,970	16,817
P.12	Output for own final use	1	36	216	358	524	620	1,222	1,115	1,126	1,265
P.2	Intermediate consumption	1	86	457	721	1,692	2,141	2,621	2,984	3,006	3,376
B.1g	Gross value added	6	375	1,989	3,138	7,370	9,324	11,415	12,996	13,090	14,705

4.6 Integrating Short-term Statistics (STS) indices for Food and beverage service activities

Output for Restaurants and mobile food service activities and beverage service activities was previously derived as the sum of tourist expenditure and resident expenditure on restaurants and bars. While tourist expenditure is directly observed through expenditure surveys on an ongoing basis, expenditure by residents was based on the results of the HBS of 2008 and extrapolated using price statistics with no volume indicator.

With this benchmark revision, resident expenditure was updated with HBS 2015 and the data has been extrapolated backwards to 2009. The extrapolation from 2016 onwards is now based on STS indices.

This change in methodology also addressed an ESA 1995 verification cycle reservation which read: ‘Volume trends should be considered for the extrapolation of restaurant and bars output consumed by residents (applicable to years from 2004 to 2010)’.

Table 4.6 Revisions in Food and beverage service activities

NACE 56 in € 000	2000	2005	2010	2015	2019
Output	7,201	22,008	36,280	74,019	82,257
Intermediate consumption	3,541	12,661	20,381	58,058	47,106
Gross value added	3,660	9,347	15,899	15,961	35,151

5. Derogations

5.1 Derogation on hours worked for 1995 to 1999

Labour Force Survey (LFS) information for 2000, was used to derive the hours worked for 1995 to 1999. Hours worked were transmitted by industry A10 breakdown and A64 in Tables 111 and 303 of the ESA 2010 transmission programme, thus addressing a derogation which expires in 2020.

5.2 Cross classification of fixed assets by industry and by asset (stocks), Balance Sheets for non-financial assets and Consumption of fixed capital

In order to satisfy the requirements of the ESA 2010 transmission programme, Malta is obliged to transmit the Cross classification of fixed assets by industry and by asset (stocks) and Balance Sheets for non-financial assets in Tables 20 and 26 respectively by 2020. The Perpetual Inventory Method (PIM) was to derive stocks and consumption of fixed capital (CFC).

Up to 2020Q1, the PIM was calculated by institutional sectors; Non-financial corporation (S.11), Financial corporations (S.12), General government sector (S.13), Households (S.14) and Non-profit institutions serving households (S.15). This sub-division by sector is particularly important for S.13 and S.15, since GVA and Output are derived using the sum of costs approach. Consequently, CFC has a direct impact on GVA and Output for these sectors. The data derived for stocks and CFC by sector was not detailed enough to satisfy the official legal requirements.

In this benchmark revision, the PIM was applied by industry and by sector at NACE Section A21. To apply the PIM, a detailed time series of GFCF is required.

ESA 2010 compliant GFCF is available in the investment matrices of 1995 to 2013. These are industry by product matrices. These investment matrices were adjusted to be consistent with the investment matrix of 2014, both in terms of asset, as well as industry breakdown (since the investment matrices of 1995-2007 were in NACE Rev.1 and CPA 2002 classifications). The PIM model was used to calculate the stocks and CFC.

GFCF data from years 1954-2003 compiled according to the System of National Accounts (SNA) 1953 methodology was available, however only the total value for Construction and Machinery was available. The investment matrices of 1995 to 2003 were used to estimate the GFCF for 1954 to 1994 by product. The extrapolation prior to 1954 was modified such that average growth rates between 1954 to 1994 were taken into consideration.

The PIM created negative stocks in some instances due to large disposals in GFCF. These cases were identified and computed separately such that stocks are now positive throughout the whole series. Particular attention was given to cases where there was a transfer of assets from S.13 to the private sector.

In order to derive stocks and CFC at replacement prices, the new deflators used for GFCF were applied.

As from this benchmark revision, costs of ownership transfer on non-produced assets, like land, contracts, leases and licences were added to GFCF. These were added to the PIM so as to derive CFC. An average service life of thirty years was applied on land and four years for other non-produced assets.

Table 5.1 Revisions in Consumption of fixed capital

€ 000	1995	1996	1997	1998	1999	2000	2001	2002	2003
S.11 + S.14	31,455	16,853	20,338	2,021	2,011	-4,529	-18,394	-60,458	-28,613
S.12	4,297	3,522	2,487	1,683	747	228	-565	-2,087	-1,433
S.13	4,294	4,704	4,703	5,132	5,335	6,197	7,515	7,249	11,132
S.15	438	483	580	618	697	749	766	441	822
Dwellings	-8,568	-1,790	-3,634	-5,709	-8,127	-10,399	-13,537	-17,136	-19,388
Total	31,917	23,771	24,474	3,744	663	-7,754	-24,215	-71,992	-37,480

€ 000	2004	2005	2006	2007	2008	2009	2010
S.11 + S.14	-25,554	-1,195	-30,642	-19,991	-19,182	-19,325	-23,218
S.12	-1,397	-811	-2,460	-2,862	-3,055	-2,915	-2,288
S.13	12,013	19,778	15,175	21,765	20,404	18,372	13,256
S.15	965	1,498	954	1,491	1,590	1,555	1,254
Dwellings	-21,042	-23,090	-2,871	-8,586	-13,589	-20,890	-22,295
Total	-35,015	-3,821	-19,843	-8,184	-13,831	-23,203	-33,291

€ 000	2011	2012	2013	2014	2015	2016	2017	2018	2019
S.11 + S.14	-39,661	-47,303	-48,245	-36,758	-18,960	-11,879	7,807	20,917	41,651
S.12	-1,958	-1,517	-1,171	-455	1,072	1,099	1,882	1,653	2,613
S.13	9,759	8,779	7,680	12,575	16,328	18,474	20,692	21,625	22,563
S.15	1,017	996	909	1,202	1,500	1,736	2,004	2,238	2,476
Dwellings	-25,540	-24,720	-22,889	-20,622	-19,192	-19,131	-19,865	-18,876	-18,141
Total	-56,383	-63,765	-63,717	-44,059	-19,252	-9,701	12,521	27,558	51,162

Consumption of fixed capital will be transmitted by industry A64 breakdown for the first time at previous year's prices and in chain-linked volumes in Table 301 of the ESA 2010 transmission programme, thus addressing a derogation which expires in 2020.

5.3 The production approach at previous years' prices and chain-linked volumes

For the first time, NSO will publish GVA at basic prices, Taxes and subsidies on products and Consumption of fixed capital at previous year's prices (PYP), and in chain-linked volumes (CLV) by

industry. An additional table will be included in the quarterly GDP news release with the results of the production approach in chain-linked volumes.

GVA at PYP and in CLV is compiled both on a quarterly and annual basis using the single extrapolation and/or single deflation techniques. The system caters for double deflation but for the time being, the methods used are generally the single extrapolation and/or single deflation techniques, given that a price index for intermediate consumption by industry has not yet been developed. However, the implementation of the SUT at previous year's prices will allow the implementation of double deflation.

5.3.1 GVA by industry

GVA by industry is compiled at the following level of detail:

- NACE division level (A88)
- Transmission table level (A64)¹¹
- NACE section level (A21)
- News Release level (A10)¹²

Computations are carried out for the three sectors listed below:

- Private sector (S.11 + S.12 + S.14)
- General government sector (S.13)
- Non-profit institutions serving households sector (S.15)

The method used by the National Accounts unit to compile GDP in volume terms, is the Annual Overlap Technique (AOT). The AOT has the major advantage of keeping consistency between quarterly and annual estimates. Indeed, with the AOT method the sum of the estimates of the four quarters of a year is equal to the annual estimates¹³

The National Accounts unit follows Eurostat's recommendations on price and volume measures whenever possible and seeks alternative solutions when data are unavailable.¹⁴

Price indices (deflators) and volume measures (extrapolators) are compiled directly at previous year's prices with the previous year as the reference year.

Laspeyres volume indices are used to compute extrapolators and Paasche price indices are used to compute deflators. However, at the most disaggregated level, Laspeyres price indices are suitable. Prices indices have been aggregated as Paasche price indices if the weights of the current period were available. In they were not available, aggregated price indices have been compiled as Laspeyres price indices.

¹¹ Transmission table 301

¹² Transmission table 101

¹³ For more details, refer to Eurostat (2013), 'Handbook on Quarterly National Accounts'.

¹⁴ For further details, see Eurostat (2016), 'Handbook on Prices and Volume Measures in National Accounts'.

To derive GVA by industry at PYP several sources are used, with the most important ones listed below. Proxies were developed by the National Accounts Unit in the absence of Services Producer Price Indices (SPPIs) and new volume and price indices were developed for Construction, Financial service activities, except insurance and pension funding of which FISIM, Insurance activities, Rental and leasing activities, Travel agency, tour operator reservation service and related activities, Education, and Gambling and betting activities.

Table 5.2 Source data used to derive GVA by industry at PYP and in CLV

Indices	Unit	Type of index	Base	Periodicity	Availability	Notes	
CCI (NA)	National Accounts	Paasche index	price	Chained	Quarterly	2000 onwards	Based on the number of permits of houses and apartments
CCI (STS)	Short-Term Statistics	Laspeyres index	price	Fixed	Quarterly	2000 onwards	Based on labour cost index and material cost index
GWI	National Accounts	Paasche index	price	Chained	Quarterly	2000 onwards	Overall index for all general government employees
HICP ¹⁵	Price Statistics	Laspeyres index	price	Chained	Monthly	2000 onwards	At COICOP 4-digits level
IPS	Short-Term Statistics	Laspeyres index	volume	Fixed	Monthly	2000 onwards	NACE 45, 46 and 47
LCI	Labour Market	Laspeyres index	price	Chained	Quarterly	2000 onwards	At NACE section level, section B to S ¹⁶
AOP	Agriculture	Laspeyres index	price	Fixed	Quarterly	2000 onwards	NACE 01, 02
PPI	Short-Term Statistics	Laspeyres index	price	Fixed	Monthly	2000 onwards ¹⁷	NACE 08, 10, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 15, 26, 27, 28, 29, 31, 32, 33, 35 and 36
RPPI	Price Statistics	Laspeyres index	price	Chained	Quarterly	2010 onwards	Quality adjustments are not taken into consideration
SPPI	Short-Term Statistics	Laspeyres index	price	Fixed	Quarterly	2010 onwards	NACE 51, 61, 62 and 69

5.3.2 Taxes and subsidies on products

In order to derive GDP in volumes terms from the production approach, taxes and subsidies on products need to be derived at PYP. Taxes and subsidies in volume terms should generally follow the same change in volume as the use they are related to.

Two separate estimates are compiled; one for Value Added Tax (VAT) and another one for Other taxes and subsidies on products. In order to obtain VAT at PYP, an implicit volume index is derived. With regards to Other taxes and subsidies on products, each tax is extrapolated by a specific volume indicator, either explicit or implicit (derived from a price index) in order to obtain the value of the tax at PYP. Then, all taxes at PYP are aggregated and CLV estimates are computed following the methodology mentioned earlier. The same approach is used for subsidies.

¹⁵ HICP at constant taxes is also available from 2005 onwards.

¹⁶ For each NACE industry based on LCI deflators, the indices at section level are weighted by using the weights of the related industry at NACE division.

¹⁷ NACE 15 is available until 2017. NACE 33 is available from 2010 onwards.

GDP in CLV is obtained after adding GVA at PYP with net Taxes and subsidies on products at PYP.

5.4 Improvements in the methodology of previous years' prices and chain-linked volumes in the expenditure approach

Traditionally National Accounts data in volumes terms has been derived using the expenditure approach. This benchmark revision will also incorporate several improvements which had an impact on the whole time series. The most important improvements were done to GFCF, and exports and imports of goods and services.

5.4.1 Final consumption expenditure

The resident consumption abroad deflators are now based on a larger basket of countries (59 countries and the rest of the world). The quarterly expenditure of the current period is now used to weight the overall PYP deflator which is based on the overall HICP of each country adjusted for exchange rate variations. Aggregations by zone are now also available¹⁸.

5.4.2 Gross fixed capital formation

The table below illustrates the improvements made in the compilation of GFCF in volumes.

The construction cost index, developed by the National Accounts [CCI (NA)], is a specific index for Dwellings. The construction cost index derived by the STS unit [CCI (NA)], is based on material and labour cost indices and is applied to Other buildings and structure.

Prior to this benchmark revision, the overall Unit Value Index (UVI) for Machinery and transport equipment (SDG 7), was used to derive Machinery and equipment (AN.113). The UVIs were derived at 8-digit Harmonized System (HS) Code and grouped at SDG level¹⁹, thus it was not possible to derive a separate deflator for each sub-component of Machinery and equipment. The weighted export PPI at 3-digit CPA by zone of EU member states are being used to derive specific deflators for each sub-component.

The SPPI of Computer programming, consultancy and related activities (NACE 62) is now being used to derive Computer software and databases (AN.1173) in volumes.

¹⁸ Euro area, European union (excluding euro area) and Rest of the world.

¹⁹ Food and live animals (SDG 0); Beverages and tobacco (SDG 1); Crude materials, inedible, except fuels (SDG 2); Mineral fuels, lubricants and related materials (SDG 3); Animal and vegetable oils, fats and waxes (SDG 4); Chemicals and related products, n.e.s. (SDG 5); Manufactured goods classified chiefly by material (SDG 6); Machinery and transport equipment (SDG 7); Miscellaneous manufactured articles (SDG 8); Commodities and transactions not classified elsewhere in the SITC (SDG 9)

Table 5.3 Source data used to derive GFCF

P.51	Gross fixed capital formation	Benchmark 2014	Benchmark 2020
AN.111	Dwellings	CCI (NA)	CCI (NA)
AN.112	Other buildings and structure	CCI (NA)	CCI (STS)
AN.113	Machinery and equipment	Overall UVI – SDG7	Derived from sub-components
AN.1131	Transport equipment	Overall UVI – SDG7	Export PPIs of EU countries by zone, HICP, world prices for sea craft and aircraft of CPA 29.1-29.33, 30.1-30.4
AN.1132	ICT equipment	Overall UVI – SDG7	Derived from sub-components
AN.11321	Computer hardware	Overall UVI – SDG7	Export PPIs of EU countries by zone, of CPA 26.2
AN.11322	Telecommunication equipment	Overall UVI – SDG7	Export PPIs of EU countries by zone, of CPA 26.3
AN.1139	Other machinery and equipment	Overall UVI – SDG7	Export PPIs of EU countries by zone, of CPA 25.1-25.4, 25.5-26.6, 28.1-28.4, 28.9, 32.5
AN.115	Cultivated biological resources	Overall HICP	Overall HICP
AN.117	Intellectual property products	Overall HICP	Derived from sub-components
AN.1171	Research and development	Overall HICP	Overall HICP
AN.1173	Computer software and databases	Overall HICP	SPPI of NACE 62
AN.1174	Entertainment, literary or artistic originals	Overall HICP	Overall HICP 09.4 Recreational and cultural services

The implicit deflator for GFCF is now stable across the time series. The decrease in prices in ICT equipment is mainly due to the improvement of the quality of ICT products.

5.4.3 Exports and Import of goods

Unit Value Indices (UVIs) are still used to derive exports and imports of goods in volumes.

Table 5.4: Improvements in the compilation of UVIs

Unit value indices	Benchmark 2014	Benchmark 2020
Type of indices	Laspeyres price indices	Paasche price indices
Level of detail	HS code at 8-digits	HS Code at 8-digits
Level of aggregation	SDG classification (10 levels)	SUT classification (206 products)
Zone adjustment	None	3 zones: Euro area, European union (excluding euro area) and Rest of the World
Price variation adjustment ²⁰	Items whose price doubles (+/-) compared to the base are excluded	Different geometric filters are used at product level to exclude products for which the price variation is too different from the price of the base period.

The UVIs used to be derived at 8-digit HS Code and grouped at SDG level. Items whose price doubles (+/-) compared to the base used to be excluded.

UVIs are still derived at 8-digit HS Code. However, these are now derived by zone and aggregated by CPA using the product breakdown used for SUT. Paasche price indices are now being derived rather than Laspeyres price indices. Different filters are applied to specific products instead of using an overall assumption that if the prices double (+/-) compared to the base, a product is excluded. Such filters respect geometric variations (for instance $80 < P1/P0 < 125$). Geometric filters are used in order to cancel out positive and relative variations. For instance, if a product decreases by 20%, it must increase by 25% to go back to its original prices. While arithmetic filters feature for absolute numbers, geometric filters cater for relative prices [i.e. $(1000\text{EUR} - 20\%) + 25\% = 1000\text{ EUR}$]. If a UVI is missing for a specific zone, it is imputed as follows:

- EUR is missing: EUR = EU
- ROW is missing: ROW=EU
- EU is missing: EU=EURO

Now that UVIs are extracted by zone²¹, exports and imports of goods (fob) and services by Member States of the EU / third countries for main aggregates transmitted to Eurostat in tables 120 and 121 will now display different implicit prices indices for each zone.

²⁰ The adjustment is based on the assumption that a significant price change between the current and the base periods is due to a change in quality rather than a change.

²¹ Zones: *European union (incl. Euro area), Euro area, European union (excl. Euro area), Rest of the World.*

5.4.4 Exports and Import of services

Exports of services were mostly based on specific prices indices obtained from resident enterprises and HICP. Whenever possible, SPPIs produced by the Short-Term Statistics unit have now been introduced.

Imports of services were mostly based on consumer prices for industrial countries as published in the International Financial Statistics (IFS) Yearbook, by the International Monetary Fund (IMF). These indices have now been substituted with SPPIs of other countries which are available by CPA or with HICP of other countries which is available by COICOP. Each COICOP and CPA has been associated with a specific Balance of Payments variable.

Balance of payments data by zone is used to derive exports and imports of services by zone at product level. This will allow the transmission of exports and imports of services by Member States of the EU / third countries for main aggregates transmitted to Eurostat in tables 120 and 121, with different implicit prices indices for each zone.

5.4.5 Future projects

In the coming years the NSO intends to fully integrate each SUT at PYP in the quarterly estimates. For now, SUT 2015 results at PYP have been integrated for HFCE, GFCF, as well as exports and imports of services. The availability of regular SUT at PYP will facilitate this in the future. In the future NSO will need to derive quarterly and annual National Accounts data at PYP and in CLV for 1995 to 1999. Currently, data for these reference years is only available annually and at current prices.

5.5 The balancing process at previous year's prices

The National Accounts unit has developed a balancing process at previous year's prices given that now, GDP at PYP is available both from the production and the expenditure approaches. The choices made for the balancing process are based on the respective strengths and weaknesses of the two approaches.

From the expenditure approach, Final consumption expenditure, Gross capital formation and trade in services are considered reliable. However, trade in goods which mainly rely on UVIs is considered less reliable since UVIs do not take into consideration changes in quality. Moreover, in the case of Malta, some products might not be exchanged on a regular basis. This may lead to the discarding of some products when compiling UVIs.

From the production approach, in absence of a full set of SPPIs, LCIs or SPPIs of other countries are used as proxies and thus industries based on such indices are less reliable.

The final discrepancy at PYP is ultimately spread across all industries based of their relative share in the economy and the accuracy of the deflator used.

6. Conclusion

The work in relation to the implementation of ESA 2010 is by no means complete. Malta, together with other Member States, received several derogations which expired on 1 January 2020. This means that, as from next year, the NSO will embark on several projects to address these derogations and to expand the National Accounts statistics presently being compiled. Malta will also be working to address a number of reservations which arose following the first ESA 2010 verification cycle.

Users should be informed that the GNI Inventory²² currently available on the NSO website describes the sources and methods of the ESA 2010 series as published in September 2014. The GNI Inventory will be updated with the methodological changes presented in this document in the upcoming year.

²² National Statistics Office (2015). Gross National Income Inventory Malta, European System of Accounts 2010. https://nso.gov.mt/en/nso/Sources_and_Methods/Unit_A1/National_Accounts/Documents/GNI_Inventory.pdf