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**Methodology of Quarterly National Accounts
(QNA)
2005 Base**

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**Methodology of Quarterly National Accounts
(QNA)
2005 Base**

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FOREWORD

The National Administrative Department of Statistics (DANE) presents to the interested public “The methodology of the 2005 base Quarterly National Accounts of Colombia”.

Quarterly National Accounts (QNA) aim at describing quarterly the economic situation of a country. Their findings are presented in a synthetic and timely manner, coherent with annual national accounts. They are supported by the series of annual accounts and by short-term data originating in multiple sources of information.

This document intends to provide the users with the required tools to understand and to interpret the Quarterly National Accounts of Colombia. Illustrative examples are included in order to clarify the explanations on each aspect of the methodology.

An important new development of the methodology of the 2005 base, introduced in the annual accounts, and as a consequence in the quarterly accounts as well, is the calculation at 2005 constant prices by chaining. This procedure allows taking into consideration in the measurement of the changes in the volume of the aggregates, the modifications in the structure of the economy, as a result of the changes in the relative values of its components.

INTRODUCTION

There is the need to identify, as soon as they occur, the changes that take place in the economy in the short term. The Quarterly National Accounts (QNA) provide the data necessary for the detection of these changes and inform about the variations of GDP, consumption, exports, imports, and investments, among others, that occurred during the previous quarter. Their results are widely used as synthetic indicators of the economic activity of the country by analysts, politicians, researchers, the academia, the press, the enterprise community and the general public. The changes of these indicators over time and the associated price and volume measurements, make it possible to appreciate the global results of the economy, and therefore, to judge the effect of the economic policy in the short term.

QNA constitute a synthesis of the information of the short-term economic situation, in which basic statistical indicators articulate with the main macroeconomic aggregates. They include the calculation of GDP from the production and the expenditure approaches. In each of these cases, estimations are made at detailed levels of the classification from which aggregate figures are derived.

The conceptual and methodological framework of annual national accounts is used as reference for the QNA. However, QNA show some particularities regarding the forms of calculation, the sources of information and how results are presented. These particularities will be covered in this document.

As a result of the compilation of the new 2005 base of the annual national accounts, the methodology of QNA was updated. As it will be shown, perhaps the main change consists in substituting volume calculations using the prices of a fixed base year by calculations using the chaining method.

The results of this new base were official as of the first quarter of 2010 and since then, the series of quarterly results using 2005 as the base year are being published. The series available at the date of this publication covers the 2000-2011 (quarter IV) period; it includes GDP and its components at current and 2005 constant prices by chaining.

This document presents the methodological aspects and procedures followed by DANE for the calculation of quarterly GDP. The first chapter presents the conceptual framework; the second explains the general process used for the elaboration of the quarterly accounts; chapter three describes the method applied to calculate production by products and activities and how to obtain GDP following the production approach; chapter four describes the method for calculating GDP according to the expenditure approach. Chapter five describes the software application used for the automatic calculation processes and the instruments used for the dissemination of the results and the related documentation. The Annexes present the classifications used, illustrate the procedures for the adjustment of the quarterly magnitudes to the annual level (“benchmarking”) and the seasonal adjustment using the X-12 ARIMA program, the summary of the sources of information in particular for the price indices and the mechanisms followed for quality control.

BACKGROUND

The activities currently developed by DANE in the field of macroeconomic statistics have been defined in the Decree 262 of 2004, which confirmed its responsibility in the compilation of annual and quarterly national accounts, and established among others the following functions:

- To compile annual, quarterly, national, regional and satellite accounts, in order to evaluate economic growth at the national, regional and sectoral levels;
- To process and to adapt the international recommendations to the conditions and particularities of the country;
- To promote the dissemination of the system of synthesis and national accounts, and to train the staff responsible for their production and the users of macroeconomic statistics in their use and analysis;
- To assure the coherence among annual, quarterly, regional and environmental accounts.

Many of these functions already existed in previous legislation that regulated the functions assigned to the different public entities.

The 2005 base system of QNA, purpose of this publication, follows the conceptual guidelines of the previous 1994 and 2000 bases systems of QNA, compiled by DANE, whose publication begun in August 1997 and March 2008 respectively.

The first QNA of Colombia ever compiled corresponded to the 1994 base of national accounts. They included the calculation of GDP (production and expenditure approaches) at current and constant prices. In the production approach the results were broken down into 40 activities; for the expenditure approach the elements were classified according to groups of products. Within the framework of this base, results were obtained for the 1994-2007 period (all quarters included).

As of the first quarter of 2008, the 2000 base series of quarterly accounts was published. This series covered the 2000-2009 period (III quarter). In this base, the conceptual aspects of SNA 1993 already adopted in the 1994 base were maintained and the methodological changes introduced in the 2000 base annual accounts were introduced. Among the latter we find: the method used to measure the production of the Central Bank, the allocation among users of the Financial Intermediation Services Indirectly Measured (FISIM) and the method used to account for the operations of the illegal economy.

In the 2005 base, the conceptual aspects of SNA 1993 adopted in base 2000 remain, but changes regarding the method of calculation of the accounts at constant prices and the processing of the Tax on Financial Movements, among others, are included; additionally, the recommendations of SNA 2008 concerning FISIM were adopted.

The methodological design and the validation of the calculation processes had the support of Statistics Canada, who has been the advisor of the project from its beginning.

1. CONCEPTUAL FRAMEWORK

1.1. OBJECTIVES

1.1.1. General objective

QNA constitute a synthesis of short-term information; they aim at representing in a timely manner, on a quarterly basis, the economic situation of the country, coherent with annual national accounts. Accordingly “QNA should be timely, coherent, accurate, comprehensive, and reasonably detailed”.¹

1.1.2. Specific objectives

From the general purposes of the quarterly accounts, the following specific objectives are derived:

- To present the general economic situation of the country, using synthetic figures organized within a coherent accounting framework;
- To provide a data set that constitutes the source used to follow up the cycle of the economy and to construct economic models;
- To explain, within a sensible level of detail, the evolution of the economic activity through disaggregated information on the evolution of the economic activities as well as of the other aggregates of supply and demand;
- To identify the short term movements of the economy and the turning points of its trend: The quarterly accounts reflect the short term movements and make the identification of the points of inflection of the economy possible, whereas the annual accounts calculate its average evolution, synthesized in an annual growth rate. Nevertheless, in periods of recession or growth, it is necessary to quickly detect the changes of trend that occur in the short term. This is an information that the annual accounts cannot provide;
- To synthesize the information on the short term economic situation: QNA gather and reconclie an important set of short term indicators, for instance the industrial production indices, as well as those on agriculture, construction, price indices and the statistics relating to foreign trade, among others. This simplifies the work of the short-term analysts, who, in the absence of such information, would have to undertake the task of collecting the data and confronting them with other indicators, and obtaining apparently contradictory results in some cases;

¹ IMF Washington, (2001) Quarterly National Accounts Manual. Concepts, Data Sources and Compilation. Paragraph 1.5

- To serve as a guide for the development of the short term statistical system, since the compilation of QNA enables identifying information gaps; providing support for the review and redesign of existing statistical operations and finally, promoting the development of new ones.

1.2 CHARACTERISTICS OF THE QUARTERLY NATIONAL ACCOUNTS AND THEIR BASIC COMPILATION PROCEDURE

1.2.1 General characteristics and International References

“Quarterly National Accounts (QNA) constitute a system of integrated quarterly time series coordinated through an accounting framework”.² QNA adopt the same concepts, principles, definitions and basic structure as the 2005 base annual national accounts, which in turn rely on the concepts and methodologies proposed in SNA 1993 and SNA 2008.

QNA for Colombia were compiled following the recommendations of the IMF³.

The scope of QNA is more limited than that of annual accounts since the information available in the short term does not make it possible to implement the complete model. In Colombia, QNA include the calculation of GDP according to the production and expenditure approaches, at current prices and at 2005 constant prices by chaining. They do not include other components of annual accounts such as the calculation of GDP following the income approach nor complete accounts for the institutional sectors.

1.2.2 Basic Procedures

“It is important for QNA to have a time-series character. A time series is defined here as a series of data obtained through measurement of the same concept over time that allows different periods to be compared. Thus, to form a time series, the data have to be comparable over time”⁴.

These time series are “essential for business cycle analysis, for identifying turning points, for trend-cycle analyses, for studying the dynamic relationships between economic variables (in particular, leads and lags), and for forecasting. For these purposes, it is also important that the time series are sufficiently long”⁵. The quarterly series that were constructed for the 2005 base of quarterly accounts initiated with year 2000.

The series of quarterly accounts are constructed from statistical short-term indicators; they use monthly or quarterly figures, produced by DANE, the ministries, the superintendencies, the General Accounting Office, the Central Bank, DIAN, private

² IMF (2001), Quarterly National Accounts Manual, paragraph 1.1

³ It should be mentioned that Colombia signed with IMF the agreement on data dissemination SDDS, on May 1996

⁴ IMF, (2001). QNA Manual paragraph 1.13

⁵ IMF (2001) QNA Manual paragraph 1.14

⁵ IMF (2001) QNA Manual paragraph 1.14

business federations or associations and private corporations, among others. On the other hand, annual national accounts, besides indicators, use the financial statements of the corporations and annual economic surveys, sources that provide detailed information (reporting, for instance, income and expenditure of the institutional sectors) but are available only on an annual basis, and with a certain delay. These are complemented with adjustments for production chains and data on employment. The short-term surveys do not investigate all these variables.

These differences on the characteristics of the information used might explain why the changes described in the annual accounts differ from those obtained from the corresponding quarterly statistical indicators. This is the case, for example, of the indicator of evolution of the manufacturing production; in the quarterly accounts it is derived from the Monthly Manufacturing Survey (MMM) whose reference framework is the Manufacturing Annual Survey (EAM)⁶. The annual accounts use several complementing sources besides the EAM, which generates differences with the quarterly source. The differences are more noticeable in those industrial categories where small businesses are important.

Therefore, the use of indicators to determine the evolution of the variables of the quarterly accounts requires the application of benchmarking, a statistical procedure that enables the adjustment of the quarterly estimates to the figures of annual accounts.

Another aspect that has to be taken into consideration in QNA is the effect generated by seasonal patterns. That is the case of many agricultural products, which production concentrates in a particular period of the year, a situation that also affects their prices. In order to study the pattern of change of the economy beyond the seasonal effects, the quarterly accounts, at current and constant prices are corrected for seasonal variations, using the X-12 ARIMA procedure. Working with seasonally adjusted series, the change from one quarter to the previous one reflects exclusively the actual economic behavior of the economy in that quarter.

The statistical procedures used for the adjustment to the annual data and the seasonality correction of the series are explained below.

a. Adjustment to the annual data: Benchmarking.

The quarterly series are adjusted to annual accounts (available for past years) using the statistical procedure called “benchmarking”. For the years where national accounts are available (past years), this process adjusts the quarterly calculations to the historical results of the annual accounts. It combines two sources of information on the same variable, one obtained with high frequency, in this case quarterly, and the other one obtained with lower frequency, in this case annually, in such a way that the estimated variable is adjusted to the values obtained with greater coverage and quality but lower frequency.

⁶“EAM is a census of manufacturing establishments with ten or more employees and/or whose value of production is greater than a certain amount.” Methodology of the Annual Manufacturing Survey. EAM-DANE.

“The core problem of benchmarking in a quarterly context is how to align a quarterly time series to annual data while maintaining the quarterly pattern and without creating a discontinuity in the growth rate from the last quarter of one year to the first quarter of the next year. This problem is known as the step problem”.⁷ This “step problem” appears when the quarterly indicator does not grow at the same rate as the annual data of reference, a case that might appear in particular at the beginning of each year since the quarterly values are adjusted to the annual data. For quarters where no annual data are available, i.e. those corresponding to the current year, the procedure projects the series according to the behavior of the indicator used.

It must be noted that whenever a new annual estimation is available (the case of provisional and final data), it is necessary to apply “benchmarking” again to readjust the quarterly series to the new annual data. This occurs at the end of March, each year, when final data for year $n-2$ and preliminary data for year $n-1$ of the national accounts are released.

Annex D presents the “benchmarking” procedure in detail and includes an example.

b. X-12 ARIMA, the statistical procedure for seasonal adjustment

The growth rates, calculated directly from original series, do not always indicate the effective increase or decrease of the economic activity since they may include short-term factors that conceal the medium or long-term economic movements. For example, retail sales vary notoriously in the months of December and January; Christmas drives the sales and then they shrink in the following months. To consider these increases as an improvement of the economic situation could be misleading.

Other elements that distort the measurement of the trend are the number of days and the number of working days in a month, in particular for retail trade and tourism activities. It is not possible to compare directly the economic activity of the months of March and April, because one of them includes the Easter holidays. Depending on the sector, seasonal peaks may appear in different periods with different extent and intensity.

A simple way of analyzing a time series over a period of time, while eliminating the influence of seasonal factors, often consists in comparing the current period with the similar one of the previous year. The difference thus established is called “annual change”. However this method presents several drawbacks such as:

- A high annual growth rate for an economic activity does not necessarily indicate recovery, because this result can be originated by the comparison of a current period with a previous period whose value has been exceptionally low as a result of a particular event.
- The number of working days of a month with respect to the same month of the previous year is not always equal; a phenomenon that is amplified in cases like Easter, period where the festive days may vary indistinctly from March to April.

⁷ IMF (2001) QNA Manual, paragraph 1.27

Nevertheless, there are more sophisticated methods, (such as the one presented here) that allow the analysis of time series through breaking down their sequential movement into the elements that determine their change over time, as follows:

- **Cycle.** It is a movement, in the economic activity, greater than a year, characterized by phases of expansion and recession around the trend. It consists of four phases: recession, depression, recovery and acceleration (or boom).
- **Trend.** The long-term evolution of the phenomenon measured by the series. Thus for example, although the manufacturing production or farming present periods of reduction in the short-term, the tendency in the long-term is to increase, as a result for instance of a greater demand.
- **Seasonality.** It is defined as the set of fluctuations within time periods shorter than a year, which repeat more or less regularly.

The application of the X-12 ARIMA statistical program enables identifying these components as well as the unexplained residual elements when seasonality is isolated from the other sources of variation.

The time series, in which the seasonal effects have been eliminated, are called “seasonally adjusted”; thus, when using seasonally adjusted series, the comparison of a quarter with respect to the previous one reveals strictly the economic behavior of the quarter under study.

DANE’s publications of quarterly GDP provide the public with seasonally adjusted and unadjusted times series.

Annex E presents this procedure in detail and illustrates it with an example.

1.2.3 Contents of the QNA

As it has been said, the QNA system is, in general, more limited in scope than the annual accounts. The system implemented in DANE includes the calculation of GDP from the production and expenditure approaches, at current and 2005 constant prices by chaining. Production is calculated by activities and expenditure by groups of products. (Table 1)

Table 1. Gross Domestic Product from the production and expenditure approaches

Production	Expenditure
$GDP = \sum VA + Tx$	$GDP = FCE + GFCF + \Delta Inv + X - M$
Where; <i>GDP = Gross Domestic Product</i> <i>VA = Value Added of activities at basic prices</i> <i>Tx = Net taxes on products including:</i> <i> Taxes and levies on imports</i> <i> +Nondeductible VAT</i> <i> +Other taxes on products</i> <i> - Subsidies on products</i>	Where; <i>FCE = Final Consumption Expenditure</i> ^a <i>GFCF = Gross Fixed Capital Formation</i> <i>Δ Inv = Change in inventories</i> <i>X = Exports</i> <i>M = Imports</i>

Source; DANE, DSCN

^a Final consumption expenditure includes: Household Final Consumption, General Government Final Consumption and Non-Profit Institutions Serving Households (NPISH) Consumption

The variables are calculated, to the extent possible, at the most detailed level of the QNA classifications; in some activities the estimations are made for individual products and the results are added to reach higher levels (sub-group and group) of aggregation, whereas in other cases the estimations are made directly for the group.

For QNA, a classification of products was defined and derived from the classification used in annual national accounts. This classification includes 113 products, whereas the classification of national accounts considers 369 products; similarly, QNA deal with 53 activities while national accounts include 61. QNA and national accounts both take into account 9 tabulation categories for final presentation purposes. The breakdown for the calculation of the different aggregates is presented in Table 2.

Table 2.- Breakdown used for the calculation of the economic aggregates in Quarterly National Accounts (QNA)

Aggregates	Breakdown
Production	113 products ¹
Value added	53 activities; 9 tabulation categories ^{2,3}
Household final consumption expenditure ⁴	
Products	77 products
- By purpose	12 groups
- By durability	4 groups
General Government final consumption exp.	6 products
Gross fixed capital formation	20 products and 6 types of fixed assets
Exports	45 products
Imports	40 products
Taxes and duties on imports excluding VAT	40 products
Taxes on products excluding VAT	113 products by category of demand
Non deductible value added tax (VAT)	113 products by category of demand
Subsidies on products	113 products
Trade and transport margins	113 products

Source : DANE - DSCN

¹ Refer to Annex A

² Refer to Annex B

³ Refer to Annex C

⁴ Refer to Annex J

Annexes A, B, C and J present the classifications of products, activities, tabulation categories for activities and final consumption used in the compilation of QNA.

1.3. REFORMS INDUCED ON THE OCCASION OF THE 2005 REBASING

With the construction of the new 2005 base of annual national accounts, it was necessary to update the methodology and the system of the quarterly national accounts. Several reasons justified their change, among them the following:

- Update of the annual reference values and adaptation of the classifications;
- Methodological changes and adjustments;
- Improvement of the indicators;
- Update of the software used.

1.3.1 Update of the annual reference values and adaptation of the classifications

The values of the economic variables of the 2005 base annual accounts were updated and the reviewed product and activity classifications were adapted.

1.3.2 Methodological changes and adjustments

In the calculation of the 2005 base national accounts, the method used until the 2000 base for the calculation of the accounts at constant prices was changed; this change followed the international recommendation and consisted of calculating the accounts in volume by chaining the volume and price indices with the previous year indices, both at the level of product and at the aggregate level of the different items of supply and use.^{8 9}

The following methodological changes were also introduced:

- The adoption of the civil year instead of the agricultural year for the measurements in agriculture;
- The adoption of the method recommended by SNA 2008 for the calculation of the Financial Intermediation Services Indirectly Measured (FISIM);
- The treatment of the Tax on Financial Movements (GMF) as a tax on products and not as a tax on income and wealth;
- The improvement of the methodology and procedures for the calculation of household final consumption expenditure and gross fixed capital formation (GFCF).

1.3.3 Improvement of the indicators

These improvements include in particular:

- The use of new sources of information for the activities of communications, restaurants, hotels, business services, cinema, radio and television;
- Extension of the sample of entities whose information is used in the calculation of the activities of the general government sector and to establish its evolution;
- Adjustment of the calculation of the construction of residential buildings; the information is now presented by cities, type of dwelling and socio-economic stratum; additionally, the number of cities covered by the Census of Constructions was extended;
- Use of new indicators for the calculation of health care services.
- Review of the series of price indices for foreign trade (imports and exports) by products for the 2000-2010 period.

1.3.4 Update of the computer software

As a result of the changes described above, it was necessary to update the computer tools used for the calculation by products and the consolidation of results.

⁸ For more information on the chaining method applied in the 2005 base, refer to DANE "National Accounts, 2005 Base. Methodological changes. Most relevant results". November 2010

⁹ Refer in this document to paragraph 2.2.2 QNA consolidation at 2005 prices by chaining.

2 . PROCESSES TO COMPILE THE QUARTERLY NATIONAL ACCOUNTS (QNA)

The calculation process of QNA is made in two stages: the first one consists in the calculations at the individual products level and the second is the consolidation of the aggregates and the GDP compilation.

The calculation by product follows the QNA classification, and maintains the differentiation between the production and the expenditure domains; the evolution for each one of these elements is established from previously defined basic indicators.

Each economic aggregate is broken down into a given number of products as shown in Table 2.

In the second stage the different aggregates are calculated: Production and intermediate consumption by activities, value added, total imports and exports, household final consumption expenditure according to durability, among others.

The procedure for establishing the aggregated variables of QNA depends on the price systems being used: current or 2005 constant prices by chaining.

2.1. COMPILATION BY PRODUCT

Calculations for each aggregate (production, household final consumption expenditure, gross fixed capital formation, imports and exports) are made by product, according to the breakdown presented in Table 2.

The calculation of the quarterly series by product consists in establishing its evolution from the behavior of an indicator derived from the available basic statistics.

The indicators chosen for each economic variable by product are defined from the analysis of the methodology used in the annual accounts and of the information available, on a monthly or quarterly basis. They have to meet two basic conditions:

- To reproduce the evolution of the values in previous periods, that is, they must present the same evolution as the corresponding variable of the annual accounts;
- They should enable estimating the current period, reflecting the quarterly behavior of the variable under study.

2.1.1. Classes of indicators used

The indicators used are of different nature: they may come from surveys, specialized research or from administrative records available, but should meet the condition that they provide information at the quarterly or monthly level. They are classified as:

1. **Variables calculated from representative samples of a sector:** For example, the Monthly Manufacturing Survey (MMM) reflects the behavior of manufacture; the Monthly Sample of Retail Trade (MMCM) and the survey of Retail Department

Stores and Hypermarkets (GAHM) give indication for a part of household final expenditure and of the retail trade activity, and the Quarterly Services Survey (MTS) provide information for the activities of communications, restaurants, hotels and business services;

2. **Physical Units:** Tons of harvested crops (agriculture); produced barrels (petroleum); giga watts generated (electricity); registered students (education); etc.
3. **Variables generated using special calculations:** The production of financial institutions and that of services of the government are obtained by classifying the items of the financial statements of certain organizations of the sector in terms of national accounts. The production of trade is calculated as the sum of the commercial margins estimated by products and categories of demand. The production of the construction of buildings is calculated from the quarterly Census of Constructions, considering in every period construction actually made.
4. **Variables linked to the behavior of the activities.** This is an indirect method applied to activities where direct information is not available. This is the case, for instance, of the commissions received by real estate companies from dwelling rentals, under the assumption that they follow the same path of growth as rentals do. Similarly, a part of the production of business services is estimated from the production of the sectors that consume them; the transport of freight is calculated from the transportable supply; etc.
5. **Variables obtained by sum of the categories of demand:** it is used for some products, as for instance coffee, banana, flowers, cattle and gold production.

2.1.2. General method of calculation by product

As it has been already explained, the time series by product, concerning economic variables associated with supply and use, are calculated at the most detailed level of the QNA classification, at current and 2005 prices by chaining.

The general procedure consists in projecting the values of the elements of the 2005 base of national accounts using the selected indicators.

Depending on the nature of the available indicator, calculations start at current or at constant prices. Three cases are possible:

- a). Price and volume indicators are available
- b). Value and price indicators are available
- c). Value and volume indicators are available

The following paragraphs describe, as an example, the steps when starting from price and volume indicators:

First, a quarterly series is calculated at constant prices using a volume indicator. Subsequently, a series at current prices is calculated by using an adequately chosen price indicator, and both series are seasonally adjusted. In both cases, and within the

conformation of the series itself, quarterly data are adjusted to the annual data by “benchmarking”.

To illustrate the procedure, product 030201 “Poultry, live” is taken as an example. The volume indicator used is the chicken production in tons, information provided by the National Federation of Poultry Producers (FENAVI). Table 3 presents calculations and results in detail.

a. The volume indicator, chicken production in tons (column 1), is transformed into an index, (quarterly average base 2005 = 100 (column 2)) by dividing the quantity produced in each quarter by the average quarterly production for year 2005.

b. The value of the quarterly production at 2005 constant prices (column 3) is obtained by multiplying the volume indices of column 2 by the quarterly average value of production for year 2005 ($2.584/4 = 646$ thousand million pesos).

c. The value of production at constant prices (column 3) is adjusted by benchmarking to the level of the annual accounts at 2005 constant prices by chaining (column 5), results are presented in column 6. For the quarters where no annual data is available (current year, 2011 in the example), this statistical procedure projects the series in accordance with the quarterly behavior of the original indicator.

d. The series obtained in c) is seasonally adjusted by using the X-12 ARIMA program (column 7).

e. In order to obtain the values at current prices, the quarterly value adjusted to the annual level (column 6), at constant prices (without seasonal adjustment) is multiplied by a price index (base average 2005 =100). In this example, the PPI corresponding to “Products produced and consumed” for product 02122 “Poultry, live” (column 8) is used. The results are shown in column 9.

f. The quarterly series at current prices established in step e), is adjusted to the level of annual accounts (column 11) by benchmarking. The results are shown in column 12.

g. Finally, this series is seasonally adjusted using the X-12 ARIMA program (column 13).

Table 3. Calculation of quarterly production of "Poultry-live", at 2005 constant prices by chaining and at current prices, according to years and quarters

2000 (I-IV)-2011^{Pr} (I-IV) thousand million pesos

Years and quarters	QNA volume indicator (tons) (1)	Volume index Quarterly average 2005=100 (2)	2005 Constant prices by chaining					Current prices					
			Quarterly production value (Annual level 2005) (3)	Annual production value		Production value adjusted to annual level (6)	Seasonal adjusted series (7)	Average price index 2005=100 (8)	Quarterly production value (Annual level 2005) (9)	Annual production value		Production value adjusted to annual level (12)	Seasonal adjusted series (13)
				Annual level 2005 (4)	Annual accounts (5)					Annual level 2005 (10)	Annual accounts (11)		
2000 I	132,109.5	69.3	447			450	468	74.2	334			341	353
II	138,046.7	72.4	468			471	475	74.2	350			358	364
III	145,747.9	76.4	494			498	501	76.3	380			391	392
IV	146,839.7	77.0	497	1906	1921	502	477	77.3	386	1450	1493	403	384
2001 I	135,719.6	71.2	460			466	483	79.9	372			394	407
II	148,252.2	77.7	502			509	514	82.3	419			449	457
III	149,083.4	78.2	505			511	516	83.8	428			459	460
IV	162,531.3	85.2	551	2018	2042	556	529	82.5	458	1677	1790	488	466
2002 I	152,645.8	80.0	517			520	537	83.2	432			454	467
II	155,804.3	81.7	528			530	537	82.7	437			454	464
III	161,782.1	84.8	548			549	555	84.6	464			478	480
IV	178,805.0	93.8	606	2199	2206	607	577	86.9	528	1861	1929	543	518
2003 I	167,100.4	87.6	566			568	585	88	499			514	527
II	161,701.5	84.8	548			551	558	89.5	492			506	517
III	168,776.9	88.5	572			575	581	90.9	522			534	535
IV	180,490.3	94.6	611	2297	2309	615	585	87.6	540	2053	2102	548	523
2004 I	167,771.2	88.0	568			572	587	92.4	528			528	541
II	178,267.1	93.5	604			609	617	93.4	568			563	576
III	175,988.2	92.3	596			600	606	96.4	577			570	573
IV	187,155.8	98.1	634	2402	2419	638	609	98.3	626	2299	2280	619	590
2005 I	180,928.9	94.9	613			615	632	98.7	606			606	624
II	186,780.5	97.9	633			633	642	97.8	618			620	635
III	189,637.3	99.4	642			641	644	98.4	630			631	633

Table 3. Calculation of quarterly production of "Poultry-live", at 2005 constant prices by chaining and at current prices, according to years and quarters

2000 (I-IV)-2011^{Pr} (I-IV) thousand million pesos

Years and quarters	QNA volume indicator (tons) (1)	Volume index Quarterly average 2005=100 (2)	2005 Constant prices by chaining					Current prices					
			Quarterly production value (Annual level 2005) (3)	Annual production value		Production value adjusted to annual level (6)	Seasonal adjusted series (7)	Average price index 2005=100 (8)	Quarterly production value (Annual level 2005) (9)	Annual production value		Production value adjusted to annual level (12)	Seasonal adjusted series (13)
				Annual level 2005 (4)	Annual accounts (5)					Annual level 2005 (10)	Annual accounts (11)		
2006 I	198,761.6	104.2	673			671	690	95.7	641			629	649
II	198,623.6	104.1	673			672	684	97.9	657			637	652
III	218,399.3	114.5	740			739	740	100.2	740			711	710
IV	234,045.5	122.7	793	2879	2875	793	761	99.2	786	2824	2728	751	717
2007 I	211,823.2	111.1	717			718	739	98.7	708			675	695
II	226,876.0	119.0	768			771	783	94.9	731			699	712
III	237,182.2	124.4	803			807	806	91.9	742			717	713
IV	246,462.1	129.2	835	3123	3136	840	808	86.7	727	2908	2805	714	685
2008 I	246,320.9	129.2	834			839	862	89.8	753			756	775
II	255,258.2	133.8	865			871	883	88.1	767			783	795
III	244,898.3	128.4	830			836	836	88.8	742			767	765
IV	264,181.8	138.5	895	3424	3448	902	867	89.5	807	3069	3146	840	811
2009 I	245,751.0	128.9	832			838	861	90.8	760			793	811
II	246,351.5	129.2	834			840	851	91.3	766			801	812
III	256,161.6	134.3	868			875	876	92.8	811			848	847
IV	271,600.1	142.4	920	3454	3480	927	892	91.9	851	3188	3330	888	860
2010p I	255,028.7	133.7	864			870	891	93.2	810			843	858
II	260,879.8	136.8	884			890	903	93.1	827			859	869
III	270,960.9	142.1	918			925	928	90.4	835			866	866
IV	280,073.2	146.9	949	3615	3641	956	919	87.8	839	3311	3439	871	846
2011pr I	261,712.5	137.2	886			892b	911	91.4	814			845	858
II	272,054.4	142.6	922			929b	941	94.4	876			910	921
III	261,162.2	136.9	885			891b	896	93.8	834			866	868
IV	280,069.0	146.9	949	3642 a		956b	920	99.5	950	3474 a		987	961

Source: DANE -DSCN

a. In this example there is not information available for the product "Poultry-live" according to the annual accounts

b. Forecast information using the quarterly variations of the original indicator

P: Provisional

Pr: Preliminary

In order to assess the quality of the volume indicator chosen, the values of the four quarters in every year are added (column 4) and the result is compared with the corresponding value of the annual accounts (column 5). If the differences between the annual growth rates estimated with the quarterly figures and the annual growth rates of the annual accounts fall inside a predetermined range, it means that the chosen indicator is of good quality.

Table 4 presents the comparison of the annual growth rates obtained from the quarterly figures (before the benchmarking adjustment) and those implicit in the annual national accounts for the product "Poultry – live". In this case, the indicator chosen for the QNA is of good quality.

Table 4. Comparison of the annual growth rates implied in the QNA calculations of "Poultry-live" production and the national accounts values at 2005 constant prices by chaining, according to years

2000-2010 ^P				
Thousand million pesos				
Years	Annual production quarterly accounts	Annual growth rate %	Annual production annual accounts	Annual growth rate %
2000	1,906	--	1,921	--
2001	2,018	5.9	2,042	6.3
2002	2,199	9.0	2,206	8.0
2003	2,297	4.5	2,309	4.7
2004	2,402	4.6	2,419	4.8
2005	2,584	7.6	2,584	6.8
2006	2,879	11.4	2,875	11.3
2007	3,123	8.5	3,136	9.1
2008	3,424	9.6	3,448	9.9
2009	3,454	0.9	3,480	0.9
2010 ^P	3,615	4.7	3,641	4.6

Source : DANE - DSCN

^P Provisional

(-) non defined

A similar procedure is applied when the information available are the value and price indicators, or the value and volume indicators.

2.1.3. The price indices series

The estimations of elementary variables in QNA are initially made at current or at constant prices, depending on the information available and the method of calculation of the variables. In both cases price indices are used whether to deflate the series, i.e.,

to transform the information available at current prices into constant prices, or on the contrary, to transform information at constant prices into current prices.

Before performing any process of calculation, at current or constant prices, for the elementary variables of supply or use, a previous step is required to prepare and process the price indices databases.

2.1.3.1 Available sources

The price indexes used are:

- PRODUCER PRICE INDEX (PPI), by category of use:
 - Total domestic supply
 - Produced and consumed products
 - Imported
 - Exported

- CONSUMER PRICE INDEX (CPI)¹⁰ by:
 - Type of expenditure
 - CPI except food
 - CPI except fuel
 - CPI except fuel and utilities

- Implicit price index from the Monthly Manufacturing Survey (MMM)
- Residential Construction Cost Index (ICCV)
- Civil Engineering Construction Cost Index (ICCP)
- Foreign Exchange Rate (TC)
- International Monetary Fund (IMF)¹¹
 - CPI publication for several categories of major advanced economies and emerging and developing economies
 - Commodity price index

- Price indices of the US *Bureau of Labor Statistics*¹²
- Unit value indexes obtained from the databases of foreign trade for imported and exported goods
- Price indices calculated by sectoral staff for the following products¹³:
 - Ores with high content of gold
 - Platinum ore
 - Silver ore
 - Rock salt

¹⁰ The Consumer Price Index CPI is classified by type of expenditure into "group, sub-group, and basic expenditure". To use it in QNA the total CPI is calculated without food and fuel or without fuel and public utilities. This index is used with some goods and services of the classification.

¹¹ IMF produces CPI's from information provided by member countries.

¹² The US Bureau of Economic Analysis develops price indices for imported and exported goods, used for the calculations of foreign trade.

¹³ Price indices built by DANE-DSCN, from sources on costs, fares, etc.

- Sea salt
- Emeralds and other precious and semiprecious stones
- Milled or green coffee
- Precious metals and metals plated with precious metals
- Generated electrical energy
- Residential and non-residential constructions
- Leasing of equipment (with operator) for construction or demolition.
- FISIM for production, imports, intermediate consumption, final consumption and exports
- Social insurance services on health and professional risks
- Indices of the general government aggregates: compensation of employees, intermediate consumption and GFCF
- International Long Distance calls
- National Long Distance calls

Annex F presents the price indices by product used for estimating production, imports and exports.

2.1.3.2 Combining two or more price indices for a product of the QNA classification.

In some cases a product of the QNA product classification is considered as single or “elementary”, although it is a combination of two or more products of the annual accounts (or of two or more products considered as different in the sources of information available). In these cases a weighted average price index is calculated from the price indices of each product, using the 2005 base year weights.

Table 5 illustrates the process followed in order to obtain a quarterly weighted average price index for the production of 020303 “Other fruits”, from those of two products of the annual national accounts: 020303 “Orange, lemon, mandarin and other citric (grapefruit, tangelo, etc.)” and 020399 “Other fresh fruits and nuts n.e.c. (grapes, pineapple, mango, passion fruit, etc.)”.

The PPI of “produced and consumed products” for product 01320 “fresh or dry citric Fruits” and product 01340 “Other fresh fruits” are used.

In order to combine both indices quarterly, the steps to be followed are:

1. For each one of the price indices of the products (called now A and B), the series of monthly indices are converted into series of quarterly indices using arithmetic averages (if the available information is presented on a monthly base).¹⁴
2. These two series are transformed into quarterly series base 2005=100, by dividing each one of the elements by the quarterly average of year 2005.

¹⁴ Annex F.

3. The weighted average of the quarterly series previously calculated (step 2) is obtained, using as weights the production shares in base year 2005; in this example, the product A had a share of **32,82%** and product B a share of **67,18%** of the total value of the aggregated product.

When the quarterly average base of this compound price index is not equal to 100 for base year 2005, the series is readjusted proportionally so that this value becomes 100.

The results are shown in Table 5 below.

Table 5. Example of price indices weighting for 020303 "Other fruits"
2000 (qtr i-iv)- 2011^{Pr} (qtr i-iv)

Years and quarters	Original quarterly price index (Step1)		Series with average for year 2005 = 100 (Step 2)		Composite price index (2005=100) (Step 3)	
	Product A	Product B	Product A:	Product B:	Product QNA *	
	1	2	3	4	5	
2000	I	50.9	71.7	59.4	75.4	70.2
	II	58.5	74.7	68.2	78.5	75.1
	III	63.0	72.6	73.4	76.3	75.4
	IV	48.2	58.7	56.2	61.8	59.9
2001	I	62.3	63.2	72.6	66.5	68.5
	II	63.4	77.6	73.9	81.6	79.1
	III	60.7	83.4	70.7	87.7	82.1
	IV	50.5	79.9	58.8	84.0	75.8
2002	I	60.9	90.2	71.0	94.9	87.0
	II	68.5	96.8	79.8	101.8	94.6
	III	68.1	100.8	79.4	106.0	97.3
	IV	65.9	83.0	76.9	87.3	83.9
2003	I	74.4	87.4	86.7	91.9	90.2
	II	75.3	88.1	87.8	92.6	91.0
	III	67.4	75.0	78.6	78.8	78.8
	IV	68.8	66.6	80.2	70.1	73.4
2004	I	72.0	75.8	83.9	79.8	81.1
	II	76.7	92.0	89.3	96.8	94.3
	III	83.5	91.3	97.3	96.0	96.4
	IV	79.5	83.3	92.7	87.6	89.3
2005	I	83.4	93.9	97.2	98.7	98.2
	II	83.1	97.3	96.9	102.3	100.5
	III	87.4	99.0	101.9	104.2	103.4
	IV	89.3	90.1	104.1	94.8	97.8
2006	I	94.1	93.4	109.7	98.3	102.0
	II	90.5	106.1	105.5	111.6	109.6
	III	94.2	106.8	109.8	112.4	111.5
	IV	105.6	100.8	123.0	106.0	111.6
2007	I	134.3	110.2	156.5	115.9	129.2
	II	129.6	113.9	151.0	119.8	130.0
	III	106.3	102.6	123.9	107.9	113.2
	IV	126.1	104.2	147.0	109.7	121.9
2008	I	145.9	111.4	170.0	117.2	134.5
	II	132.0	103.7	153.9	109.1	123.8
	III	111.2	109.6	129.6	115.2	120.0
	IV	126.6	116.8	147.6	122.9	131.0
2009	I	165.3	129.5	192.7	136.2	154.8
	II	172.0	124.2	200.5	130.6	153.5
	III	156.8	125.8	182.7	132.3	148.9
	IV	147.0	109.2	171.3	114.8	133.4
2010 ^P	I	150.9	112.9	175.9	118.7	137.5
	II	138.2	126.4	161.0	132.9	142.1
	III	88.5	112.7	103.2	118.5	113.5
	IV	132.4	109.0	154.3	114.6	127.7
2011 ^{Pr}	I	190.6	137.0	222.2	144.1	169.7
	II	199.7	142.6	232.7	150.0	177.2
	III	169.7	155.4	197.8	163.4	174.7
	IV	173.6	136.5	202.3	143.6	162.9

Source : DANE-DSCN

Column (5) = 0,3782 X Column (3) + 0,6718 X Column (4)

P: provisional

Pr: preliminary

2.2 COMPILATION OF AGGREGATES

From the time series of the economic variables by product that were established in the previous phase, it is possible to establish the time series of the aggregates.

The objective is to assess global GDP according to the production and the expenditure approaches and to reconcile these two perspectives through a critical analysis of its components (which will be developed in Section 2.3).

In the production approach, the value added by activity is calculated starting from the production by product. This production by product is transformed into production and intermediate consumption by activity, using the matrices of production and intermediate consumption already existing in annual accounts.

In the expenditure approach, calculations are made for final consumption expenditure, by purpose and durability, gross fixed capital formation by type of asset, and for total imports and exports, among others.

The variables and aggregates at 2005 constant prices by chaining are established from the values for year 2005 at current prices, by chaining the indexes calculated at previous year's prices and not by adding or subtracting variables. Due to this particularity, the procedures used for the calculations at current prices or at 2005 constant prices by chaining are different. Sections 2.2.1 and 2.2.2 present each of them respectively.

2.2.1. QNA aggregates at current prices

2.2.1.1 Assessment of GDP and its components following the production approach

Within the production approach the following calculations are made:

- a). Production by activity;
- b). Intermediate consumption by activity;
- c). Value added by activity, by activity tabulation category and for the whole economy;
- d). Taxes less subsidies on production

With these components it is possible to estimate GDP.

- a). **Calculation of production by activity.** To compile production by activity it is necessary to start from the quarterly series of production by product¹⁵, adjusted to the annual level, obtained in the first stage of the process (Section 2.1.2). These series are distributed each quarter among the activities by means of the structure of the production matrix of the annual accounts for the corresponding

¹⁵ That is at the level of the 113 products of the QNA product classification

year. The production of each activity is obtained by adding its components. In the cases when annual accounts are not available, the structure of the last compiled matrix is applied. For a better understanding of the procedure followed, refer to Annex N.

The quarterly production by activity is adjusted to the values of the corresponding annual accounts (by benchmarking) and subsequently, the corresponding quarterly series are seasonally adjusted.

b) Calculation of Intermediate Consumption (IC) by activity

b.1. Quarters in which annual data are available

Once the production by activity has been adjusted to the annual level, the intermediate consumption of the activity is estimated by multiplying the value of the quarterly production of the activity (j) in year (n) by the total technical coefficients of the activity ($TC_{[j], n}$) of the annual accounts. The same coefficient is used for the 4 quarters of a year.

By definition, the total technical coefficient is:

$$TC(j)_n = \frac{IC_{cp}(j)_n}{P_{cp}(j)_n}$$

Where:

$TC_{[j], n}$ = Total technical coefficient of activity j in year n

$IC_{[j], n}$ = Total intermediate consumption of activity j in year n

$P_{[j], n}$ = Total production of activity j in year n

cp = Current prices

$(j)_n$ = Activity j year n

Therefore, the total intermediate consumption of activity j is calculated as

$$IC_{cp[j], n} = P_{cp[j], n} \times TC_{cp[j], n}$$

b.2 Quarters where annual data are not available

For the quarters of the current years, for which annual data are not available, the total technical coefficients ($TC_{(j)}$), are estimated from the intermediate consumption matrix of the annual accounts of the last available year. Nevertheless this matrix is projected, in order to take into account the differences in the prices growth rate of both production and inputs between two consecutive years.

The procedure is developed in two stages. The first one consists in estimating an intermediate consumption matrix for year $n+1$ at prices of year n (last year available in annual accounts), by multiplying the matrix of intermediate consumption of year n at current prices by a vector of volume indices of production of the activities of year $n+1$ as compared to year n . This means that as a first approximation, an assumption is made that the technical coefficients at constant prices are unchanged for two consecutive years. Refer to Annex N.

$$M ICkp_{(n+1/n)} = M ICcp_{(n)} * V Ind vol Pr_{(n+1/n)}$$

Where:

$M ICkp_{(n+1/n)}$ = Matrix of annual intermediate consumption for year $(n+1)$ at year n prices

$M ICcp_{(n)}$ = Matrix of annual intermediate consumption for year n at current prices.

$V Ind vol Pr_{(n+1/n)}$ = Vector of volume indices of production for year $(n+1)$ with respect to year n , by activity

In the second step the IC matrix for year $(n+1)$ at current prices is obtained by multiplying the values of intermediate consumption of the previous matrix of IC for year $(n+1)$ at year n 's prices (already established in step 1) by the vector of price indices¹⁶ of IC products of year $(n+1)$ with respect to year n . Refer to Annex N.

$$MICcp_{(n+1)} = M ICkp_{(n+1/n)} * V Ind prec CI Prod_{(n+1/n)}$$

Where:

$M ICcp_{(n+1)}$ = Matrix of annual intermediate consumption for year $(n+1)$ at current prices

$M ICkp_{(n+1)/n}$ = Matrix of annual intermediate consumption for year $(n+1)$ at year n prices

$V_Ind prec CI Prod_{(n+1)}$ = Vector of price indices of year $(n+1)$ with respect to year n for intermediate consumption products

The last matrix provides the total intermediate consumption of each activity corresponding to the value of its production. Finally, by combining the results of the estimates of intermediate consumption and of production by activity it is

¹⁶ A price index is defined for each Intermediate Consumption product. It may be PPI, CPI, ICCV among others (refer to Section 2.1.3)

possible to compute the total technical coefficient of intermediate consumption for a given activity in year $(n+1)$.

$$TC_{(j)n+1} = \frac{IC_{pc(j)n+1}}{P_{pc(j)n+1}}$$

c) Calculation of Value Added (VA) by activity, tabulation category and total value added

Finally, for each quarter, the VA by activity, at current prices is obtained as the difference between the value of production and that of total intermediate consumption of the activity at current prices:

$$VA_{cp(j)} = P_{cp(j)} - IC_{cp(j)}$$

Where:

$VA_{cp(j)}$ = Value added at current prices of activity (j)

$P_{cp(j)}$ = Production at current prices of activity (j)

$IC_{cp(j)}$ = Intermediate Consumption at current prices of activity (j)

The VA for tabulation categories¹⁷ and for the economy as a whole is obtained by adding the value added of the activities belonging to each category.

Category VA = \sum VA of the activities belonging to the category

VA total = \sum VA for all activities

d) Calculation of Gross Domestic Product at current prices following the production approach

It is calculated as the sum of the VA at current prices of all the activities plus the taxes on products, the duties and taxes on imports (other than VAT), the non-deductible VAT less subsidies at current prices (T')¹⁸

$$GDP_{current} = \sum VA_{current} + T'_{current}$$

2.2.1.2. Calculation of GDP following the expenditure approach

It is obtained by calculating, in an independent manner, each of the elements and adding them up at the end, thus:

¹⁷ Refer to Annex C

¹⁸ The procedure for estimating taxes less subsidies on products, at current and constant prices is explained in Section 2.2.3.

$$GDP_{Expenditure} = HFCE + GFCE + GFCF + \Delta Inv + X - M$$

Where:

HFCE = Household Final Consumption Expenditure

GFCE = Government Final Consumption Expenditure (In QNA, this item also includes the final consumption of non-profit institutions serving households, NPISH)

GFCF = Gross fixed capital formation

ΔInv = Change in Inventories

X = Exports of goods and services

M = Imports of goods and services

Each variable of the expenditure approach is calculated by product, according to the method that is explained in Chapter 4, and along the following steps:

- Calculation of the elements of demand by products, at current or constant prices, according to the nature of the indicator available, by applying the method described in Section 2.1.2.

In the case of imports and exports, it should start from the values at current or constant prices, established according to the method explained in section 4.3

- The values calculated for each element are adjusted to the annual data by "Benchmarking", the series are seasonally adjusted and the results are aggregated.

2.2.2 Calculation of QNA aggregates at 2005 constant prices by chaining

The use in the QNA of the chained volume indices has the advantage of using, as year to year weights, the value structure of the previous year, which takes into account the changes in the relative values, a characteristic that becomes particularly relevant when the values of certain products within a group evolve differently from the rest of products in the group. This is, for instance, the case of petroleum, coal and gold, in certain periods, or the case of construction, in which the general building construction and the civil engineering works follow very different patterns of evolution.

The value at 2005 constant prices by chaining, for each of the variables of the system, is obtained by successively multiplying its value in 2005 by the volume indices of a year in relation to the immediately previous one for this same variable.

However, as a result of the application of this method, the value at 2005 constant prices by chaining of any composite variable is no longer the sum of its parts, because each aggregate and each component evolves according to its own chained indicators, that is to say that the additivity property is lost. Therefore, at 2005 constant prices by chaining, it is not possible to obtain the value of the composite variables as the sum of its components; thus, the value added at constant prices is no longer the difference between the value of production at constant prices and the value of the intermediate

consumption at constant prices; the production of the tabulation category of activities is no longer the sum of the production of its constitutive activities; total GDP calculated by chaining is different from the one obtained as the sum of the value added in the different activities and the taxes on products, etc.

Nevertheless, for each aggregate, the sum (or the difference) of its elements will be taken as the indicator of its evolution at constant prices by chaining.

2.2.2.1 Techniques for quarterly chaining

The IMF Manual of Quarterly Accounts presents two techniques for annual chaining of quarterly accounts: the one-quarter overlap and the annual overlap. Each of the two methods has its advantages and disadvantages.

a) The one-quarter overlap technique has the advantage of providing a smoother transition with respect to each connection of the series, in contrast with the technique of annual overlap, which can introduce a step. In contrast, it has the drawback that the data aggregates do not correspond to the annual data, which implies an additional process (“benchmarking”) to eliminate any resulting discrepancy between the quarterly data and the corresponding annual data.

b) The annual overlap technique, “may be more practical for Laspeyres type volume measures in national accounts because it results in data that aggregate exactly to the corresponding direct annual index”.¹⁹

SNA 1993 and SNA 2008 recommend performing the chaining annually, i.e. applying the annual overlap; they do not advise performing it with a lower frequency. This is due to short-term volatility in relative prices (caused by seasonal effects and other factors). “The purpose of chain-linking is to take into account long-term trends in changes in relative prices, not temporary short-term variations”²⁰.

Therefore, in the 2005 base QNA of Colombia, the annual overlap technique was adopted. With this method the estimates of every quarter of a year (*n*) are carried out at average weighted prices of year (*n-1*). The quarterly Laspeyres volume index at prices of the previous year is given by:

$$LQ_{(n-1) \rightarrow (t,n)} = \frac{\sum_i \bar{p}_{i,(n-1)} * q_{i,(t,n)}}{\sum_i \bar{p}_{i,(n-1)} * \bar{q}_{i,(n-1)}} = \sum_i \frac{q_{i,(t,n)}}{\bar{q}_{i,(t,n-1)}} * \omega_{i,(n-1)}$$

Where:

$\bar{p}_{i,(n-1)}$: *Weighted average price of item i (weights are quantities), in the quarters of the year n-1*

¹⁹ QNA Manual, Concepts, Data Sources, and Compilation, IMF paragraph 9.39

²⁰ QNA Manual, Concepts, Data Sources, and Compilation, IMF paragraph 9.32

$q_{i,(t,n)}$: Quantity of item i in the quarter t of year n

$\bar{q}_{i,(n-1)}$: Arithmetic mean of the quantities of item i for the quarters of year $n-1$

$\omega_{i,(n-1)}$: Weight in the base year, i.e. the share of the value of item i in the total value at year $(n-1)$ current prices

- **Chained Series.** The quarterly volume measures corresponding to each year are chained, forming congruent, long-term, time series; the result constitutes a annually chained quarterly Laspeyres type index .

$$CI_{0 \rightarrow t} = I_0 \xrightarrow{*} I_1 \xrightarrow{*} I_2 \xrightarrow{*} I_3 \xrightarrow{*} \dots \xrightarrow{*} I_{(t-1) \rightarrow t} \equiv \prod_{\tau=1}^t I_{(t-1) \rightarrow \tau}$$

Where $I_{t-1 \rightarrow \tau}$, corresponds to a price or volume index measuring the change between the previous period (base) and the present one.

2.2.2.2 Quarterly chaining: the general method

As it was just mentioned, the annual overlap technique has been selected. For each aggregate, the sum (or the difference) of its elements is taken as the indicator of its evolution at constant prices by chaining.

For the calculation of the accounts at constant prices by chaining, two types of periods are identified, depending upon the availability or lack of annual data:

a) Periods where annual data are available

For these periods an indicator is constructed (by sum or difference of its components), and used to split the chained annual aggregates into quarters. For example, for household consumption expenditure corresponding to food and non-alcoholic beverages (purpose) the volume indicator is the sum of the component products: vegetables, cereals, fruits, eggs, meat, dairy products, sugar, etc.; in the value added by activity, the volume indicator for each activity is the difference between production and intermediate consumption, each one taken at 2005 constant prices by chaining. It must be recalled that due to the chaining method, these sums or these differences are not equal to the “total” variable.

The quarterly indicators are applied to the 2005 value and the resulting series is adjusted to the annual series by “benchmarking”.

b) Periods where annual data are not available (current years)

In accordance with the annual overlapping technique, the values of the quarters of year n are calculated at the average prices of year $n-1$, and the resulting indices are chained with the series at 2005 constant prices by chaining, obtained in the previous step.

c) A practical example

In order to illustrate this methodology, an example of the calculation of the value added for the tabulation category relative to “mining” is presented; first for the 2000-2010 period in which annual data are available and then for the quarters of year 2011, projected from the data of the previous periods. This is done with the non-seasonally adjusted quarterly series adjusted to the annual data.

- **2000-2010 period with annual data**

First step.- The quarterly indicator of value added for the 2000-2010 period at 2005 constant prices by chaining is built for each one of the activities; **06** “Extraction of coal, lignite; extraction of peat”; **07** “Extraction of crude petroleum and natural gas; service activities incidental to petroleum and gas extraction; excluding surveying; mining of uranium and thorium ores”; **08** “Mining of metal ores”; **09** “Quarrying of non-metallic minerals”. It is constructed at constant prices as the difference between the production and intermediate consumption of these activities at 2005 constant prices by chaining.

The series correspondint to each activity is transformed into a volume indicator, with quarterly average 2005 = 100 and it is applied to the 2005 value of the annual accounts in order to obtain the value added of the activities. The result is adjusted to the annual accounts level at 2005 constant prices by chaining (Table 6, columns 2 to 5).

Second step,- The calculation of the value added for the tabulation category of mining activities, is developed using as its *indicator* the sum of the value added of the individual activities that compose it, which have already been established in the previous step (Tables 6 and 7, column 1). The series of the indicator is transformed into a volume index with quarterly average 2005 = 100 (Table 7, column 2); This indicator is applied to the value of year 2005 (Table 7, column 3) to estimate the value added at 2005 constant prices by chaining (Table 7, column 4); the results are adjusted to the level of the annual accounts at 2005 constant prices by chaining by “benchmarking” (Table 7, column 6).

Table 6. Value Added (VA) at 2005 prices by chaining, for mining activities and the indicator for the mining tabulation category

2000 (qtr I-IV)-2010^P (qtr I-IV)

Thousand million pesos

Years and quarters	Total activities (1)	06 Coal mining (2)	07	08	09	
			Extraction of crude petroleum and natural gas (3)	Mining of metal ores (4)	Quarrying of non metal ores (5)	
2000	I	5,974	803	4,680	300	191
	II	5,791	737	4,547	313	194
	III	5,676	733	4,354	330	259
	IV	5,623	757	4,310	297	259
2001	I	5,254	817	3,894	348	195
	II	5,087	1,038	3,528	319	202
	III	5,635	963	4,047	374	251
	IV	5,116	701	3,734	404	277
2002	I	5,170	791	3,829	351	199
	II	5,065	695	3,788	351	231
	III	5,301	911	3,691	436	263
	IV	5,234	778	3,730	412	314

Source: DANE, DSCN

Table 6. Value Added (VA) at 2005 prices by chaining, for mining activities and the indicator for the mining tabulation category

2000 (qtr I-IV)-2010^P (qtr I-IV)

Thousand million pesos

Years and quarters	Total activities (1)	06 Coal mining (2)	07	08	09	
			Extraction of crude petroleum and natural gas (3)	Mining of metal ores (4)	Quarrying of non metal ores (5)	
2003	I	4,787	655	3,500	422	210
	II	5,296	1,148	3,413	509	226
	III	5,588	1,326	3,452	550	260
	IV	5,092	832	3,378	555	327
2004	I	4,921	1,029	3,212	460	220
	II	5,132	1,067	3,328	512	225
	III	5,244	1,137	3,354	490	263
	IV	5,249	1,041	3,325	534	349
2005	I	5,139	1,144	3,272	488	235
	II	5,341	1,199	3,367	535	240
	III	5,409	1,253	3,368	501	287
	IV	5,482	1,210	3,374	532	366
2006	I	5,348	1,326	3,296	488	238
	II	5,272	1,152	3,352	495	273
	III	5,594	1,416	3,329	528	321
	IV	5,676	1,437	3,327	506	406
2007	I	5,320	1,370	3,208	466	276
	II	5,438	1,422	3,265	462	289
	III	5,586	1,383	3,352	498	353
	IV	5,954	1,525	3,514	471	444
2008	I	5,741	1,450	3,647	352	292
	II	6,063	1,522	3,749	455	337
	III	6,320	1,518	3,938	471	393
	IV	6,507	1,498	4,058	523	428
2009	I	6,418	1,471	4,125	526	296
	II	6,657	1,491	4,301	500	365
	III	6,857	1,506	4,447	514	390
	IV	7,318	1,479	4,799	587	453
2010 ^P	I	7,359	1,569	4,967	531	292
	II	7,725	1,655	5,191	573	306
	III	7,633	1,478	5,346	507	302
	IV	7,925	1,397	5,557	575	396

Source: DANE, DSCN

^P Provisional

Table 7. Value added calculation. Mining tabulation category (03)

2000 (qtr I-IV)-2010 ^P (qtr I-IV)		thousand million pesos				
Years and quarters	VA summation of the activity as indicator (1)	Volume index 2005 average = 100 (2)	Annual accounts VA year 2005 (3)	VA estimated at 2005 prices by chaining (4)	VA adjusted to annual level Benchmarking (5)	
2000	I	5,974	111.8		5,974	5,854
	II	5,791	108.4		5,791	5,676
	III	5,676	106.2		5,676	5,567
	IV	5,623	105.2		5,623	5,523
2001	I	5,254	98.3		5,254	5,170
	II	5,087	95.2		5,087	5,009
	III	5,635	105.5		5,635	5,545
	IV	5,116	95.8		5,116	5,026
2002	I	5,170	96.8		5,170	5,064
	II	5,065	94.8		5,065	4,959
	III	5,301	99.2		5,301	5,200
	IV	5,234	98.0		5,234	5,158
2003	I	4,787	89.6		4,787	4,751
	II	5,296	99.1		5,296	5,283
	III	5,588	104.6		5,588	5,592
	IV	5,092	95.3		5,092	5,100
2004	I	4,921	92.1		4,921	4,923
	II	5,132	96.1		5,132	5,130
	III	5,244	98.2		5,244	5,240
	IV	5,249	98.2		5,249	5,245
2005	I	5,139	96.2		5,139	5,137
	II	5,341	100.0	21.371	5,341	5,341
	III	5,409	101.2		5,409	5,410
	IV	5,482	102.6		5,482	5,483
2006	I	5,348	100.1		5,348	5,350
	II	5,272	98.7		5,272	5,273
	III	5,594	104.7		5,594	5,594
	IV	5,676	106.2		5,676	5,673
2007	I	5,320	99.6		5,320	5,314
	II	5,438	101.8		5,438	5,425
	III	5,586	104.6		5,586	5,563
	IV	5,954	111.4		5,954	5,915
2008	I	5,741	107.5		5,741	5,686
	II	6,063	113.5		6,063	5,994
	III	6,320	118.3		6,320	6,245
	IV	6,507	121.8		6,507	6,437
2009	I	6,418	120.1		6,418	6,364
	II	6,657	124.6		6,657	6,612
	III	6,857	128.3		6,857	6,815
	IV	7,318	137.0		7,318	7,271
2010 ^P	I	7,359	137.7		7,359	7,304
	II	7,725	144.6		7,725	7,660
	III	7,633	142.9		7,633	7,566
	IV	7,925	148.3		7,925	7,854

Source: DANE - DCSN

^P Provisional

The 2000-2010 series of the value added of the tabulation category corresponding to mining activities, at 2005 prices by chaining is thus obtained.

- **2011 period without annual data**

For the quarters of years without annual data (current years), the growth rates are established at the previous year's prices (2010) and then linked to the values of the series for the 2000-2010 period obtained in the step above, taking care of avoiding the generation of a "step effect" when changing the reference from one year to the other. This procedure is illustrated in the table below, built as a continuation of the example for the mining tabulation category.

At the detailed level of the activities, the values of production and intermediate consumption at 2005 prices by chaining, are calculated for years 2010 and 2011. (Table 8)

Table 8. Production and intermediate consumption for the activities of the mining tabulation category at 2005 prices by chaining

Mining activity	2010 ^P (quarters I-IV)-2011 ^{Pr} (quarters I-IV)							
	2010 ^P (quarters)				2011 ^{Pr} (quarters)			
	I	II	III	IV	I	II	III	IV
	thousand million pesos							
	Production (P 1)							
06 Coal mining	2,095	2,211	1,973	1,866	2,225	2,226	2,503	2,442
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	6,168	6,451	6,645	6,909	7,125	7,710	7,844	8,069
08 Mining of metal ores	835	900	797	903	658	647	830	912
09 Quarrying of non-metal ores	383	401	394	519	331	390	475	594
	Intermediate consumption (P 2)							
06 Coal mining	524	552	494	468	557	558	626	612
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	1,201	1,257	1,294	1,343	1,387	1,501	1,528	1,570
08 Mining of metal ores	304	327	290	330	240	236	302	332
09 Quarrying of non-metal ores	90	95	93	123	78	93	113	140

Source: DANE - DSCN - Previous calculations

^P Provisional

^{Pr} Preliminary

The data of Table 8 are used to obtain the indices for 2011, with the average base 2010 = 100. (Table 9)

Table 9. Volume indices for production and intermediate consumption, activities of the mining tabulation category

Mining tabulation category	2010 ^P (quarters I-IV)-2011 ^{Pr} (quarters I-IV)										
	Annual	2010 ^P (quarters)				2011 ^{Pr} (quarters)				Quarterly average 2010 = 100	
		I	II	III	IV	I	II	III	IV		
Production (P.1)											
06 Coal mining	100.0	102.9	108.6	96.9	91.6	109.3	109.3	122.9	119.9		
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	100.0	94.3	98.6	101.6	105.6	108.9	117.8	119.9	123.3		
08 Mining of metal ores	100.0	97.2	104.8	92.8	105.2	76.6	75.3	96.7	106.2		
09 Quarrying of non-metal ores	100.0	90.3	94.5	92.9	122.3	78.0	91.9	112.0	140.0		
Intermediate Consumption (P.2)											
06 Coal mining	100.0	102.8	108.3	97.0	91.9	109.3	109.5	122.9	120.1		
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	100.0	94.3	98.7	101.6	105.4	108.9	117.8	120.0	123.3		
08 Mining of metal ores	100.0	97.2	104.6	92.7	105.5	76.7	75.5	96.6	106.2		
09 Quarrying of non-metal ores	100.0	89.8	94.8	92.8	122.7	77.8	92.8	112.7	139.7		

Source : DANE - DSCN

^P Provisional

^{Pr} Preliminary

With these data, the values of total production and intermediate consumption for each activity for year 2011 (*n*) are calculated at 2010 constant prices (*n-1*). For so doing, the average current values of year 2010 (*n-1*), (Table 10, Column 1) are used, which are multiplied by the volume indices base quarterly average 2010 = 100, obtained in Table 10. The results are shown in Table 11.

The difference between production and intermediate consumption defines the value added by activities and for the mining tabulation category in 2011, at 2010 constant prices, given that in this case additivity is applicable (Table 11).

Table 10. Quarterly average, production and intermediate consumption, mining activities and tabulation category at constant prices

Activity	2010 ^P (quarters I-IV)					thousand million pesos					
	Quarterly average 2010 (1)	2010 ^P (quarters)				I	II	III	IV		
		I	II	III	IV						
Production by activity (P.1)											
Total production tabulation category	14,625	13,898	14,999	13,693	15,911						
06 Coal mining	2,841	2,787	3,147	2,694	2,737						
07 Extraction of crude petroleum, natural gas, uranium and	9,769	9,302	9,769	9,214	10,790						
08 Mining of metal ores	1,455	1,303	1,550	1,261	1,706						
09 Quarrying of non-metal ores	560	506	533	524	678						
Intermediate consumption (P.2)											
Total intermediate consumption tabulation category	2,883	2,727	2,979	2,683	3,139						
06 Coal mining	693	680	768	657	668						
07 Extraction of crude petroleum, natural gas, uranium and	1,569	1,491	1,566	1,479	1,738						
08 Mining of metal ores	483	432	514	418	566						
09 Quarrying of non-metal ores	138	124	131	129	167						

Source : DANE - DSCN

^P Provisional

Table 11. Production, Intermediate Consumption and Value Added for Mining, tabulation category, year 2011 at 2010 prices, by quarters

Activity	Quarterly average 2010 ^P	2011 ^{Pr} at 2010 ^P prices (quarter)			
		I	II	III	IV
thousand million pesos					
Activity production (P.1)					
Total production tabulation category	14,625	15,294	16,228	17,236	17,783
06 Coal mining	2,841	3,104	3,106	3,492	3,407
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	9,769	10,638	11,511	11,711	12,047
08 Mining of metal ores	1,455	1,115	1,096	1,406	1,545
09 Quarrying of non-metal ores	560	437	515	627	784
Activity intermediate consumption (P.2)					
Total intermediate consumption tabulation category	2,883	2,944	3,100	3,356	3,472
06 Coal mining	693	758	759	851	832
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	1,569	1,709	1,849	1,882	1,934
08 Mining of metal ores	483	371	364	466	513
09 Quarrying of non-metal ores	138	107	128	156	193
Activity value added (B.1)					
Total value added tabulation category	11,742	12,350	13,127	13,881	14,312
06 Coal mining	2,148	2,347	2,347	2,641	2,575
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	8,200	8,929	9,662	9,829	10,113
08 Mining of metal ores	972	744	732	940	1,032
09 Quarrying of non-metal ores	422	330	387	471	591

Source: DANE - DSCN

^P Provisional

^{Pr} Preliminary

From the value added data for year 2011, at 2010 prices (Table 11) the volume indices base previous year 2010 = 100 are calculated, in particular the index corresponding to the mining tabulation category. Table 12 presents these results.

Table 12. Value added volume indices in Mining activities, at year *n-1* prices, by quarters

Mining activity	Average volume index 2010	2011 ^{Pr} (quarters)			
		I	II	III	IV
Quarterly average 2010 ^{Pr} = 100					
Total value added tabulation category	100.0	105.2	111.8	118.2	121.9
06 Coal mining	100.0	109.3	109.3	122.9	119.9
07 Extraction of crude petroleum, natural gas, uranium and	100.0	108.9	117.8	119.9	123.3
08 Mining of metal ores	100.0	76.6	75.3	96.7	106.2
09 Quarrying of non-metal ores	100.0	78.1	91.7	111.7	140.1

Source : DANE -DSCN

^{Pr} Preliminary

Finally, the volume indices of value added of year 2011 at 2010 prices, presented in Table 12, are linked to the 2000 - 2010²¹ series by activity calculated at 2005 prices by chaining for mining activities (Table 6, column 2 to 5) and for the tabulation category (Table 7, Column 5), multiplying the average values for year 2010 at 2005 constant prices by chaining by the volume indices in Table 13. The results are shown in Table 14.

Table 13. Value Added (VA) mining activities, tabulation category, at constant prices by chaining

2009 (quarters I-IV)-2010^P (quarters I-IV)		thousand million pesos							
Mining activity	2009 (quarters)				2010 ^P (quarters)				Average 2010 ^P
	I	II	III	IV	I	II	III	IV	
Total tabulation category	6.364	6.612	6.815	7.271	7.304	7.660	7.566	7.854	7.596
06 Coal mining	1.471	1.491	1.506	1.479	1.569	1.655	1.478	1.397	1.525
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	4.125	4.301	4.447	4.799	4.967	5.191	5.346	5.557	5.265
08 Mining of metal ores	526	500	514	587	531	573	507	575	547
09 Quarrying of non-metal ores	296	365	390	453	292	306	302	396	324

Source : DANE -DSCN

^P Provisional

²¹ For the 2000-2010 period, annual accounts are available.

Table 14. Value added (VA) mining activities and tabulation category at 2005 prices by chaining and discrepancy

Mining activities	2009 (quarters I-IV)-2011 ^{Pr} (quarters I-IV)												thousand million pesos			
	2009 (quarters)				2010 ^P (quarters)				2011 ^{Pr} (quarters)							
	I	II	III	IV	I	II	III	IV	I	II	III	IV				
06 Coal mining	1,471	1,491	1,506	1,479	1,569	1,655	1,478	1,397	1,666	1,666	1,875	1,828				
07 Extraction of crude petroleum, natural gas, uranium and thorium ores	4,125	4,301	4,447	4,799	4,967	5,191	5,346	5,557	5,733	6,204	6,311	6,494				
08 Mining of metal ores	526	500	514	587	531	573	507	575	418	411	528	581				
09 Quarrying of non-metal ores	296	365	390	453	292	306	302	396	253	297	362	454				
GR03 Mining by summation (6)	6,418	6,657	6,857	7,318	7,359	7,725	7,633	7,925	8,071	8,578	9,076	9,356				
GR03 Mining by chaining (7)	6,364	6,612	6,815	7,271	7,304	7,660	7,566	7,854	7,989	8,492	8,980	9,258				
Statistical discrepancy (8)	-54	-45	-42	-47	-55	-65	-67	-71	-82	-86	-96	-98				
% Discrepany over total value added (9)	-0.8	-0.7	-0.6	-0.6	-0.7	-0.8	-0.9	-0.9	-1.0	-1.0	-1.1	-1.0				

Source : DANE - DSCN

^P: Provisional^{Pr}: Preliminary

Note: In this case, the discrepancy is established by comparing the value added for the mining tabulation category by summation of the individual activities (row 6) and the value added estimated by chaining (row 7). In this case the discrepancy is less than 1.1% (rows 8 and 9)

The new method of calculation at 2005 constant prices by chaining reveals a difference with the former fixed base method. The chaining method, respects the individual evolution of the aggregates, but the additivity property disappears. The difference in the results obtained by the two methods (denominated statistical discrepancy) is not to be considered as an error but a controlled difference, generated by the loss of additivity of the process, which is relatively low, broadly speaking less than 1%.

2.2.2.3. Compilation of the Quarterly National Accounts (QNA) at 2005 prices by chaining

As previously mentioned, the series corresponding to the aggregates (applying the chaining methodology, section 2.2.2.2) both for the production approach and for the expenditure approach are established from the results obtained for individual products, at constant prices, adjusted to the annual levels and seasonally adjusted (section 2.1).

a) Calculation of Value Added (VA) for tabulation categories, of total value added and consolidation of GDP (Production approach)

When annual data are available, the aggregates at 2005 constant prices by chaining are calculated by means of an *indicator*, in this case obtained by addition of the components. Thus, the indicator for the calculation of the value added of a tabulation category of activities is equal to the sum of the value added of the respective activities; the indicator for the calculation of total value added will be the sum of the value added of all the activities; the indicator for GDP will be the sum of the value added of all the activities plus the total taxes on products less subsidies.

In each case, the result obtained is interpreted in terms of the 2005 level (2005 level = 100), adjusted to the annual level by chaining and then seasonally adjusted.

In current years, without annual data available, the quarterly values of year n are calculated at previous year $n-1$ prices, and are linked with the series previously calculated.

b) **Gross Domestic Product (Expenditure approach)**

The method used is similar to the one applied to GDP for the production approach, described in the previous paragraphs. In the first stage the elements of expenditure are calculated and the series for the aggregates are established in a second stage.

2.2.3 Calculation of the taxes and subsidies on products at current and 2005 constant prices by chaining.

The different taxes are calculated independently, by products and by components of expenditure at current prices and 2005 constant prices by chaining. These taxes include import duties, non-deductible VAT, other taxes on products, including the Tax on Financial Transactions (GMF) (commonly designated as **4 per thousand**). Subsidies on products are also calculated.

In a later stage, the taxes at current and constant prices are adjusted to the annual accounts data in the periods where they are available. In the other periods where no annual data are available at current prices, they are adjusted to the government tax collection levels, the taxes at constant prices are calculated by the chaining method.

2.2.3.1. Taxes at current prices

- **Non-deductible Value Added Tax (IVA) and other taxes on products, excluding the Tax on Financial Movements (GMF).**

For these taxes, it is generally assumed that each tax varies in the same proportion as the product on which it is levied. For example, if the consumption of automobiles grows 15% in value, the corresponding taxes (VAT and other taxes on products, except GMF), will increase in the same proportion. Therefore, these taxes are calculated at current prices, by projecting the value of year 2005 according to the change of the corresponding demand aggregate.

- **Tax on Financial Movements (GMF- 4 per thousand)**

It is an indirect tax of the national order that is levied on the financial transactions made by the users of the financial system. The amount of the transactions forms the taxable base. This tax is applied according to the use of certain means of payment (withdrawals in cash, by check, by account booklets, debit notes, among others).²²

Although, the generating fact of the GMF is frequently the same as the financial services, it is not possible to associate it with this transaction because its

²² Law 633 of 2000, Paragraph 871

collection is “*ad valorem*”, that is to say, based on the amount of the transaction, while the associated financial services frequently are associated with the number of transactions, thus its evolution is different from that of the production of these services.

GMF at current prices is calculated from the monthly collection carried out by DIAN, value that is distributed among the elements of expenditure: (intermediate consumption, household final consumption expenditure, etc.). Intermediate consumption is calculated considering the transactions made by corporations; the declared net income from the income tax declaration by individuals and corporations was taken as reference, assuming that a very large proportion of these income flows through the financial system and is therefore subject of payment of this tax. The difference with the total collection is attributed to Household Final Consumption Expenditure.

In QNA, the distribution of reported taxes among the elements of expenditure (intermediate and final consumption) is done in the same way as in annual accounts. For quarters where annual data are not available, the last established distribution is used.

- **Duties and taxes on imports**

They are obtained at current prices by forecasting the values calculated in 2005, with the value index of the imports of each product on which they are levied. The total value of this item is calculated as the sum of the taxes on individual products.

- **Subsidies**

They are calculated from the current evolution of production and nominal exports of the products entitled to these benefits.

- **Total taxes**

The total value is obtained as the summation of the previously calculated taxes.

$$Tx\ total = VAT + Other\ taxes + GMF + DM - Sub$$

Where:

VAT = Non-deductible Value Added Tax

Other taxes = Other taxes on products excluding GMF

GMF = Tax on Financial Movements

DM = Duties and taxes on Imports

Sub = Subsidies

The sum of the taxes at current prices, by type of tax, is adjusted to the information provided by DIAN (Collections); whereas the duties on imports are adjusted according to the growth rates of the amounts collected by DIAN (Customs).

2.2.3.2. Taxes at 2005 constant prices by chaining

The same method as that used at current prices is applied: The value of taxes or subsidies estimated for year 2005 is forecasted according to the change in volume of the corresponding aggregate. It is assumed that the tax increases in volume in the same proportion as the product on which it is levied. For example, if the consumption of automobiles grows 5% in volume, the corresponding taxes (VAT and other taxes on products), will increase in the same proportion.

The total of the taxes calculated at 2005 constant prices by chaining for the years 2000-2009, in which annual data are available, are calculated using as *indicator*, the series constructed by summation of taxes less subsidies at 2005 prices by chaining. For the years where no annual data are available, they are obtained firstly by calculating the values of year n at year $n-1$ prices, and chaining, item by item, the volume indices thus obtained with the values of the previous series at 2005 prices by chaining.

- **Tax on Financial Movements (GMF) at constant prices**

It is obtained by deflating each one of the components of demand by a price index. For final consumption, the total CPI is used as a deflator, and for intermediate consumption the implicit deflator of production by activity, weighted according to the importance of the production of the activities. In the periods in which a change of rate appears, for example in 2005 in which the GMF rate went from 3 per thousand to 4 per thousand, the effect was included in the price index. In this case the formula of the index is as follows:

$$PI_{total} = \frac{Deflator}{\left(\frac{Rate_n}{Rate_{n-1}} \right)}$$

For the years where there are no changes in the rate, the denominator is equal to 1, therefore the total price index is equal to the deflator.

- **Implicit price index.**

Considering the taxes at current and 2005 constant prices by chaining, an implicit price index is obtained; it includes the change due to changes in the prices of products on which they are levied and change in the tax rate.

2.3 Comparison of results obtained for GDP according to the production and expenditure approaches

The method of estimation used guarantees, for the annual data, the identity of supply and use of the products at a detailed level of the classification at current prices, as well as the identity of GDP according to the production approach and according to the expenditure approach. Nevertheless these identities are not assured for quarterly periods.

In the process of comparison of the mentioned aggregates in QNA, the purpose is not to reach a complete mathematical identity, as it is the case of annual accounts, but to identify the differences, for instance incompatible trends, and trying to correct them.

Once GDP has been calculated by both approaches (production and expenditure), the results are compared. If there are significant differences, the causes are determined and the variables are recalculated.

It is necessary to recall that with the benchmarking procedure, in which quarterly estimates are systematically adjusted to the annual levels, when those exist, there should be no major differences between supply and demand for quarterly data, when there are no annual references.

The coherence analysis is in principle performed at the level of products, by means of commodity flow balances according to the availability of information, taking into consideration the fact that imports and exports are aggregated and that the estimation of Intermediate Consumption is realized globally. However, the computer software provides estimates of intermediate consumption by products, obtained from the projections of the intermediate consumption matrices. The trends of prices and volume in particular are verified, and their shares are checked.

Nevertheless, this process does not necessarily assure total coherence of the aggregated data. For this reason, a second step is required within the analysis, in which the macroeconomic context is referred to, and the results for the variables are evaluated with all the economic information available. It should be noticed that this type of analysis is restricted to those components in which the quarterly data are indirectly measured due to the limitation of information.

A clear example of this refers to intermediate consumption, obtained under the assumption of constant technical coefficients (within a short term context). Within the reconciliation of results, this is a variable open to adjustment given the lack of quarterly data, an adjustment that might generate changes in the technical coefficients matrix and in the intermediate consumption by product.

There are several causes that explain the differences in the aggregated results. That is precisely the reason for corrective actions: changes in the technical coefficients that have not been considered, modifications in the distribution of demand, etc. This also shows the importance of this last step to maintain the coherence of data.

2.4. Sequence of data editing and reconciliation

The successive results of the quarterly accounts usually undergo modifications from quarter to quarter due to changes in the annual values of reference, change in the seasonal factors and the periodical review of basic information.

- **Changes in the annual values.** As new results in the annual accounts are available, the quarterly values projected using indicators are modified since, as

it was explained, the past quarterly data are adjusted to annual data (“benchmarking”). This situation appears when the first provisional estimation of the year takes place or when the provisional annual results become final ones, and they enter into the publication schedule and are broadly disseminated among the public.

According to the schedule of annual accounts, new data are included at the time of the issuance corresponding to the fourth quarter and that of the whole year as follows:

- Provisional Version of the annual accounts with a one-year lag
- Final Version of the annual accounts with a two-years lag

Thus for example, at the time of publishing the fourth quarter accounts of year 2011, the information of 2010 provisional annual accounts and the 2009 final annual accounts are included in the QNA.

- **Changes in seasonal factors.** The introduction of new data in the quarterly time series brings about modifications in the factors used as seasonal adjustments and therefore generates changes in the results.
- **Adjustments in the figures of the indicators.** The quarterly statistical information, used for short-term evaluation, is subject to updates in which many of the data of the last periods have a provisional character and the sources that provide them may be reviewed.
- **Redefinition in the calculation methods.** Insofar as new indicators appear, that bring about improvements in timeliness, coverage and consistency to the quarterly estimations, they are included in the calculation procedures and replace previously used sources. The same happens when the production of some indicator stops. It is clear that the introduction of new indicators is done under control, with the purpose of not significantly altering the evolutions measured based on previous indicators.

3. METHODOLOGY OF CALCULATION OF GDP BY PRODUCT AND ACTIVITY

This chapter presents the methodology used for the calculation of production by activity and by product. Annex I describes in detail the indicators and the data sources that were used.

3.1. AGRICULTURAL PRODUCTION

The production corresponding to agriculture is calculated quarterly from a sample of twenty-two products. Their production in year 2005 represented 98.6% of the total production of agriculture. The estimations are performed starting at current prices or at 2005 constant prices by chaining, depending on the available indicators. They may correspond to annual, monthly or quarterly production, by components of demand or, when needed, they may be estimated using indirect methods.

The production is registered at the time of the harvest, maintaining the principle of the annual accounts where measurements are associated with the calendar year. This approach has modified the previous system where the crop year was used.

3.1.1. Estimates from annual production

In some products like cassava, banana and fruits, calculations start from the annual production. It is then distributed into quarters using the calendars based on information provided by the Ministry of Agriculture and Rural Development (MADR), which assesses the temporal distribution of the harvests. In the case of cultivated assets such as African palm, sugar cane, fruit trees and coffee plants, the indicator that is used is the value of annual expenses in the unproductive areas that are also submitted to quarterization²³ assuming a uniform distribution of agricultural practices during the year.

The estimations of production for the current year are based on the annual production anticipated by MADR (forecasts) quarterized according to the calendar of the previous year.

Table 15 presents the agricultural calendar used to assign the production of the years 2000-2009 by quarters, which are updated every year in accordance with the information provided by MADR.

²³ Quarterization is defined as the generation of quarterly data for past periods from annual data and quarterly indicators. It encompasses the techniques of interpolation for stock data and temporal distribution for flow data. IMF. Op. cit. footnote 8. .

Table 15. Crop calendar, by products, years and quarters

2000 (quarters I-IV) – 2009^P (quarters I-IV)

Years and quarters	Wheat	Corn	Rice	Sorghum	Barley	Potatoes	Beans	Vegetables	Soybean	Tobacco	Cotton	Percentage			
	Cassava	Plantain	Other fruits	Sugar cane for brown sugar											
Transitory products with biannual production (a)												Permanent crops (b)			
2000 I	72	71	54	71	77	54	51	51	93	44	77	32	23	21	25
II	28	29	46	29	23	46	49	49	7	56	23	18	22	30	25
III	72	62	49	72	66	58	51	48	29	47	62	19	25	23	24
IV	28	38	51	28	34	42	49	52	71	53	38	31	31	26	25
2001 I	71	71	54	71	77	54	51	51	93	44	77	32	23	21	25
II	29	29	46	29	23	46	49	49	7	56	23	18	22	30	25
III	71	61	49	73	66	56	51	49	30	48	64	20	24	23	25
IV	29	39	51	27	34	44	49	51	70	52	36	31	31	26	25
2002 I	73	70	57	69	78	56	54	51	93	46	76	32	23	21	26
II	27	30	43	31	22	44	46	49	7	54	24	17	22	30	24
III	72	62	50	71	67	55	51	48	30	48	65	20	25	23	25
IV	28	38	50	29	33	45	49	52	70	52	35	31	30	26	25
2003 I	71	72	57	69	78	55	53	51	93	45	77	34	22	20	25
II	29	28	43	31	22	45	47	49	7	55	23	18	23	31	25
III	72	62	48	72	66	57	51	48	28	50	65	20	25	23	24
IV	28	38	52	28	34	43	49	52	72	50	35	28	29	26	25
2004 I	72	71	57	69	76	59	54	51	94	45	76	35	22	21	25
II	28	29	43	31	24	41	46	49	6	55	24	17	22	30	25
III	71	63	48	72	66	59	51	48	28	52	65	19	26	23	24
IV	29	37	52	28	34	41	49	52	72	48	35	29	30	26	26
2005 I	73	71	58	69	76	58	53	50	94	43	77	35	22	21	25
II	27	29	42	31	24	42	47	50	6	57	23	18	22	30	25
III	73	61	49	74	65	59	53	47	30	52	65	19	26	23	24
IV	27	39	51	26	35	41	47	53	70	48	35	28	29	26	26

Table 15. Crop calendar, by products, years and quarters

2000 (quarters I-IV) – 2009^P (quarters I-IV)

Years and quarters	Wheat	Corn	Rice	Sorghum	Barley	Potatoes	Beans	Vegetables	Soybean	Tobacco	Cotton	Cassava	Plantain	Other fruits	Percentage Sugar cane for brown sugar
	Transitory products with biannual production (a)											Permanent crops (b)			
2006 I	72	71	58	70	76	59	54	51	93	45	76	35	22	21	25
II	28	29	42	30	24	41	46	49	7	55	24	17	22	30	25
III	72	62	49	72	64	58	51	49	28	52	64	19	26	23	24
IV	28	38	51	28	36	42	49	51	72	48	36	29	29	26	26
2007 I	72	71	57	69	76	59	53	51	92	47	75	35	22	21	25
II	28	29	43	31	24	41	47	49	8	53	25	17	22	30	25
III	72	61	47	72	65	58	52	49	28	51	66	19	26	24	24
IV	28	39	53	28	35	42	48	51	72	49	34	29	30	25	26
2008 I	72	71	57	69	76	59	54	52	95	47	77	35	22	22	25
II	28	29	43	31	24	41	46	48	5	53	23	18	22	29	25
III	71	62	48	72	65	58	50	49	27	50	62	19	26	24	24
IV	29	38	52	28	35	42	50	51	73	50	38	28	30	25	26
2009 ^P I	71	71	57	69	76	58	53	51	93	47	76	35	22	22	25
II	29	29	43	31	24	42	47	49	7	53	24	17	22	29	25
III	71	62	47	72	65	59	51	49	28	51	64	19	26	24	24
IV	29	38	53	28	35	41	49	51	72	49	36	29	30	25	26

Source: Ministry of Agriculture and Rural Development (MADR)

Calculations : DANE - DSCN

a) Transitory products, with two complete crops during the year. They percent is 100% in the semester and 200% in the year.

b) Permanent crops (life period over one year) and several crops throughout the year

3.1.2. Estimates from semester production

For transitory products such as wheat, maize, barley, sorghum, potatoes, red beans, vegetables (tomato, onion, welsh, carrot and beans, among others), soybean and tobacco, the indicators have a semester periodicity; they are quarterized using the temporal distribution of harvests defined by the agricultural calendars (Table 23). In years where annual accounts are not available, calculations are based on forecasted and observed semester production, as follows:

- For quarters I and III the quarterly indicators are taken from the forecasts of the National Agriculture and Cattle Farming Survey (ENA); they are distributed per quarter based on the calendars of the previous year.

*Quarterly Production I year $n = (\text{Production Forecast for 1}^{\text{st}} \text{ semester year } n) * (\text{Quarterly Distribution of the harvest of semester I year } n-1 [\text{table 23}])$*

The production forecast is obtained multiplying the area sown during the second semester year $n-1$ by the expected yields for the first semester of year n (Source ENA).

*Production Forecast for 1st semester year $n = (\text{Sown area } 2^{\text{nd}} \text{ semester year } n-1) * (\text{Expected Yield semester 1 year } n)$*

The yields forecast are derived from ENA.

- For quarters II and IV observed semester data are available, from which the calculated data for quarters I and III are reviewed and II and IV are estimated. The semester data are distributed quarterly with the information of the last calendar available.

3.1.3. Estimates from monthly data

For crops such as cacao, sugarcane and palm seed, production is calculated from indicators in physical units, on a monthly basis.

3.1.4. Estimates from demand

This method is used to calculate production of coffee parchment, flowers and bananas.

In the case of flowers, which main use is the sales to the rest of the world, the indicator used is exports at constant prices²⁴ registered by DIAN.

In the case of parchment coffee, the production in volume is obtained adding intermediate consumption (parchment coffee used by the milling facilities) and the change in inventories. The indicator used to calculate intermediate consumption is the production of green coffee²⁵, which comprises exports, the change in inventories and

²⁴ For more detail on the calculation process of foreign trade at current and 2005 constant prices by chaining refer to paragraph 4.3

²⁵ Parchment coffee is used to produce green coffee. Data are given in green coffee equivalent and are converted back into parchment coffee using a factor of 1,326 (1 kilo of green coffee= 1,326 kilos of parchment coffee).

the purchases of coffee by the roasting industry, information provided by the National Federation of Coffee Growers (FNC).

Parchment coffee production = intermediate consumption + change in inventories

The parchment coffee production at current prices is estimated by transforming each one of the elements of demand into value with a price index constructed from the reference prices of the carga "(125 kilos) of dry parchment coffee "from the National Federation of Coffee Growers (FNC).

For bananas, exports are estimated from data of foreign trade at constant prices (X), whereas household final consumption expenditure and intermediate consumption are calculated by applying the growth rate of the production of "other fruits".

Bananas production = X + intermediate consumption + HFC

To obtain the production at current prices, each component of demand is transformed into value by means of a price index; exports with the unit value price index obtained from the data of foreign trade; intermediate consumption with the PPI of produced and consumed products (code 01311-2); for production of bananas and household final consumption, with the CPI corresponding to bananas (code 1410200).

3.1.5. Indirect estimates

For products with no quarterly indicator, the production is calculated by applying the global growth rate of agricultural production. This method is also used for the services related to agricultural production.

3.2. LIVE ANIMALS AND ANIMAL PRODUCTION

This group includes the breeding of animals (all type of cattle, draught animals, etc.) and products derived from the cattle activity. The production of cattle, pigs, milk, poultry and eggs is calculated quarterly. These products represented 96,1% of the production of the group in 2005.

3.2.1. Bovine Cattle

The quarterly production of bovine cattle is calculated by adding the extraction of cattle assigned to slaughter (intermediate consumption) and exports, the change in the herd due to births and aging of the existing population less the deaths (changes in inventories and gross fixed capital formation).

- **Extraction.** It represents the (registered and unregistered) slaughter of cattle and exports. The extraction indicator is the slaughter of cattle, in kilograms, reported as from year 2010 by DANE's Survey of Cattle Slaughter (ESAG), which is representative of the activity at the national level. This information has been combined with the 2000-2009 series constructed with data on slaughter provided by the National Federation of Cattle Breeders (Fedegan)²⁶ and

²⁶ FEDEGAN as the manager of the National Cattle Fund (FNG) has the information on total (registered) cattle slaughter in number of heads, since 1996 to date, FEDEGAN gathers information from 940 slaughter houses.

adjusted in coverage, with historical indicators of weight and sex produced by DANE's 1990-1997 censuses and the sample of 72 municipalities.

- **Change in inventories.** The quarterly inventories are derived from annual stocks, beginning with the figure calculated for year 2005. The annual inventory of cattle is calculated in heads, by means of a demographic model, that takes into account the increase in population (births and imports), as well as the decrease of it (slaughter, exports and natural deaths). With this model the series of inventories for the 1999-2009 period was calculated. This series has been complemented with data derived from the National Agricultural Survey for 2008 (year of the largest coverage of this survey) that provides information about sex, type or purpose (milk, meat, mixed) and age (0-12 months, 12-24 months, older than 24 months).
- **Inventories by quarters.** The rate of quarterly growth is inferred from the figures of annual inventories, assuming a uniform growth in the period:

Therefore:

$$\text{Final Inventory (n)} = \text{Final Inventory (n-1)} * (1+tt)^4$$

Where *tt* represents the rate of quarterly growth

$$(1 + tt)^4 = (\text{Final Inventory n})/(\text{Final Inventory (n-1)})$$

And:

$$\text{Quarterly Inventory }_k = \text{quarterly Inventory }_{k-1} * (1+tt)$$

- **Gross Fixed Capital Formation (GFCF).** The GFCF is defined as the increase of the stock of cattle that is used continuously in production (cattle for milk, sheep for wool, draught animals, etc.). For quarterly calculations, the indicator of the change in inventories is used.

3.2.2. Rest of products from animal breeding

The rest of products from the cattle activity are calculated from figures on slaughter, and from the slaughter of pigs,²⁷ and data on the monthly production of milk, poultry and eggs.

3.3. PRODUCTS OF FORESTRY, EXTRACTION OF WOOD AND RELATED ACTIVITIES

To calculate the production of forestry, except fuel wood, an indicator is constructed that combines the index of the actual wood production (from the MMM) and the index of paper pulp production calculated from the figures provided by the National Association of Entrepreneurs of Colombia (ANDI).

For fuel wood the indicator used is the total rural population reported by the Integrated Households Survey (GEIH).

²⁷ It is assumed that inventories follow the same pattern as production.

3.4. FISH AND OTHER FISHING PRODUCTS

Given the difficulty to obtain data for this activity, the production at constant prices is calculated indirectly by the combination of two indicators: the indicator for activity ISIC 1512 "Processing and preserving of fish and fish products" (from MMM) with a weight of 60% and the growth of the rural population (weight 40%).

In order to obtain the production at current prices, the constant values are multiplied by the PPI of produced and consumed products corresponding to product 0501 "Fishing and fish production in hatcheries and fish farms".

3.5. OPERATION OF MINES AND QUARRIES

The quarterly production of mines and quarries is calculated from a representative sample of characteristic products of the activity: coal, crude oil, natural gas, gold, silver, platinum, iron, nickel, salt, emeralds and other minerals. These represented 93,1% of the total mining output in 2005.

3.5.1. Coal

The series of coal production was constructed by putting together the annual data provided by the Mineral Energy Planning Unit (UPME) of the Ministry of Mines and Energy for the 2000-2004 period, (converted to quarters using the structure of year 2000), and from year 2005 to date, the production data provided by the main producing companies and, for small companies, by the Colombian Geological and Mining Institute (INGEOMINAS). This scheme makes it possible to obtain a national coverage.

3.5.2. Crude oil

The series of crude oil production was constructed by assembling the series provided by ECOPETROL for years 2000-2007 and the series of registered production from the Ministry of Mining and Energy from 2008 to date.

3.5.3. Natural Gas and other energetic products

The indicator of quarterly natural gas production was constructed by joining series 2000-2005 (in thousand BTUs) of ECOPETROL and the registered production (from 2006 to date) of the Ministry of Mines and Energy, (in thousand cubic feet) by month and field.

3.5.4. Mineral with high contents of gold

The quarterly production of gold is calculated from the components of demand: raw material for the production of precious metals, exports of gold mineral without further processing and change in inventories. In order to calculate the part corresponding to raw material the product 310103 "Precious metal ores and concentrates" is taken as an indicator, where gold is one of the main components²⁸. Exports are obtained from the

²⁸ Paragrah 3.6.3 explains the methodology for the calculations of precious metals.

data of foreign trade. It is assumed that the change in inventories follows the pattern of behavior of production.

3.5.5. Non-metallic ores for industrial uses

The non-metallic ores production is estimated indirectly from the behavior of the activities that use them: 2801 “Basic chemicals” (20% weight), 3001 “Glass and glass products, ceramic ware and refractory products” (25%), 3002 “Cement and other non-mineral products n.e.c.” (55%). The source of data for this calculation is the MMM.

3.6. MANUFACTURING INDUSTRY

The production of the manufacturing industry at current and constant prices, with the exception of the groups: meat, green coffee, brown sugar and precious metals, is calculated from indices of real and nominal production derived from MMM.²⁹

The index is directly applied to the groups for which a strict correspondence between the classification of national accounts and of MMM exists. For the other activities, an index is constructed combining two or more groups, adding the values of production estimated from MMM. Table 16 presents the correspondence between the classification of national accounts and that of MMM.

3.6.1. Production of meat and fish

For this activity, the production includes meat from cattle, pig, poultry and fish. It is estimated using as an indicator the figures of cattle and pig slaughtering, and the production of poultry and fish.

3.6.2. Green Coffee

The production of green coffee is calculated as the sum of the elements of demand: exports, intermediate consumption of coffee by the roasting industry (provided by the National Federation of Coffee Growers), and the change in inventories of green coffee less imports. The indicators for each element of the balance are obtained in quantity; they are multiplied by the prices of the base year³⁰ to establish a volume indicator.

$$P = IC + \text{change in inventories} + X - M$$

3.6.3. Precious metals and metals plated with precious metals

The production of precious metals and metals plated with precious metals is calculated as the sum of the elements of demand:

$$P = IC + X + \text{Change in inventories}$$

²⁹ In 2001 a new design for the MMM was introduced. The classifications for food and garments were disaggregated, making then possible to present the QNA with more detail.

³⁰ The estimate of green coffee production is used as indicator for the estimate of parchment coffee production.

The indicators are: for intermediate consumption, the series of MMM ISIC 3690 “Jewelry Production”; for exports, refined gold exports³¹ and for change in inventories, the increase of gross gold reserves³² (data provided by the Central Bank).

3.7. ELECTRICITY

The production of electricity, including generation, transmission, distribution and commercialization of electrical power, is calculated from the consumption by residential and non-residential users. The information provided by XM, a subsidiary of Interconexión Eléctrica S.A., refers to the total demand of the National Interconnected System. For prices, a weighted index of the CPI of energy for residential users and of the rates used in contracts with non-residential users is constructed.

3.8. GAS DISTRIBUTED THROUGH MAINS

The production in volume is estimated as the sum of the elements of demand, i.e. intermediate consumption and household final consumption expenditure. The non-residential consumption of natural gas and the residential consumption of natural gas are respectively used as indicators. The National Committee of Operation and Natural Gas Consumption (CNO-GAS) provides the data. The consumer price index for gas is used in order to obtain the production at current prices.

³¹ In some years exporting companies report exports as a mining product, in others as pigments, or as industrial products or as metal waste. The refined gold series was built by grouping together the categories of foreign trade classifications employed by exporters to register exports in different years.

³² Excluding revaluation.

Table 16. Correspondence between the classifications of Quarterly Accounts (QNA) and the Monthly Manufacture Sample (MMM)

Quarterly accounts		Economic activity ISIC Rev. 3 AC	
Codes	Description	Codes	Description
100108	Preserves and preparations of meat	1510	Production, processing and preservation of meat and fish
11	Animal and vegetal oils and fats	1520	Elaboration, processing of fruits, legumes and vegetables, oils and fats
12	Dairy products	1580	Manufacture of other food products
1301	Grain milling products, starches and starch products	1530	Manufacture of dairy products
1302	Bakery products and pasta	1540	Manufacture of grain mill products, starches and starch products, and prepared
1401	Milled coffee and other coffee products	1550	Manufacture of bakery products, macaroni, noodles, couscous and similar
1402	Industrial products of coffee	1561	Coffee hulling
150001	Raw cane or beet sugar, refined or not	1580	Manufacture of other food products
18	Beverages	1570	Sugar mills and refineries
19	Tobacco products	1590	Manufacture of beverages.
20	Natural textile fibers; yarn and thread; woven and tufted textile	1600	Manufacture of tobacco products.
21	Textile articles, other than apparel	1720	Weaving of textiles.
22	Knitted and crocheted fabrics; wearing apparel	1740	Manufacture of other textile products
230100	Tanned leather; composition leather	1750	Manufacture of knitted and crocheted fabrics and articles
2302	Leather products and footwear	1800	Manufacture of wearing apparel, dressing and dyeing of fur
24	Products of wood, cork, straw and plaiting materials	1910	Tanning and dressing of leather;
25	Paper products, paperboard and its products	1920	Manufacture of footwear
26	Printed matter and analogous products	1930	Manufacture of travel accessories, luggage, handbags, saddlery and harness
27	Refined petroleum products; nuclear fuel	2020	Manufacture of builder's carpentry and joinery.
2801	Basic Chemicals	2030	Manufacture of builder's carpentry and joinery.
2802	Other chemical products; man-made textile fibers	2090	Manufacture of other products of wood;manufacture of articles of cork, straw and
		2100	Manufacture of paper, paperboard and its products.
		2210	Publishing
		2220	Printing
		2230	Service activities related to printing
		2321	Manufacture of refined petroleum products, inside the refinery
		2322	Manufacture of petroleum derivatives, outside the refinery
		2410	Manufacture of basic chemicals
		2420	Manufacture of other chemical products

Table 16. Correspondence between the classifications of Quarterly Accounts (QNA) and the Monthly Manufacture Sample (MMM)

Quarterly accounts		Economic activity ISIC Rev. 3 AC	
Codes	Description	Codes	Description
29	Rubber and plastic products	2510	Manufacture of rubber Products
		2520	Manufacture of plastics products
3001	Glass and glass products; ceramic ware and refractory products	2610	Manufacture of glass products.
		2691	Products of non-structural, non-refractory ceramic wares
3002	Cement and other non-metallic products ncp	2699	Manufacture of other non-metallic mineral products n.e.c.
310101	Basic iron and steel	2710	Basic Industries of iron and steel.
		2720	Manufacture of basic precious and non-ferrous metals.
3102	Fabricated metal products, except machinery and equipment	2800	Manufacture of fabricated metal products except machinery and equipment
		2910	Manufacture of general purpose machinery.
32	Machinery and equipment	2920	Manufacture of special purpose machinery
		2930	Manufacture of domestic appliances n.e.c.
		3100	Manufacture of electrical machinery and apparatus.
33	Other machinery, electrical machinery and apparatus	3200	Manufacture of radio, television, and communication equipment and apparatus.
		3300	Manufacture of medical, precision, and optical instruments, watches and clocks.
		3410	Manufacture of motor vehicles and their engines.
		3420	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and
34	Transport equipment	3430	Manufacture of parts and accessories (luxuries) for motor vehicles and its engines.
		3500	Manufacture of other transport equipment
35	Furniture	3610	Manufacture of furniture
36	Other manufactured goods ncp	3690	Other manufacturing n.e.c..

Source: DANE -DSCN

3.9. WATER, SEWAGE AND REFUSE DISPOSAL, SANITATION AND OTHER ENVIRONMENTAL PROTECTION SERVICES

These services include water supply, sewage, sanitation and refuse disposal. Their production is calculated from the financial statements of the companies providing those services. These reports are presented quarterly to the General Accounting Office (CGN). The CPI of water distribution, sewage and refuse disposal services is used as a deflator.

3.10. BUILDING AND OTHER CONSTRUCTIONS

This activity consists of construction, modifications and repair of housing as well as constructions for industrial and commercial uses, government services, warehouses, schools, hospitals and hotels, among others.

The general method used for estimating the production of construction is based on the accrual system, which consists of registering the production with the same pattern of progress as a given construction.

Depending on the type of construction and on the availability and quality of the information, different methods are used, according to the following groupings:

- Housing and other constructions in the 15 main urban areas³³
- Housing and other constructions – other urban areas
- Rural Housing
- Housing without construction license
- Housing maintenance, renovations and repairs

The estimates of production of housing and other constructions in the main urban areas are based on the results of DANE's Census of Buildings (CEED). The production in other urban areas is based on the reports of construction licenses.

The production of construction of rural housing and of housing without license is determined indirectly from the evolution of the stock of dwellings and the Housing Construction Cost Index (ICCV).

Lastly, the reforms and repairs are estimated in evolution by taking the stock of dwellings and non-residential construction as volume indicator and the Housing Construction Cost Index as price indicator.

³³ Since the first quarter of 2009, the coverage of the quarterly calculation was extended to include the 15 areas of the Construction Census, generating a new series for the 2009-2010 period, which is linked to the series prior to 2009.

3.10.1 Housing and other construction in the 15 main urban areas

This component of construction is calculated quarterly from the results of the CEED carried out by DANE in the 15 main areas, of which 12 correspond to urban (AU)³⁴ and 3 to metropolitan areas (MA).³⁵

Through the census, an individual follow-up of construction projects is made and in each period information is requested on the area of the project, saleable private areas, common property area, the parking area, value per square meter of the saleable and parking areas and the state of development of the project (according to the corresponding table organized by main items of the construction process) and the degree of advance within a specific item³⁶, among others. These variables are used in the determination of the area constructed for each project in the corresponding period.

The value of the constructed area, expressed in percentage value terms, is determined by comparing the status of a project in a given period with respect to the previous one, taking into account the item of the construction where the project is to be found, the degree of advance within a particular item and the corresponding specific values.

- **Specific values.** They represent the average percentage share of each individual item of the construction in the total corresponding investment. Table 17 presents the specific values for the different types of construction, classified in three groups: Group 1, single-family and multi-family dwellings, Group 2, offices, commercial premises, shopping centers, health centers, hospitals, institutional headquarters and similar, and Group 3, industrial facilities and warehouses.

Table 17. Specific values (%), by type (purpose) of construction, according to main items

Main Item	Type of construction		
	Group 1	Group 2	Group 3
Total investment	100	100	100
Item 1: Site preparation, digging out and foundations	10	13	26
Item 2: Structure and cover	20	27	36
Item 3: Masonry, plasters and waterproof works	15	10	8
Item 4: Finish level 1 ^a	45	43	24
Item 5: Finish level 2 ^b	9	6	5
Item 6: Finish level 3 ^c	1	1	1

Source: DANE - DIMPE. Design of the New Housing Construction Cost Index

^a Finish level 1: Wooden or metallic carpentry, floors, walls and ceilings coverings.

^b Finish level 2: Painting, installation of equipment and carpets, glasses and mirrors, installation of appliances

³⁴ Bogotá, Cali, Barranquilla, Pereira, Armenia, Cartagena, Neiva, Ibagué, Villavicencio, Pasto, Popayán and Manizales.

³⁵ Medellín, Bucaramanga and Cúcuta

³⁶ Defines the progress of a project at the time of the census. Six items were defined: 1. Site preparation, digging and foundations; Item 2. Structure and cover; Item 3. Masonry, plasters and waterproof works; Item 4. Finish Level 1; Item 5. Finish Level 2 and Item 6, Finish Level 3.

The production at current prices is calculated by multiplying the area constructed in the period by the average value³⁷ per square meter of the project. Since this average is determined as the relationship between the total value of the project and the total constructed area (that includes common areas and parking spaces) its value is lower than the price per square meter of the saleable (private) area. Production is estimated independently for each project and then, the results are added.

The production at constant prices is obtained by multiplying the area constructed in the period by the value of the square meter using 2005 year prices. In the case of housing construction, the calculation is performed by socio-economic stratum (segments) of each city and by type of dwelling (single-family and multi-family). For constructions other than housing, calculations are made by classifying the projects by purpose and the results are added. In addition, for non-residential constructions the value of production at constant prices is also estimated by deflating the production at current prices by the ICCV value, and the results of the two methods are averaged. This is performed in order to eliminate the volatility shown in the implicit price index obtained from the CEED results, since it does not only reflect the changes in prices but also the changes in the composition of construction projects by purpose.

3.10.2. Housing and other constructions - Other urban areas

Once the total area of the licensed projects for the whole country is known, the corresponding information is organized into two groups: the first one corresponds to the municipalities covered by the census, and the second constitutes the other urban areas; for the latter, the area constructed in the period is calculated as follows:

In the first place, the area (m²) of the projects whose construction initiates in each period is calculated by applying a two period lag model, where 76% and 51% of the licensed projects of residential and non-residential constructions³⁸ respectively begin in the quarter of approval and the rest begins in the following quarter. Therefore the total area (m²) initiated in each quarter is the result of adding the percentage applied to the licensed area that initiates in the period of study, plus the percentage area of the projects that were licensed during the previous period. Secondly, the production associated with the initiated projects follows a schedule given by the progress curve³⁹ corresponding to each type of construction project.

³⁷ It corresponds to the total value of the project divided by the total constructed area. The constructed area includes the saleable area, the common property area and the parking area. The parking area may be also sold at prices that are normally lower than the price per square meter of the private areas.

³⁸ It is an average result obtained by comparing the total licensed area and the actual area of new projects reported by the CEED in Barranquilla, Bucaramanga, Armenia and Pereira.

³⁹ The progress curve establishes the average time to complete a project; this time varies depending on the type of project and the percentage of the total cost corresponding to each quarter. This tool allows the determination of the values of the construction by quarter.

The production at current prices is obtained by multiplying the area constructed in the period by a reference price, corresponding to the average value of housing and non-residential constructions, in intermediate cities covered by the Census of Construction in base year 2005. The evolution of this price follows the change of the implicit price index for the cities covered by the CEED.

The production at constant prices is calculated by multiplying the area constructed in the period by the average value per square meter in base year 2005.

3.11. CONSTRUCTION OF CIVIL WORKS

This group includes all the activities related to construction, maintenance, improvement and adjustment of infrastructure, such as: bridges, tunnels, highways, railroads, airfields, airports, ports, hydraulic projects, sewage networks, pipes and lines for communication and electrical energy supply, hydroelectric power stations, pipelines, viaducts, aqueducts, roads, parks and sport facilities.

The production of this group of products is calculated using the Investment in Public Works Indicator (IIOC) set up by DANE, which measures the quarterly evolution of the investment in public works, through the behavior of the disbursements made by the contracting institutions to independent contractors.

3.12. TRADE

The aggregate of commercial margins on products constitutes the production of trade. The annual accounts estimate the commercial margins on the basis of a percentage rate for each product and each use. These margins are calculated quarterly by product and by elements of demand, assuming that these margins follow the same trend as intermediate consumption, final consumption expenditure, gross capital formation and exports. The sum of the margins provides the production of trade at current and at constant prices.

3.13 SERVICES OF MAINTENANCE AND REPAIR OF MOTOR VEHICLES. REPAIR OF PERSONAL GOODS AND HOUSEHOLD GOODS

The production of repair services is calculated by combining two indicators: the vehicle stock which is calculated with a two-year lag (70% weight) – this lag corresponds to the delay in obtaining the respective information – and the index of sales of spare parts of automotive and vehicle lubricants derived from the MMCM (Monthly Surveye of Retail Stores) (30% weight).

3.14. ACCOMMODATION SERVICES IN HOTELS, CAMPING SITES AND OTHER NON-PERMANENT FORMS OF ACCOMMODATIONS

Since 2005, the quarterly production at current prices of hotel services is calculated based on the nominal incomes perceived by accommodation services as reported by

DANE's Monthly Sample of Hotels. The results are combined with the quarterly information for the 2000-2004 period, provided by the Colombian Hotels Association (Cotelco)⁴⁰. The price index used to value the production at constant prices is the CPI corresponding to tourism.

3.15 FOOD SERVING SERVICES AND PROVISION OF ALCOHOLIC BEVERAGES FOR ON-SITE CONSUMPTION

The production of restaurants and bars is calculated using as an indicator the real incomes perceived by the food and beverage serving services for on-site consumption activities according to DANE's Quarterly Services Sample. In order to value this production at constant prices, the CPI corresponding to meals consumed outside the household is used.

3.16 TRANSPORT SERVICES

3.16.1. Regular, non-regular and special passenger transport (urban, suburban and interurban)

In order to estimate the evolution of the production of passenger land transport in volume, an indicator is constructed, consisting of the number of registered students and the occupied population in the respective quarter (as main users of urban transport). For the first component, the total number of students in all levels of the educational system (from pre-school to university) is considered, and for the second the occupied population reported by the GEIH. To establish the production at current prices, the CPI for urban transport of passengers is used.

3.16.2. Freight land transport

The evolution of the production of freight land transport in volume is estimated indirectly, using as indicator the behavior of the transportable supply. This is obtained at constant prices by adding the production of transportable agricultural products, the production of the manufacturing industry and the imports of goods. The price index for the calculation of production at current prices is the total PPI.

3.16.3. Pipeline transport services

The production at constant prices of this service is calculated from the transported volumes of crude petroleum, refined products of petroleum and gas produced. For gas, it is assumed that pipeline transport follows the same trend as the production of this

⁴⁰ Available rooms and occupancy rates

product. For the calculation of production at current prices, the exchange rate index is used as an indicator since the prices in dollars are unchanged.

3.16.4. Passenger and freight air transport services

The production of air transport at current prices is calculated from the quarterly incomes from the transport of passengers and freight on national airlines and the price indices used for the calculation in value are the CPI for airline tickets and total PPI of produced and consumed products for freight, respectively.

3.17. SUPPORTING AND AUXILIARY TRANSPORT SERVICES

The quarterly production of supporting and auxiliary transport services is estimated for each of the main products. The sum of these values is used as indicator to determine the value of production at constant and current prices. The indicators used per product are as follows⁴¹:

- 490101 “Storage and warehousing; and cargo handling services”. The production at current prices is obtained using as indicator the income of the warehouses certified by the credit institutions; it is deflated using the total CPI. The evolution of loading and unloading services at constant prices is estimated from the volume of imports and exports, excluding coal and petroleum; the price index is based on the evolution of the exchange rate.

490103 “Supporting services for road and railway transport”. The indicator used for the calculation of the production at current prices, is the value of tolls collected by public and private concession operators; the deflator is a price index constructed from the resolutions issued by the Ministry of Transport that establish the value of tolls.
- 490105 “Supporting services for air or space transport”. The indicator used is the sum of the quarterly production at constant prices of the air transport services of passengers and of cargo. In order to obtain the production at current prices the quarterly index of the exchange rate is used.
- 490201 “Travel agency, tour operator and tourist guide services”. The production at current prices is calculated based on the income of the travel agencies according to DANE’s Quarterly Sample of Travel Agencies, which is deflated by the total CPI to establish the value at constant prices.
- 470200 “Inland water transport services”. The production at constant prices of the river transport services of passengers is obtained by splitting in quarters the

⁴¹ Depending on the indicator available, the value of production is first estimated, either at constant or at current prices, and then the corresponding estimated value at current or at constant prices is estimated using the price index

annual information of passengers transported by these means, according to the Ministry of Transport, assuming a uniform distribution among quarters. For the last year, its growth is estimated with the growth rate of the total population. The river cargo transport follows the behavior of products whose transportation by this mean is possible (agricultural products and cattle). To calculate the production at current prices the total CPI is used.

3.18. POSTAL AND COMMUNICATION SERVICES

3.18.1. Postal and courier services

The indicator used to calculate the production as of 2008, is the income of the companies providing postal and courier services, reported by DANE's Quarterly Services Sample (MTS). This series is coupled to the quarterly 2000-2007 data based on the operational incomes of a sample of three companies providing these services. The CPI corresponding to mail services is used as deflator to calculate the production at constant prices.

3.18.2. Fixed telephony services, mobile telecommunication services, telecommunication services except data transmission services and programme distribution services

The services of mobile telephony, long distance telephony (national and international), and Internet are calculated separately and the results are added. The indicator used in each case is the nominal income of the companies providing the services. To obtain the production at constant prices, each component is deflated by a price index related to the specific service.

For urban telephony, the number of lines in good operative condition is used as indicator. The indicators are provided by the Ministry of Information Technologies and Communications (TICs).

3.18.3. Data transmission services; programme distribution services

The indicator used to calculate the production as of year 2008 is the income of the companies providing the service of television by subscription according to DANE's Quarterly Services Sample (MTS). This series is coupled with the quarterly 2000-2007 data series constructed from the operational income of a sample of the main companies providing the service. To calculate the production at constant prices the total CPI is used. The results are compared with the growth rates calculated by the National Commission of Television; if significant differences were to be found, the causes are analyzed and if needed, the results are adjusted.

3.19. FINANCIAL INTERMEDIATION, INSURANCE AND RELATED SERVICES

Financial corporations are organizations mainly dedicated to financial intermediation or to ancillary activities closely related to this intermediation. A financial intermediary acts as agent of other institutional units and assumes risks when contracting financial liabilities independently.

Financial intermediation consists in obtaining funds, transforming and channeling them to agents with funding needs. The resources come from transferable deposits or from bonds or other financial instruments that are converted into short-, medium- or long-term loans. In this service the financial intermediary pays an interest lower than the interest it receives.

The related or ancillary activities may represent a secondary activity of the financial intermediaries or the principal activity of agencies or specialized brokers such as the dealing in financial markets on behalf of others (e.g. stock broking) and related activities such as security and commodity brokers, investment and mortgage advisers, fund managers, etc. which provide services that are close to financial intermediation without exposing themselves to the risk of contracting financial liabilities on their own behalf.

This sector includes institutions such as: the Central Bank (Banco de la República), commercial banks, financial corporations, financing companies, fiduciary corporations, saving and loans cooperative funds, special funds of employees, special entities such as the financing corporation for the electrical sector, Financiera Eléctrica Nacional (FEN), the foreign trade bank BANCOLDEX, the financing corporations for regional development Financiera de Desarrollo Territorial S.A. (Findeter), among others, as well as ancillary organizations.

3.19.1. Calculations at quarterly level

Quarterly calculations of main and secondary productions for the monetary and non-monetary corporations and other financial organizations use the same method as the one followed for the annual accounts. The financial statements⁴² published by the Superintendency of Finance are used in the construction of the quarterly series. From this series, the transactions on assets and liabilities conducted by the intermediaries are established.

Estimates are made for the most representative organizations within the sector. In 2005, they represented, 87,5% of the production recorded in the annual accounts. Table 18 enumerates the organizations included in the quarterly calculations and their share in the total coverage of annual national accounts.

⁴² Financial statements of the financial sector detailed by type of intermediary (Balance Sheet and Profit and Loss Statements)

Table 18. Sample of financial intermediaries and insurance companies included in quarterly calculations and share in the total production of the annual accounts

Organizations	Quarterly accounts	Annual Accounts
Total Coverage	87,51	100,00
5101 -Comissions and other financial intermediation services	54,03	58,33
Banco de la República (Central Bank)	1,72	1,72
Deposit Corporations	43,24	43,24
Banking Establishments	43,24	43,24
Non-deposit Corporations	6,46	6,46
Financial Corporations	0,77	0,77
Traditional commercial funding companies	2,11	2,11
IOEs (Special Official Institutions)	3,15	3,15
Cooperatives of "higher category"	0,04	0,04
Cooperatives of financial character	0,39	0,39
Other financial intermediaries	2,61	6,91
Cooperative and Employees Funds	0,00	3,51
Mutual Investment Funds	0,00	0,02
Specialized Companies in commercial funding and leasing	1,35	1,35
Regional and municipal organizations	0,00	0,77
National Savings Fund (FNA)	0,50	0,50
Housing Financing Fund for army forces members	0,76	0,76
5102 - General insurance services; life and reinsurance services;	26,91	28,44
General insurance companies	10,88	10,88
Life insurance Companies	5,61	5,61
Prepaid health insurance (EMP)	0,00	1,53
Health Promotion Organizations (EPS)	5,98	5,98
Administrators of the Subsidized Health Care System (ARS)	2,10	2,10
Administrators of professional risks (ARP)	2,34	2,34
5103 - Supporting financial intermediation services, insurance, pension funds and retirement allowance funds	6,57	13,23
Stock Market Manager	0,00	0,24
Brokerage Agents	0,00	2,45
Investment managing corporations	0,00	0,05
FOGAFIN/FOGACOO	0,27	0,27
Money exchange companies	0,00	1,08
Fiduciary Corporations	1,81	1,81
Pension and retirement allowance funds (AFP)	4,49	4,49
NPIS belonging to the financial corporations sector	0,00	0,20
Cooperatives. insurance brokers and agencies	0,00	2,64

Source:DANE – DSCN

3.19.2. Measurement of the production at current prices

Most financial organizations do not explicitly charge their clients for services that they provide. They do it indirectly by paying interest to the depositors at a lower rate than the one they charge for loans and other transactions. This is why part of the production of financial organizations is estimated by means of the denominated FISIM. The calculation of FISIM only applies to loans and deposits when they are provided by or deposited with financial institutions (SNA 2008 paragraph 6.165). Other investments, those for which the intermediaries do not have control on the prices at which they buy or sell, nor on the types of interest which they get or pay, as it is the case of the investments in titles, bonds, funds, etc., are not included.

$$FISIM = Interest\ received - Interest\ paid$$

To get the total characteristic production it is necessary to add to FISIM the income received from commissions, fees from transfers, letters of credit, advisory services, fiduciary services, and credit cards; the secondary production is obtained by taking into account the income from other services, such as: warehousing, leases, suppliers rebates, etc.

- **Calculation of Financial Intermediation Services Indirectly Measured (FISIM) by means of the reference interest rate method.** FISIM originate in operations on assets (loans) and operations on liabilities (deposits) made by monetary corporations. To calculate FISIM originating in these two types of operations, the *actual interest* received or paid by the intermediaries and the calculated *reference interest* using a reference rate are compared.

The reference rate may be defined as the pure interest received by the intermediation, without considering other elements of service; it reflects the risk and the maturity structure of loans and deposits. "The rate prevailing for interbank borrowing or lending maybe a suitable choice as a reference rate" (SNA 2008: paragraph 6.166). For base year 2005, an implicit reference rate, denominated Midpoint Rate (MPR) was used. It was calculated⁴³ as the ratio between the interests received plus the interests paid by financial intermediaries and the balances of loans plus the average quarterly balances of deposits.

$$MPR = (rL + rD) / (yL + yD)$$

Where:

rL = Interests received in operations on assets

rD = Interests paid in operations on liabilities

⁴³ For the 2000 base, the interbank rate (TIB) was used as reference rate. In the 2005 base it was not used because, in some cases, in particular for FISIM (by lenders), the values were negative. The total value of FISIM was different from interest received less interest paid by monetary corporations. To make things more difficult differences were increasing over time.

yL = Balance of operations on assets
 yD = Balance of operations on liabilities
 $r_{(MPR)}$ = Midpoint rate (reference rate)

For year 2005 and based on the values of loans, deposits and interest, the calculated reference midpoint rate $r_{(MPR)}$ calculated quarterly is equal to 2,568%, and the reference interests reached 1.753,4 thousand million pesos, according to the following data, as provided by the Superintendency of Finance:

First quarter, 2005 (Thousand million pesos)

Loans	\$ 76.212
Interests Received	\$ 2.644
Deposits	\$ 60.349
Interests Paid	\$ 863

Reference rate = $((\$2.644 + \$863) / (\$76.212 + \$60.349)) * 100$
 $r_{(MPR)}$ = 2,568% quarterly
 $r_{(MPR)}$ = 10,3% annual
 Interest of reference (rr) \$1.753, 4 = $((\$76.212,3 + \$60.349, 0) / 2) * 2,568\%$

• Calculation of Financial Intermediation Services Indirectly Measured (FISIM) paid by lenders and borrowers. To calculate FISIM paid by lenders and by borrowers, the midpoint reference rate is applied to the balances of loans and deposits of the monetary corporations. The difference between the interest received from the borrowers and the interest of reference to be received gives a result denominated FISIM paid by borrowers and the difference between the interest paid to depositors and the amount of interest of reference, is denominated FISIM paid to lenders. This estimation method denominated the midpoint reference rate method⁴⁴ applies the following formula (SNA 2008: paragraph A3.24):

$$FISIM = (rL - rr) yL + (rr - rD) yD$$

Where:

rr = Interest of reference

$FISIM$ (by borrowers) = effective Interest received rL - interest of reference rr .
 (or those that would have been received, would the services be invoiced explicitly with the MPR).

$rL > rr$.

$FISIM$ (by lenders) = Interests of reference rr (or those that would have been paid, would the services be received explicitly with the MPR) - actual Interests paid rD .

⁴⁴ MAHECHA, Marco Tulio. Propuesta metodológica para asignar a los usuarios los SIFMI (Methodological proposal to assign FISIM to users). Page 3.

$$rr < rD$$

- **Practical Method.** Actually, FISIM (by borrowers or by lenders) are calculated by applying the midpoint reference rate MPR to the balances of financial assets and financial liabilities registered on the general balance sheet. These are compared with the actual interest received and paid as registered in the profit and loss account.

The difference between the rate paid to the intermediaries by the borrowers and the reference rate is the denominated borrowers margin and the difference between the reference rate and the rate actually paid to the depositors is the denominated lenders margin. In percentage terms, these margins represent the amount of FISIM charged.

With the reference rate previously calculated (2.568%) the following results are obtained, based again on figures provided by the Superintendency of Finance.

First quarter, 2005 (Thousand million pesos)

FISIM operations on assets:

Loans	\$76.212
Interests Received	\$ 2.643,6
$r_{(MPR)}$	= 2,568%
r	= 3,469% = $(\$2.643,6 / \$76.212)$
Interest of reference	\$1,753.4 = $(((\$76.212 + \$60.349) / 2) * 2,568\%)$
Borrowers Margin	= 3,469% - 2,568% = 0,9%
FISIM (by borrowers)	= \$2.643,6 - \$1.753,4 = \$890.2

FISIM operations on liabilities:

Deposits	\$ 60.349
Interests Paid	\$ 863,3
$r_{(MPR)}$	= 2,568%
r	= 1,430% = $(\$863,3 / \$60.349,0)$
Interest of reference	\$1.753,4 = $(((\$76.212,3 + \$60.349,0) / 2) * 2,568\%)$
Lenders Margin	= 2,568% - 1,430% = 1,14%
FISIM (by lenders)	= \$1.753,4 - \$863,3 = \$890,1
Total FISIM	= \$ 890,2 + \$890,1 = \$1.780,3
Interest Difference	= \$2.643,6 - \$863,3 = \$1.780,3

(Operations on assets+ Operations on liabilities)

Table 19 presents, as example, the production account of the banks, year 2005, by quarters, detailed by components of the characteristic production. Table 20 presents estimates of FISIM (borrowers and lenders) for the same year. Table 21 presents annual and quarterly results for the 2000-2008 series.

Table 19. Banks production account, by quarters

2005						thousand million pesos
Quarters	Total production (1) (1 = 4 + 5)	Commissions and other income (2)	FISIM (3)	Principal production (4) (4 = 2 + 3)	Secondary production (5)	
Year	10 816	2 050	7 731	9 781	1,035	
I	2 480	441	1 780	2 221	259	
II	2 552	494	1 803	2 297	255	
III	2 831	540	2 049	2 589	242	
IV	2 953	575	2 099	2 674	279	

Source : DANE -DSCN

Tabla 20. Financial Intermediation Services Indirectly Measured (FISIM), borrowers and lenders, reference rate method, by quarters

2005 (quarters I-IV)						thousand million pesos
Concepts	Total	Quarters				
		I	II	III	IV	
Loans balance (1)	80.190	76.212	78.741	81.427	84.381	
Deposits balance (2)	64.209	60.349	63.019	65.743	67.723	
Received interest (3)	11.488	2.644	2.724	3.070	3.050	
Paid interest (4)	3.756	863	921	1.020	951	
FISIM total (5)						
5 = 3 - 4	7.731	1.780	1.803	2.049	2.099	
Midpoint rate (6)						
6 = (3 + 4)/(1 + 2)	10,557	2,568	2,571	2,779	2,631	
Reference interest (7)						
7 = ((1 + 2) * X 0,5) X 6	7.622	1.753	1.822	2.045	2.001	
FISIM borrowers (8)						
8 = 3 - 7	3.866	890	901	1.025	1.049	
FISIM lenders (9)						
9 = 7 - 4	3.866	890	901	1.025	1.049	
Total borrowers and lenders (10)						
10 = 8 + 9	7.731	1.780	1.803	2.049	2.099	

Source : Financial statements of organizations controlled by the Financial Superintendency

Calculations: DANE - DSCN

Table 21. Production of Financial Services Indirectly Measured (FISIM), by type of intermediary and frequency of reporting (quarterly or annual) in national accounts

2000-2008		thousand million pesos								
Intermediary	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Depository corporations	5,027	4,773	4,915	5,550	6,472	7,457	8,217	10,615	14,063	
Other financial intermediaries ^a	191	108	181	204	238	274	302	391	805	
Quarterly FISIM ^b	5,218	4,880	5,096	5,754	6,711	7,731	8,519	11,005	14,868	
Other financial intermediaries ^c	573	600	664	772	866	971	1,029	1,158	1,219	
Annual FISIM ^d	5,791	5,481	5,760	6,526	7,577	8,703	9,548	12,163	16,087	

Source: Financial Superintendency, Superintendency of Solidarity Economy

Calculations: DANE -DSCN

^a Information by intermediaries specialized in leasing reporting to the Financial Superintendency (SFC)

^b The source of quarterly information is the Financial Superintendency (SFC), for deposit corporations and for other intermediaries

^c Information from credit and loans cooperatives, funds of employees, among others from the Superintendency of Solidarity Economy (SES)

^d Annually all financial intermediaries controlled by the Financial Superintendency (SFC) and the Superintendency of Solidarity Economy (SES) are analyzed

3.19.3 Supply and demand of FISIM

As for other products of the economy, supply and demand of FISIM are estimated. The following balance must hold:

$$P + M = IC + HFCE + X$$

Where:

P = Domestic production

M = Imports

IC = Intermediate Consumption

$HFCE$ = Household Final Consumption Expenditure

X = Exports

Total supply of FISIM (production + imports) is used as intermediate consumption of the productive activities, final consumption of households and exports to the rest of the world.

Regarding final consumption, consideration is made that FISIM is generated by the consumption loans, deposits and other investments made by households; in intermediate consumption FISIM is generated by commercial loans, housing financing, micro-credits and investments made by productive units.

Imports of FISIM are estimated on the loans granted by non-resident intermediaries to residents, and exports of FISIM refer to loans granted by resident intermediaries to non-residents.

- **Imports and exports of FISIM.** For the estimation of FISIM, given that it corresponds mostly to operations in foreign currency, 6 months LIBOR has been used as reference rate as it is very frequently used as reference in commercial contracts. More than 60% of the financial operations with the rest of the world are referred to this rate.

To calculate imports and exports of FISIM on imports and exports, information from the Balance of Payments was used (in particular for interest and for the balances of the International Investment Position of the Central Bank); the financial statements of the intermediaries controlled by the Superintendency of Finance were also used.

- **Allocation of FISIM.** According to the recommendation of SNA93, FISIM must be allocated among users. “Whenever the production of output is recorded in the System, the use of that output must be explicitly accounted for elsewhere in the System”. Hence, FISIM must be recorded as being disposed of in one of the following ways - as intermediate consumption by enterprises, as final consumption by households, or as exports to non-residents.”⁴⁵

As a consequence, FISIM is distributed according to the purpose of each financial instrument, so that FISIM generated by consumption credit and by credit cards is considered as final consumption expenditure, since the main purpose of these instruments of credit is to finance the acquisition of consumption goods or the payment of services without commercial or entrepreneurial objectives; FISIM originated by commercial credits, is assigned as intermediate consumption, since its purpose is the generation of commercial or entrepreneurial profits by increasing the working capital, the financial leverage, the purchase of assets, among others, and FISIM derived from credits granted to non-residents in any modality or purpose is considered as exports of financial services.

Intermediate consumption also includes FISIM calculated on housing credits, based on the results of DANE’s Housing Mortgage Credit Survey, which covers 104 housing financial organizations: commercial and mortgage banks, the National Savings Fund (FNA), funds of employees, housing funds, housing cooperatives, credit collector organizations and family subsidy funds.

Table 22 presents the instruments used by financial intermediaries, by operations on assets or liabilities, and the economic use assigned to each of them: final consumption expenditure, intermediate consumption or exports.

⁴⁵ SNA93, paragraph 6.125

Table 22. Loans and deposits used to analyze FISIM

	Financial instruments	Allocation by economic use
Borrowers Operations	Consumption credits and leasing	Final consumption expenditure
	Commercial credits and leasing	Intermediate consumption
	Micro-credit credit and leasing	Intermediate consumption
	Housing credit	Intermediate consumption
	Credits reimbursed by the rest of the world	Exports
Lenders Operations	Savings deposits (current account, savings and others)	Intermediate consumption and final consumption expenditure
	Certificates of term deposit	Intermediate consumption and final consumption expenditure
	Certificates of term savings	Intermediate consumption and final consumption expenditure
	Imports	Intermediate consumption, Imports

Source: DANE, DSCN.

3.19.4. Measurement of FISIM at constant prices

FISIM at constant prices is calculated by applying the margins estimated for the base year (2005) to the balances of borrowing and lending operations at 2005 constant prices⁴⁶. The balances of loans and deposits are expressed at constant prices using a global price index (excluding food and fuels)⁴⁷. The margins applied for lending operations were estimated as the difference between the implicit lending rate⁴⁸ and the midpoint rate and for borrowing operations as the difference between the midpoint rate and the implicit borrowing rate⁴⁹, for the base period (2005).

$$FISIM = (rLn-1 - rrn-1) yLn-1 + (rm-1 - rDn-1) yDn-1$$

Where:

rL = Interest received in lending operations year 2005

rD = Interest paid in borrowing operations year 2005

yL = Balance of lending operations at 2005 prices

yD = Balance of borrowing operations at 2005 prices

rr = Reference rate for base year 2005

3.20. INSURANCE SERVICES

Two products are considered: a) General and life insurance and b) Social insurance. General insurance includes the Compulsory Insurance for Traffic Accidents (SOAT), life insurance, reinsurance, and co-insurance. The second product consists of the insurance services provided by the Companies for Promotion of Health (EPS's), the prepaid medicine services, the government

⁴⁶ The method used was approximated to the recommendations made by Eurostat (2005) that suggests using methods based on the application of interests' margins of the base period to the balances (at constant prices) of loans and deposits; as there is no price nor any volume of the production of FISIM than can be directly observed and there is no specific method available.

⁴⁷ With the purpose of reducing the distortions caused by the changes in the prices of crude oil and other commodities.

⁴⁸ Total interest received divided by the total loans balance.

⁴⁹ Total interest paid divided by the total deposits balance.

social insurance funds in health, the companies managing professional risks and the pension funds.

3.20.1. General Insurance and life insurance

For this item, a method is used to construct the quarterly series and another one to calculate the production of the current year.

The 2000-2009 annual series is quarterized according to the value of the premiums issued plus the claims paid, as reported by the Colombian Federation of Insurance Companies (Fasecolda). This is done that way because the quarterly series of production when directly observed presents irregular variations that does not seem to correspond to the activity itself.

To calculate the production of the current year, the first three quarters are calculated according to the evolution of the premiums by branch of insurance⁵⁰, and in the fourth quarter the annual production is calculated and distributed by quarters, according to the behavior, throughout the year, of premiums plus claims.⁵¹

The deflator used to calculate the production at constant prices is the CPI for other financial services.

3.20.2. Social insurance system

The production at current prices of the social insurance system is estimated by considering two types of payments for services: a) the payments made by the territorial entities to the Companies for Promotion of Health of the subsidized health system (EPS-S) to insure the affiliates belonging to the subsidized health care system, and b) the payments of FOSYGA (Solidarity and Guarantee Fund of the Social Security System in Health Care) to the EPS of the contributory health care system in the compensation process. For its calculation at constant prices a price index is constructed from the yearly value of the Per Capita Unit (Unidad de pago por Capitación⁵²) of the subsidized and contributory schemes.

⁵⁰ Insurance companies, in Colombia, are classified in businesses as follows: a) General Insurance: Vehicles, fire, income protection, natural disasters, dwellings, among others, b) Persons: Personal accidents, collective or individual life insurance, burial insurance, health, etc, and c) social insurance: professional risks, health, pensions.

⁵¹ This method requires a review of the quarter calculations at the end of the year.

⁵² This unit is the basis for the calculation of what each EPS receives per person to insure the affiliates to the social insurance system

3.21. REAL ESTATE SERVICES AND DWELLING RENTAL SERVICES

3.21.1. Dwelling rental services

The dwelling rental services are part of the activity denominated real estate services and dwelling rental services; the latter includes the imputed rentals of owner occupied dwellings and the value of the rental services of dwellings rented to third parties.

The indicators to calculate the quarterly production of the rentals (either owner occupied or lent to third parties) are the evolution of the dwelling stock and the average value of rentals. The quarterly dwelling stock is calculated adding to the stock of the previous quarter, the dwellings constructed in the period, according to the figures of finished dwelling units reported by the CEED, for the urban areas. For the rural areas, the stock is estimated from the projections of rural population. On the other hand, the average value of rentals is obtained evolving the leases of the base year, with the CPI of actual leases.

When updating the dwelling stock or the rental values, several categories are taken into account: department, urban or rural area, occupancy (self-owned, lease, other⁵³), socio-economic stratum and the type of dwelling (house, apartment, other⁵⁴).

3.21.2. Rental services of non-residential facilities

These services include the lease of real estate such as offices, warehouses and premises. The quarterly production is based on indicators on the change of the stock of non-residential units and of the average value of rentals.

The stock of non-residential units is obtained adding to the stock of the previous quarter, the number of finished non-residential constructions reported by the Census of Construction; and the change of the average value of rentals is derived from the total CPI.

3.21.3. Real estate services on a fee or contract basis

These services include the activities related to purchase, sales, rental, administration and value assessment of real estate carried out for a fee or under a contractual arrangement.

The quarterly series is calculated at constant prices from the indices obtained from reported real estate transactions and the rentals of dwellings and of non-residential construction for socio-economic strata 4, 5 and 6, at constant prices. These two indices

⁵³ Other occupancy types include: occupied by a member of the family or by other person with the owner's permission and without rental payment; under usufruct or possession without property title.

⁵⁴ Other types of dwelling include: room, tent, ship, natural shelter, bridge, etc.

are weighed according to the activity production structure for year 2005: buildings (52%) and other real estate services on a fee or contract basis (48%).

3.22. BUSINESS SERVICES

The production of business services is calculated for two products: 5301 and 5302. Product 5301 includes leasing or rental services without operator; computer, research and development; professional, scientific and technical services; and product 5302 includes advertisement services, employment agencies and private security services.

Product 5301 is calculated indirectly, according to the behavior of the activities that consume in greater proportion the services included in this group. The weights were obtained from intermediate consumptions in base year 2005. Refer to table 23.

Table 23. Weights used for the quarterly indicator of product 5301 Business Services, according to economic activities 2005 Base

Activities	Description	Weights (%)
54	Public Administration and defense	16,02
51	Financial intermediation and insurance	11,87
50	Post and telecommunications	9,28
22	Manufacture of wearing apparel	8,28
28	Manufacture of basic chemicals and chemical products	8,15
57	Market health and social work	7,54
59	Other community, social and personal services activities	5,79
52	Real estate activities and rentals of dwellings	5,65
26	Publishing and printing	5,01
41	Building construction	4,85
38	Production, transmission and distribution of electricity	3,91
55	Market education	3,85
31	Manufacture of basic metallurgical products	3,44
30	Manufacture of non-metallic mineral products	3,21
2	Agriculture	3,14

Source: DANE, DSCN

For product 5302, the indicator used is the income of employment placement agencies and private security services, as reported by DANE's Quarterly Service Sample (MTS) and the advertising investment in mass media (television, press, radio and magazines) reported by the Institute of Research and Opinion Polls (IBOPE).

3.23. GOVERNMENT SERVICES

They comprise nonmarket services provided by governmental institutions to the collectivity or to households, such as general administration, defense, health and education.

The production of these services is estimated as the sum of the costs incurred in their provision: remuneration of employees, intermediate consumption, taxes on production and consumption of fixed capital.

The quarterly indicator was constructed on the basis of a sample of organizations that approximately represented 87% of the total output of government in 2005. The source of information is the Accountant's General Office; each of the accounts from the profit and loss statements of the accounting plan were standardized in terms of the national accounts variables⁵⁵.

3.23.1. Estimation at constant prices

To calculate the government production at constant prices, the values at current prices of each of the components of the production are deflated by an ad-hoc price index.

For the compensation of employees, the price index that is used considers the increases of wages and salaries declared by the government for public servants and the increases in salaries due to promotions and others. For intermediate consumption an index is calculated from the matrix of intermediate consumptions of the accounts of goods and services; and for consumption of fixed capital the PPI corresponding to capital assets, combined with the Heavy Construction Cost Index (ICCP).

3.24. MARKET EDUCATION SERVICES

The change in the production of market education services in volume is estimated from the number of students registered in the private education sector, in each of the levels: pre-school, (basic and middle) and superior. This information is provided by the Ministry of Education. For university education, the information is available by semesters whereas the information for the other education levels is annual.

At pre-school, basic and middle levels, the student population is distributed quarterly according to the A and B calendars; the students enrolled in calendar A initiate their activity in the first quarter of the civil year. The number of students is kept constant throughout the year; the students enrolled in calendar B initiate study in the third quarter of the civil year and the same number of students is kept constant until the second

⁵⁵ The results are analyzed based on the following information: At the national level, the Integrated System of Financial Information (SIIF) of the Ministry of Finance, and at the territorial level, the FUT (instrument for the collection of information on the execution of the budget in terms of income and expenditure at the territorial level) of the Accountant General's Office, in addition to the short-term reports presented by the General Directorate of the National Budget.

quarter of the following year. The distribution of students by calendar⁵⁶ is 84% in calendar A and 16% in calendar B.

The production at current prices is calculated using the price indices of registration fees for basic education and superior education respectively.

3.25. MARKET HEALTH AND SOCIAL SERVICES

These categories correspond to the services of different providers of the health system. The providers may be IPS⁵⁷, State Social Enterprises (ESE), independent health care providers (doctors, dentists), medical centers, etc.

Quarterly production at current prices is calculated from the demand approach⁵⁸, i.e., taking into account the main sources of financing of the health care system: central and local governments for the affiliates to the SISBEN System and for the associated population⁵⁹, as well as resources provided by FOSYGA for the affiliates to the contributive system. The indicators used for the estimation of production are:

- The resources that the government allocates through the General Participation System (SGP) for: a) the subsidized health system. These resources correspond to the value transferred to the territorial entities as contributions of the affiliated to the subsidized system in order for them to enter into contracts with the EPS-S, b) The payment of health services for the non-insured poor and c) the programs of public health of the territorial entities. The source of information is the Ministry of Finance through its Financial Integrated Information System. (SIIF)
- The transfers made by FOSYGA (Solidarity and Guarantee Fund of the Social Security System in Health Care) to: a) to the EPS (according to the number of registered beneficiaries in the compensation process) as insurance premiums and b) The territorial entities, according to the subsidy that the contributive system grants to the subsidized system⁶⁰ by means of the “FOSYGA’s solidarity account”.

For the calculation of the production of these services at constant prices the following deflators are used: price index calculated from the UPC (unidad de pago por capitación) used in the contributive and subsidized health systems, and the CPI corresponding to Health Services.

⁵⁶ The distribution of students by calendar is estimated from the reports on the 11th grade students who present the ICFES exam (test administered prior to graduation in Colombian high schools, The test is thoroughly developed and published by the ICFES - Colombian Institute for the Promotion of Higher Education).

⁵⁷ Institutions providing Health Services (IPS): hospitals, clinics, health centers, etc.

⁵⁸ There are not quarterly reports from the providers of health services that allow the assessment of supply

⁵⁹ Poor population not covered by the contributive or the subsidized systems.

⁶⁰ It represents 1,5 points of the contributions made by employees in the contributive scheme

Due to the irregular fluctuations of the indicators related to the General Participation System, related with the delay in the payments of the central government to the territorial entities, the annual production is quarterized for the basis of information on the population affiliated to the health system.

3.26. ASSOCIATIONS SERVICES, ENTERTAINMENT, CULTURAL, AND SPORTS SERVICES, OTHER MARKET SERVICES

To calculate the value of production, four basic indicators that are available at quarterly level are considered:

- Motion pictures: The series is constructed from the incomes of the companies exhibiting motion pictures, as reported by DANE's Quarterly Service Survey (MTS).
- Radio and television: The series is constructed from the income of the companies producing radio and television programs as reported by DANE's Quarterly Service Survey (MTS).
- Betting and lotteries: the indicator is the income from sales of lotteries and permanent bets as reported by the Superintendency of Health and the income from sales of BALOTO provided by the Territorial Corporation for Health (Etesa)⁶¹.
- Services of market and non-market associations, in cultural, entertainment, sport and other service activities. The total number of occupied persons reported by the Integrated Household Survey (GEIH) at the quarterly level is taken as a volume indicator.

3.27. DOMESTIC SERVICES

The production of this activity is obtained by means of the total persons occupied in domestic services according to the Integrated Household Survey (GEIH).

The indicator is constructed as a moving average⁶² of persons occupied in domestic services during the last four quarters

⁶¹ The basis of the tax that is collected

⁶² A moving average is used in order to stabilize the series as it presents important fluctuations...

4. CALCULATION OF GROSS DOMESTIC PRODUCT (GDP) FOLLOWING THE EXPENDITURE APPROACH

According to the expenditure approach, GDP is calculated from the aggregates: household final consumption expenditure, general government final consumption expenditure⁶³, gross fixed capital formation, change in inventories, and exports and imports. Each of these elements is calculated at purchaser's price.

$$GDP_{\text{Expenditure}} = HFCE + GFCE + GFCF + \Delta \text{Inv} + X - M$$

Where:

HFCE = Household final consumption expenditure

GFCE = General government final consumption expenditure (it includes the NPISH final consumption expenditure)

$\Delta \text{Inv.}$ = Change in inventories

GFCF = Gross fixed capital formation

X = Exports of goods and services

M = Imports of goods and services

4.1. FINAL CONSUMPTION EXPENDITURE

4.1.1. Household final consumption expenditure

Household final consumption expenditure represents the value of the goods and services acquired for the direct satisfaction of the individual needs of households. It includes the consumption goods and services purchased by resident households in the national territory or abroad: food, clothing, footwear, fuels, electric home appliances, automobiles, furniture, services (education, health, transport, legal, domestic), rentals paid and imputed on dwellings occupied by their owners, expenditures on domestic service and contingent expenses in the acquisition of government nonmarket services (registration in public educational institutions and entrances to museums, among others).

- **Classifications used.** Household final consumption expenditure may be classified according to three types of classifications: by products, by purpose of the expenses and according to the durability of goods and services. The classification by purpose groups together goods and services that satisfy the same need (or similar use) and its categories are: food and non-alcoholic beverages; alcoholic beverages, tobacco and narcotics; clothing and footwear; housing, electricity, water, gas and other fuels; furnishings, household equipment and current household maintenance; health; transport; communication; recreation and culture; education; restaurants and hotels; and

⁶³ It includes the NPISH final consumption expenditure

miscellaneous goods and services. According to the durability criterium, goods and services are classified as: durable goods; non-durable goods and services.

The starting point for the calculation of final consumption expenditure is the classification by products; from there, the purpose and the durability classifications are derived. As a product may have more than one purpose, it must be distributed among the different purposes applying weights calculated from the annual accounts of the base year.

For example, the product 20 “Natural textile fibers; yarn and thread; woven and tufted textile fabrics” has four purposes: clothing, furnishings, household equipment and current household maintenance, health products and miscellaneous goods and services (Table 24); the total value obtained for the product is distributed among these purposes according to their percentage share in the annual accounts (column 5).

Table 24. Structure of the classifications of individual consumption by purpose

Quarterly accounts product classification (1)	Classification by purpose (2)	National accounts detailed classification (ENIG) (3)	Value annual accounts (4)	Weights by product (5)	
	3	Clothing and footwear	Fabrics for clothing manufacturing for men, women, boys, girls and babies	65	38
20 Natural textile fibers; yarn and thread; woven and tufted textile fabrics	5	Furnishings, household equipment and routine household maintenance	Fabrics to make clothes of bed, table cloths, curtains and linings of furniture	39	23
	6	Health products	Sticking plaster, bandages, gauzes, adhesive bandages	16	10
	12	Diverse goods and services	Cotton, body sponges, cotton tipped applicators	50	29

Source: DANE, DSCN

The same exercise is performed when a product has several durability categories as shown in the example of Table 25 for the same product mentioned above.

Table 25. Structure of the classification of individual consumption by durability

Quarterly accounts product classification (1)	Classification by durability (2)	Detail annual accounts ENIG (3)	Value annual accounts (4)	Weights by product (5)
20 Natural textile fibers; yarn and thread; woven and tufted textile fabrics	SD Semi-durables	Fabrics for clothing manufacturing for men, women, boys, girls and babies	65	61
	ND Non-durables	Fabrics to make clothes of bed, table cloths, curtains and linings of furniture	39	
		Sticking plaster, bandages, gauzes, adhesive bandages	16	39
		Cotton, body sponges, cotton tipped applicators	50	

Source: DANE, DSCN

Annex J presents the classification used for the calculation of final consumption expenditure by product, purpose of the expense, and durability of goods and services.

- **Methods used to calculate Household Final Consumption Expenditure (HFCE)**

Quarterly HFCE is calculated from the survey of retail trade, internal demand, the Living Conditions Surveys (ECV) and in some cases, from independent indicators.

The following indicators and calculation methods are used:

- The Monthly Sample of Retail Trade (MMCM) at constant prices is used for some products such as processed foods, clothing, electric domestic appliances, etc.
- For other products, especially agricultural foods, the procedure begins with annual values of final consumption expenditure at constant prices, which are split into quarters assuming a uniform growth rate. When annual data are not available, annual final consumption is estimated.

To calculate the detailed annual consumption expenditure, the total expenses are calculated in a first step and then they are disaggregated into two groups: foods and drinks, and other goods and services; subsequently, each group is distributed by products based on the trends of their share derived from the Living Conditions Survey (ECV)⁶⁴. From there, a value index of the consumption expenditure is established for each individual product. The change in relative prices enables identifying the substitution effect and the implicitly derived volume index takes into account the habits of consumption.

- For the products whose unique purpose is domestic consumption, their HFCE is estimated as being equal to production. For example, rentals of dwellings, education, domestic service, urban transport of passengers, etc.;

- For some products, a specific indicator is used: this is the case, for instance, of the regulated demand for electrical energy and the consumption of residential gas distributed by mains;

- The final consumption expenditure of transport equipment is calculated taking as an indicator the sales of imported and nationally produced motor vehicles (automobiles, 4-wheel drives, and light trucks) from the survey on vehicles sales from DANE;

- Tobacco final consumption expenditure is calculated from rates of prevalence applied to two groups of the population; from there the number of cigarettes consumed is obtained. The rates of prevalence were taken from the Health National Survey, conducted by the Ministry of Social Protection in 2007;

- Final consumption expenditure in illicit substances is calculated from rates of prevalence applied to three groups of population; from this procedure the levels of consumption of cocaine, marijuana and heroin are obtained. These rates were taken from the National Study of Psychoactive Drug Consumption in Households in Colombia 2009, conducted by the Ministry of Social Protection and the National Narcotics Bureau (DNE)⁶⁵;

- The evolution of consumption on own account that takes place on farms for products such as rice and coffee is taken as similar to the growth rate of the quarterized rural population, constructed from the 2005 census.

Annex J presents the indicators used for the analysis of products.

⁶⁴ For a complete description of the analysis of consumption trends obtained from the Living Conditions Surveys (ECV), refer to the Methodology for the Calculation of Annual National Accounts, base year 2005: Chapter 28, Series of Household Final Consumption Expenditure.

⁶⁵ Other research papers were also used, such as the National Survey on psycho-active substance consumption by the population for ages from 10 to 24 years, carried out by RUMBOS, a program of the Presidency of the Republic; the National Study on Mental health (2003) conducted by the Social Protection Ministry and WHO; and the National Survey on psycho-active substances consumption by young students from 10 to 17 years, made by the Ministry of Social Protection and the CICAD/OEA in 2004.

- **Calculation at current prices.** Applying the corresponding price indexes to the series at constant prices, the series at current prices are calculated. The following section explains the method used to define the price indexes at quarterly level.
- **Definition of the price indexes.** To define the price index for each product, a correspondence between the price indexes of the annual accounts and the products of the quarterly national accounts was established. This correlation was designed on the basis of two general rules:
 - When a product in the QNA has several corresponding CPI within the same group, the index of the group is chosen. This is the case for example of the product “Other Fruits”; In the annual accounts 5 products belong to the same group; therefore in the quarterly accounts the index taken is the one corresponding to the group (Table 26).

Table 26. Price indices correspondance

Annual accounts			Quarterly accounts		
Product	Price index ^a		Product	Price index ^a	Weight
20303	Orange, lemon, tangerine, mandarin and other citrus (grape fruit, tangelo, etc)	1410100			
		1410500			
20399	Other fruits and nuts n.e.c. (grapes, pineapple, mango, passion fruit)	1410300	20303	Other fruits	1410000
		1410400			
		1410500			

Source : DANE - DSCN

a Corresponds to the Consumer Price Index Classification, Base 2008

- When a product in the quarterly accounts has several corresponding CPI in different groups, the index chosen is a weighted average in which the weight for each CPI is defined according to the share of each product in annual consumption.

Table 27 presents the example of “Other metallic manufactured products”, where two price indexes are combined as follows: 53% for *domestic tools* and 47% for *hygiene and facial care*.

Table 27. Price indices correspondance

Annual accounts			Quarterly accounts		
Product	Price index ^a	Value	Product	Price index ^a	Weight
	2500000	Domestic utensils	405		
				2500000	Domestic utensils
310299		Other metallic manufactured products		3102	Manufacture of metallic products except machinery and equipment
					Services of repair of metal manufactured products except machinery and equipment
	9210300	Hygiene and facial care	361	9210300	Hygiene and facial care
					0.47

Source : DANE - DSCN

^a Corresponds to the Consumer Price Index Classification Base 2008

Annex L presents the price indices by product used in the quarterly national accounts.

4.1.2. Final consumption expenditure of Government and of Non-Profit Institutions Serving Households (NPISH)

Government Final Consumption Expenditure (GFCE) comprises non-market goods and services produced by government and NPISH and consumed by them, market products produced by government and NPISH and provided to households and market products purchased by government and provided to households without any transformation.

GFCE is calculated as:

$$GFCE = GFCE \text{ in non-market products} + GFCE \text{ in market products}$$

By convention the entities producing non-market goods and services are deemed to be those that consume them, except for the partial payments made by households that are treated as HFCE.

Government expenses in the purchase of health care services and medicines, from hospital and commercial establishments, to provide them to the affiliates of the contributory and subsidized systems (social security in health), are included in GFCE.

On a quarterly basis, GFCE is calculated through two indicators: the non-market production of the government and the production of health market services, since an important part of this production, 48%, is provided to the affiliates of the contributory and subsidized systems (social security in health).

4.2. GROSS FIXED CAPITAL FORMATION (GFCF)

Gross fixed capital formation represents the value of the durable goods acquired by resident productive units.

GFCF includes the purchases less disposals as well as the construction on own-account of durable goods: buildings, machinery, transport equipment, oil wells, ICT equipment, aqueducts, plants, electrical and telephone mains, roads, bridges, dams; the expenses in improvements, reforms, remodeling, reconstructions, and extensions of existing goods, that extend their service life or increase their productive capacity; the purchase or construction on own-account of dwellings by households and the expenses for enlarging those facilities; and finally the planting of trees that will be used for producing other goods for periods of time exceeding one year.

Gross fixed capital formation at the quarterly level is classified into groups as follows:

- Cultivated assets
- Constructions
- Civil Works
- Machinery and equipment
- Transport equipment

The three first groups are supposed to change overtime as their output; for the two last categories, the indicator used is the internal availability of the product, calculated as domestic production plus imports less exports.

4.3. EXPORTS AND IMPORTS OF GOODS AND SERVICES

Exports of goods and services consist of operations (sales, barter, donations and gifts), through which residents provide goods or services to non-residents.

The imports of goods and services are operations (acquisitions, barter, and receipt of donations and gifts) through which non-residents provide goods and services to residents.

4.3.1. Exports and imports of goods

- **Time of recording:** These transactions are recorded at the time of the transfer of the ownership of the goods from a resident to a non-resident (exports) or vice-versa (imports). With some exceptions, this principle defines the coverage of international trade in goods.
- **Coverage:** Exports and imports of goods include, on the one hand, the merchandise that crosses the border with the fulfillment of the corresponding customs regulations; and on the other, goods that become part of the national supply but that have not been recorded by the national customs; that is the case of foreign trade in the free trade zones, smuggling into and from the national territory, gold exported to, or imported from commercial banks abroad, goods purchased by transport vessels (ships, planes, etc.), and direct purchases by

residents abroad (imports) and those by non-residents in the national territory (exports).

Therefore, exports and imports of goods include:

- General Merchandise
- Goods imported or exported through Free Trade Zones
- Smuggling
- Non-monetary gold
- Provisions and stores purchased by vessels in ports
- Direct purchases abroad of goods by residents or by non-residents in the national territory

4.3.2. Method of calculation of exports and imports of goods

Exports and imports of goods are calculated quarterly following a methodology globally similar to the one used in annual accounts.⁶⁶

The operations on goods are derived from the information generated by the office of foreign trade statistics of DANE and DIAN, for exports and imports. They report the merchandise crossing the border with the fulfillment of the customs regulations, in particular documentation.

The information from customs is complemented with estimates of the smuggling operations, the operations concerning the free trade zones and with figures from the Balance of Payments (produced by the Central Bank) related to foreign trade of goods for processing, repair of goods, provisions and stores acquired in port by transport vessels, re-exports, nonmonetary gold, gold exported to commercial banks abroad and the direct purchases made by non-residents in the national territory or by Colombian residents abroad.

The customs records are available in custom classifications. They are converted into the national accounts classification using correspondence tables elaborated by DANE. Thus, to each item in the customs classification (10 digits) there is a corresponding item coded in national accounts (6 digits).

For information from the Balance of Payments (BoP), there is also a correspondence classification; each export or import transaction as well as each special foreign trade operation is assigned a 6-digit national accounts code.⁶⁷

- **Calculation steps:** Each quarter, the calculation of the imports and exports of goods is performed along the following steps:

⁶⁶ Exports are valued at FOB prices and imports at CIF prices.

⁶⁷ The Annual National Accounts methodology illustrates, in detail, the conversion from BoP to National Accounts.

- Imports and exports are calculated at current prices at the 6-digit level of the classification of annual accounts, starting from the customs records of imports and exports of merchandise, the BoP data and the estimates on smuggling made by considering that its change from the previous year is similar to the variation of actual sales derived from the Retail Trade Monthly Sample (MMCM).
- In the second stage, they are converted into constant prices; this is done at the level of the national accounts classification. For this purpose the price indexes defined for each product are used. Subsequently the products of the annual classification are grouped and converted, when needed, into the quarterly classification.

$$XPkte Pit = \frac{XPcte Pit}{IPit}$$

$$MPkte Pit = \frac{MPcte Pit}{IPit}$$

Where:

Pit = Product *i* of national accounts at the annual level in period *t*

Xpcte = Exports at current prices

Xpkte = Exports at constant prices

Mpcte = Imports at current prices

Mpkte = Imports at constant prices

IPit = Price Index of product *i* of annual national accounts in period *t*

- The quarterly values are aggregated at the 2-digit level of the QNA classification. Nevertheless, some important products in foreign trade transactions are kept disaggregated: For imports, for instance, corn, wheat, basic metallurgical products, the direct purchase of goods and of services; for exports, bananas, flowers, coffee, basic metallurgical products, the purchase of goods and of services.
- The values of imports and exports are adjusted to the level of the annual accounts, at current and constant prices, by benchmarking. The series resulting from this process are seasonally adjusted using the X-12 Arima program.

4.3.3. Price indexes used

To deflate imports and exports of goods, a database of price indices corresponding to the national accounts classification was organized. The following criteria were taken into consideration in the selection of indices:

- If the product was homogeneous, that is to say, if it presented low variability, the unit value index was chosen (the case for twenty-nine products for exports and thirty-four in the imports). A product was considered homogenous if the

coefficient of variation of the price indexes of the included customs items was lower than 35%. Generally, primary products fall into this category.

- For heterogeneous products, those with coefficient of variation over 35%, a price index calculated by DANE was taken, mainly the PPI base 99, and in the case of products that were not adjusted with unit values or with PPI, price indices extracted from the US *Bureau of Labor Statistics* or from the IMF were used. If the share of the items in the PPI basket was lower than 50%, the price indices were taken at a more aggregate level.
- **Homogeneous Products.** The homogeneity of products was determined using the coefficient of variation. If the coefficient of variation was lower than 35% the customs item was considered homogeneous.

The coefficient of variation is defined as $cv = \frac{\bar{x}}{\sigma}$ in which \bar{x} is the average unit value and σ the standard deviation of the unit value.

Table 28 presents, for exports, the products defined as homogeneous and whose indices of variation were calculated from the unit values for the four quarters of base year 2005.

Table 28. Coefficient of variation for homogeneous products, according to description, 2005

Product codes national accounts 2005	Description	Coefficient of variation	
		Max.	Min.
20301	Banana	34,17	0,0
20302	Plantain	32,45	0,0
20501	Roses	34,65	1,04
20502	Carnations	34,52	0,28
20503	Dahlias, orchids and other flowers and buds	34,91	1,15
30202	Fresh Eggs with rind, in conserve, cooked or embryonated	16,07	12,76
60001	Coal	31,63	0,04
70001	Crude Petroleum	14,06	0,0
80103	Nickel ore and its concentrates (ferronickel)	14,62	3,47
80202	Platinum ore	19,92	0,77
100101	Fresh, cooled or frozen bovine meat	13,41	4,08
100103	Lamb, goat and others, fresh, cooled or frozen	9,43	9,43
130104	Starches and their products; sugar and syrups n.e.c.	17,39	1,36
140102	Milled or green Coffee	32,82	0
140201	Roasted coffee, decaffeinated or not, in grain or ground	34,48	0,12
150001	Sugar from sugarcane refined or not (crude), of beet and saccharose	25,07	0,0
160200	Confectionery preparations with sugar, with or without chocolate	34,97	0,02
200401	Fabrics made from cotton and of other natural fibers	34,72	0,07
220203	Clothing fabrics excluding knitted and crocheted	35,00	0,06
230202	Footwear with sole and uppers of rubber, plastic, leather or textile materials; other types of footwear (except orthopedic and ice skating boots)	33,66	0,0
270100	Coke and semi-coke from soft coal, lignite or toft; retort carbon, mineral tars	28,88	0,0
280106	Plastics in primary forms	34,05	0,0
280201	Paints and varnishes and related products	34,24	0,14
280205	Manufactured textile fibers (artificial and synthetic)	15,72	0,2

290100	Rubber tyres and tubes	31,00	4,71
300101	Glass and glass products	25,58	0,0
300201	Cement, lime and plaster	24,20	0,0
330205	Electrical incandescent lamps; equipment for electric lighting and its parts and pieces	33,35	0,0
330301	Electronic Components; electronic valves, tubes and their parts and pieces	31,74	5,97

Source DANE, DSCN

The *unit value Index* is calculated for these products; first for customs items and then for products according to the national accounts classification.

For each item (i) of the customs classification, the price index is equal to:

$$\frac{\sum_j p_{ijt} \ q_{ijt}}{vume_i * \sum_j q_{ijt}}$$

Where:

p_{ijt} = unit price of transaction (j) belonging to item (i) in quarter (t)

q_{ijt} = net kilos or commercialized amounts of transaction (j) belonging to item (i) in quarter (t)

$vume_i$ = average unit value for year 2005 for item (i)

Where the average unit value for item (i) or $vume_i$ for year 2005 is equal to:

$$vume_i = \frac{\sum_j p_j q_j}{\sum_j q_j} \quad j \in \{i\}$$

p_j = Price for base year 2005 of transaction (j) belonging to item (i)

q_j = net kilos for base year 2005 of transaction (j) belonging to item (i)

$Vume_i$ = average unit value for item (i)

The price index of item (i) at current prices is equal to the relationship between current and constant values.

$$VC_{it} = \frac{V_{it}}{IP_{it}}$$

Where:

VC_{it} = Constant value of item (i) in quarter (t)

V_{it} = Current Value of item (i) in quarter (t)

IP_{it} = Price Index of item (i) in quarter (t)

Then the current values and the constant values of the items belonging to a given group k are added. The ratio of these values is the Price Index of the group.

IP_{kt} : the Price Index of the product (k) of the national accounts classification in quarter (t) is equal to:

$$IP_{kt} = \frac{\sum_{i=1}^n V_{it}}{\sum_{i=1}^n VC_{it}} * 100 \quad \text{for items (i) belonging to group (k) of National Accounts}$$

- **Heterogeneous Products.** For those products whose CV is over 35%, other price indices were used: PPI, indices from the *US Bureau of Labor Statistics* or from the IMF.

Producer Price Index (PPI): It is an indicator of prices of goods in the first channel of distribution, that is to say, where producer prices are practiced. The series of PPI is produced by DANE.

The *US Bureau of Labor Statistics* (BLS) of the United States produces series of price indices by product. Those prices were used when the USA was the main commercial partner.

International Monetary Fund: The Fund publishes the price indices of internationally traded commodities. Some of these indices were used to deflate imports series.

4.3.4. Exports and imports of services

Imports of services correspond to the delivery of services by non-resident units to resident units, and exports, to the delivery of services by resident units to non-resident units.

They include transport of passengers and freight; mail, telephone and other communication services; computer services; insurance; rental of machinery and equipment and other business services; personal services; and recreational services. They also include rights paid or received for the use of licenses, registered trade-marks, copyrights, etc., acquisition of services by non-residents who visit the country for business or for personal reasons for less than a year (exports) and acquisition of

services by residents while traveling abroad, either for business or for personal reasons (imports).

- **Sources of information.** Imports and exports of services are calculated as it is done for goods in the methodology of annual national accounts. The starting point for this procedure is the BoP compiled by the Central Bank. The BoP information is produced quarterly, in US dollars, and is presented by type of service. National accounts take this information in Colombian pesos by applying the quarterly average exchange rate.

- **Calculation at constant prices.** Imports of services at current prices are deflated by a general price index for all the products. In exports, specific price indices are used for each service.

- **Construction of the deflator for imports of services.** According to the methodology of the annual accounts, an index that combines the rate of international inflation and the rate of internal devaluation is used to deflate the series of imports of services.

- The first component: the rate of international inflation was constructed as an average between the inflation in developing countries and that in industrialized countries. The inflation of the industrialized countries has a weight of 90% and that of developing ones of 10%. The sum of these two components represents the international inflation.
- The second component, internal devaluation is stated as the quarterly change of the exchange rate.

- **Deflator for direct purchases**

- **Construction of the deflator for direct purchases**

For the base 2005, the direct purchases of goods and services were divided into four product categories:

- 620100: Direct purchases of goods abroad by residents. (Imports)
- 620200: Direct purchases of services abroad by residents. (Imports)
- 630100: Direct purchases of goods in the National Customs Territory (NCT) by non-residents. (Exports)
- 630200: Direct purchases of services in NCT by non-residents (Exports)

For each of the product categories, price indices were defined. In the case of imports, a price index was constructed taking into account the CPI of the main destinations of Colombian residents, which are: United States, Spain, Mexico and Ecuador, according to the International Visitors Survey (EVI) of year 2000. These indices were weighted using the expenses made by travelers to these countries, Table 29. For exports the total CPI was used.

Table 29. Total expenses of national travelers, by main international destinations, 2000

Concepts	Total	Spain	Ecuador	USA	Million dollars	
					Mexico	
Expenses	428	34	18	3.556	21	
Share %		8	4	83	5	

SOURCE: CENTRAL BANK; DANE

Calculations: DANE – DSCN

5. AUTOMATIZATION, DISSEMINATION, AND PUBLICATION OF RESULTS

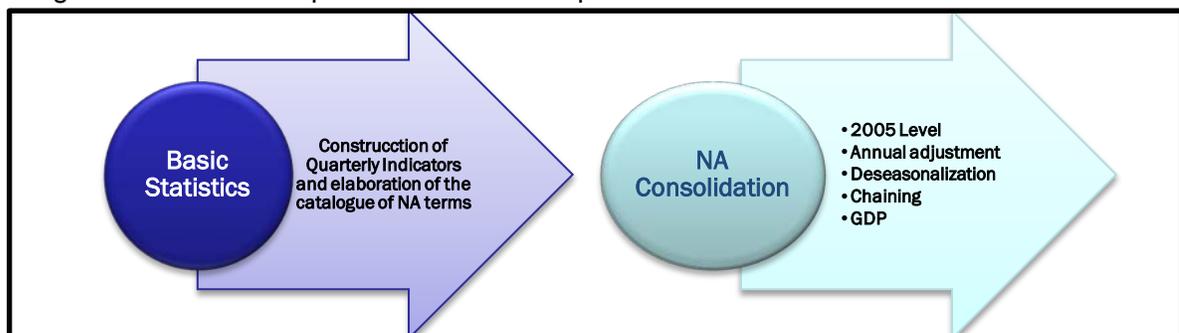
For the calculation of QNA, a computerized system, CTRIM-2005, has been developed. Its purpose is to support and facilitate the processes of consolidation of Quarterly National Accounts, and to assure and guarantee the traceability, the quality and the analysis of all the calculation processes of quarterly GDP.

The system includes the calculation of GDP from the production and the expenditure approaches at current and constant prices. Each approach includes editing and processing the basic statistics, generating quarterly indicators, adjusting to annual levels, seasonally adjusting the series, consolidating the results and finally calculating GDP. Section 1.4.6 describes the steps followed quarterly in the calculation of GDP, using the computerized system.

5.1. COMPUTERIZED CALCULATION PROCESS OF QUARTERLY NATIONAL ACCOUNTS

The automatization of the process for the calculation of QNA consists of two main steps (Diagram 1): 1) The editing and processing of basic statistics and 2) The consolidation processes for the calculation of GDP.

Diagram 1. General steps of the calculation process



Source: Realizar Consultores Ltda.

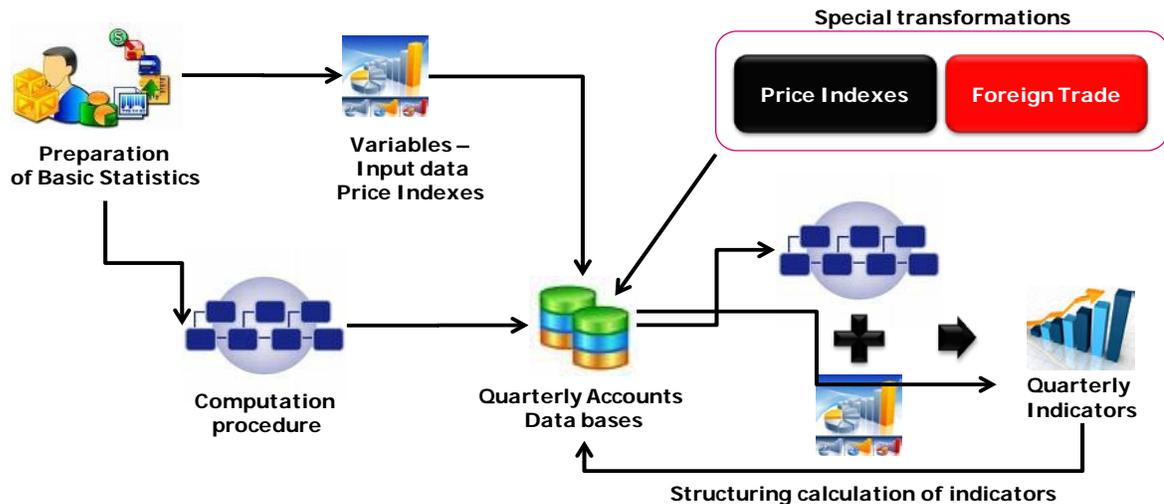
The processing of basic statistics to generate series of quarterly indicators used in the construction of GDP is a prerequisite, from a functional point of view.

Following general computer science guidelines, the following components were considered:

- Use of the Oracle database engine
- Generation of output tables and reports in MS Excel. This is the tool used by staff to verify and validate the results
- Interface with the Benchmarking software of Statistics Canada.

- Interface with the X-12 ARIMA program of the US Census Bureau
- The compilation procedure includes the calculation processes undergone by the different variables to finally produce the quarterly indicators, which are inputs for the consolidation of GDP, both at current and at constant prices (Diagram 2).

Diagram 2. Process of construction of indicators



- **Normalization**
- **Documenting the methodology**

Source: Realizar Consultores Ltda.

At this point it is important to point out that as an implementation strategy, and in order to assure the coherence of the results, calculations were structured in parallel so that the indicators at current prices and at previous year's constant prices are generated simultaneously.

Once the indicators have been constructed in CTRIM, the following step consists of giving them a meaning within the framework of national accounts. To achieve this purpose, the following references are associated with the attributes of national accounts (Diagram 3):

- **Transaction**, defines the specific use of the indicator: calculations of production, intermediate consumption, final consumption, gross capital formation, etc.;
- **Product**, that to which the indicator is related;
- **Valuation**, identifies if the indicator will be used in calculations at current or at previous year's constant prices.

Diagram 3. National accounts attributes used with the indicators of quarterly accounts



Source: Realizar Consultores Ltda.

A fundamental step is to locate the indicators within the national accounts context. It is here where the process of consolidation of GDP is originally configured.

The second step is the consolidation of GDP, which initiates with a series of processes for each of the elements of supply and demand at current prices or at 2005 constant prices by chaining. These processes are as follows (Diagram 4):

- **Generation of the series of indicators taking the level of year 2005 as base:** For each transaction of national accounts, quarterly series by product and activity of QNA⁶⁸ are constructed and adjusted to the level of the annual accounts for year 2005.
- **Harmonization of QNA with ANA:** The quarterly series resulting from the previous step are adjusted to the values of ANA, that is, the process guarantees that the sum of the quarters of a year corresponds with the value of ANA in the same year. The annual adjustment process is made by generating an interface with the Benchmarking program of *Statistics Canada*.
- **Seasonal adjustment:** This step eliminates the seasonal effect in the series obtained in the previous step. The system is supported by an interface with the program X-12 ARIMA of the US Census Bureau.
- **Generation of calculation by chaining:** When working with years that lack annual figures to be used as reference, the chaining indices method is applied to obtain the quarterly values at 2005 prices by chaining (Section 1.4.5).

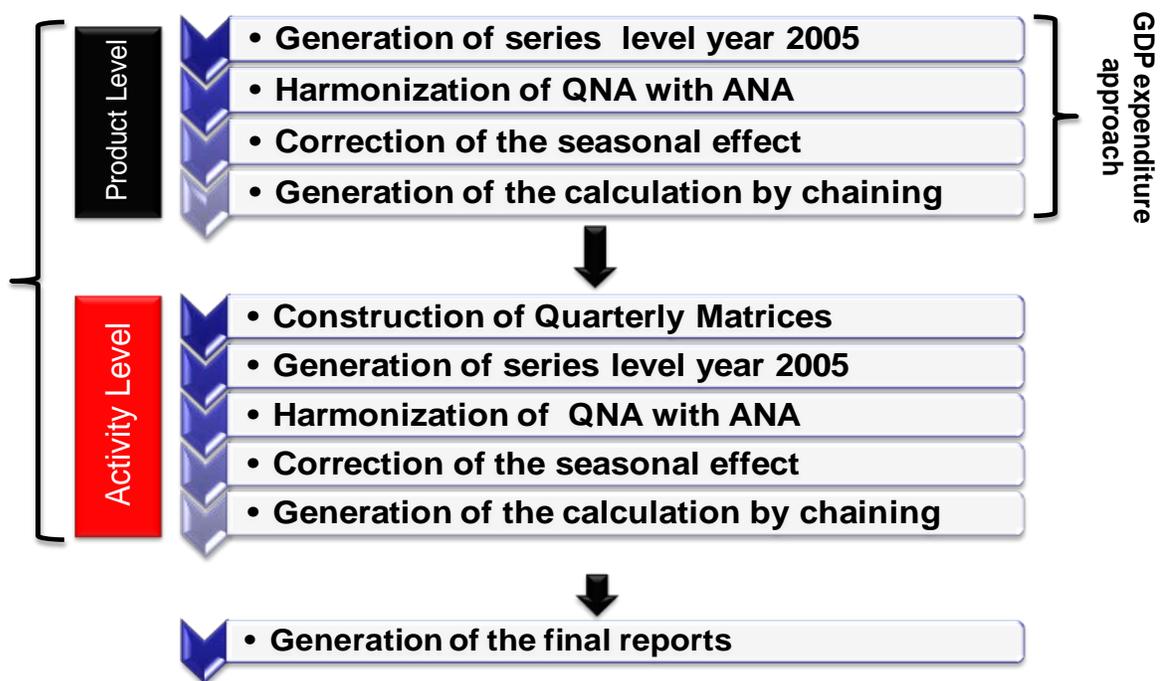
⁶⁸ The process of consolidation by activity is only done when GDP is calculated following the production approach.

The former steps are similar for the processes structured by product as for those structured by activity. They are implemented for each transaction involved in the construction of GDP independently of the approach used (production or expenditure).

Nevertheless there is a particular step whose implementation is required when working with the production approach (Diagram 4). It involves the construction of quarterly matrices, whose purpose is to generate the indicators required for the calculations of value added by economic activity. This particular procedure is done by using the distribution and technical coefficients obtained from the production and intermediate consumption matrices of the QNA.⁶⁹

Finally, when all the elements required for compiling the GDP, either following the production or the expenditure approach, are available, the corresponding output tables are generated. In addition to the above, the system produces different types of tables, which are a useful instrument for the tasks to be developed by the sector analysts, in particular for validating the coherence of the results that have been obtained.

Diagram 4. Process of consolidation of the Quarterly National Accounts



Source: Realizar Consultores Ltda.

Other processes are developed within the information system, which are necessary for the generation of the quarterly GDP; two of them have high relative importance:

⁶⁹ QNA matrices are a more aggregated version of the ANA matrices

- **Foreign trade module:** This module transforms the information from registered imports and exports, the Balance of Payments, the estimation of smuggling, the special treatment of illicit operations, FISIM and the CIF-FOB adjustments of the annual accounts.⁷⁰
- **Price indices module:** Through this module all the price indices are compiled. These indices are then transformed and used in the different steps of the calculation of quarterly GDP.

5.2. PRODUCTS AND INSTRUMENTS OF DISSEMINATION

In order to disseminate the results of the 2005 base quarterly national accounts, the following communication vehicles are available in DANE´s website:

- Press bulletins
- Press releases
- Press conferences presentations
- Methodological Notes

For the series of 2005 base Quarterly accounts, the following statistical annexes are available and published by quarters:

- GDP (production approach), , at 2005 constant prices by chaining, seasonally adjusted;
- GDP (production approach), at 2005 constant prices by chaining, without seasonal adjustment;
- GDP (production approach) at current prices, seasonally adjusted;
- GDP (production approach) at current prices, without seasonal adjustment;
- GDP (expenditure approach) at 2005 constant prices by chaining, seasonally adjusted;
- GDP (expenditure approach) at 2005 constant prices by chaining, without seasonal adjustment;
- GDP (expenditure approach) at current prices, seasonally adjusted.

⁷⁰ The results obtained from this module are used both by QNA and by ANA.

5.3. RELATED DOCUMENTS

5.3.1. Manual on Quarterly National Accounts. Concepts, Data, and Compilation - International Monetary Fund

This document orients and supports the compilation of the quarterly national accounts according to the international standards. Its main objective is to present a variety of options offered by the general principles that can be applied to the development of Quarterly National Accounts adapted to the technical circumstances of each country.

5.3.2. System of National Accounts 1993 (SNA 1993) – United Nations. International Monetary Fund, *et al.*

It is a complete, coherent and flexible set of macroeconomic accounts whose objective is to satisfy the needs of the analysts of the public and the private sector, and those in charge of the economic policy and decision-making.

5.3.3. System of National Accounts 2008 (SNA 2008) United Nations. International Monetary Fund, *et al*

It maintains the same basic theoretical framework as SNA 1993, though it includes some new methodologies and deepens the scope of an ample range of topics as a response to the changes in the economies and the needs of the users for this type of information.

5.3.4. X-12 ARIMA version 0.3 Time Series Statistical Research Staff Division. U.S. Census Bureau

The deseasonalization program X-12 ARIMA version 0.3 (U.S. Census Bureau, 2009) has been elaborated and distributed by the U.S. Census Bureau, and is used to adjust the series for seasonality. This program is a variant of the method X-11 ARIMA version 2000 developed by *Statistics Canada* that was used when the project of quarterly national accounts was initiated.

This innovation does not imply a substantial change with respect to the method of seasonal adjustment used previously, since the X-11 ARIMA and the X-12 ARIMA methods belong to the same family of adjustment methods based on movable averages.

5.3.5. Bases of National Accounting according to SNA 1993

This document provides a general description of SNA 1993, using the Colombian data to highlight the main concepts. In doing so, it facilitates the understanding and interpretation of the information and documents the basic macro-economic aggregates,

the supply and use matrix, the (real) accounts of the institutional sectors and their financial accounts.

5.3.6. Methodology of the quarterly national accounts of Colombia (1994 base)

This methodology presents advances in the elaboration of quarterly national accounts, in terms of methods of estimation, analysis of the seasonality and the consistency between the quarterly and the annual accounts, making the calculation of quarterly GDP possible, and thus satisfying the need of users for a more timely macroeconomic information.

5.3.7. Methodology quarterly national accounts (2000 base)

This document updates the previous one and introduces the new procedures and updates of indicators as a result of the statistical development of the country.

5.3.8. Quarterly press Bulletin

It is an instrument used for the dissemination of the results of the calculation of quarterly GDP, and presents the behavior of GDP following the production and the expenditure approach both at current and constant prices. In addition, this document describes the quarterly behavior of the main economic indicators, the GDP results of some countries of the region⁷¹, the methodological datasheet, a glossary of terms and the corresponding statistical annexes.

5.3.9. Balance of Payments Manual⁷² 5

It presents the international recommendations for the establishment of Balance of Payments statistics and is used as a guide for the periodic declaration of information by Member States to the IMF.

The central purposes are: (i) to determine norms on concepts, definitions, classifications and conventions, and (ii) to facilitate the collection, organization and systematic comparability at the national and international level of the Balance of Payments and the Position of International Investment statistics.

⁷¹ Depending upon the information available at the moment of publication.

⁷² IMF, Balance of Payments Manual, fifth edition

5.4. SCHEDULE

Table 30 presents the schedule of activities for QNA.

Table 30. Schedule of technical activities for the compilation of quarterly accounts, in months and weeks

Activities	Month 1				Month 2				Month 3			
	1	2	3	4	1	2	3	4	1	2	3	4
Preparation and planning	■	■										
Collecting and analysis of the basic statistics			■	■	■	■	■	■	■	■	■	■
Construction and loading of consistent indicators by economic variables into the consolidation system				■	■	■	■	■	■	■	■	■
Consolidation of results for production and expenditure						■	■	■	■	■	■	■
Review, analysis of consistency and adjustments								■	■	■	■	■
Internal, and external sectoral committees									■	■	■	■
Publication of the compilation document										■	■	■
Publication of results on the website											■	■

Source: DANE, DSCN

Annex A. Product classification used in the Quarterly National Accounts and its correspondence with the classification used in Annual National Accounts

2005 Base

Codes	Quarterly national accounts Description	Annual national accounts codes			
010001	Parchment coffee and low grade beans	010001			
010002	Coffee trees	010002			
020101	Wheat and meslin	020101			
020102	Maize (corn)	020102			
020103	Rice, not husked	020103			
020199	Barley , rye and oats grains, sorghum grains and other cereals	020104	020199		
020201	Potatoes	020201			
020202	Fresh and dried leguminous vegetables;	020202			
020204	Tomato; other vegetables, fresh or chilled n.ep (onion, garlic, beet, mushrooms, etc.)	020204	020205		
020207	Cassava; other edible roots and tubers with high starch or inulin content	020207	020299		
020301	Fresh bananas	020301			
020302	Fresh plantains	020302			
020303	Citrus fruits (lemon, mandarin and other citric ones (grapefruit, tangelo, etc.)). other fresh fruits and nuts; Coconuts, pineapples, figs, mangoes, guavas, fresh or dried	020303	020399		
020400	Oil seeds and oleaginous fruit	020401	020403	020499	
020500	Living plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds	020501	020502	020503	020599
020600	Beverage and spice crops	020601	020699		
020700	Unmanufactured tobacco	020700			
020800	Sugar cane	020800			
020900	Raw vegetable material n.e.c.	020901	020999		
021000	Plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes	021001	021002	021099	

021100	Developing areas and other services related to agricultural production	021101	021102	021103	021104	021105
		021199				
030101	Bovine cattle, live	030101				
030102	Raw milk and milk cream	030102				
030201	Poultry, live	030201				
030202	Eggs, in shell, fresh, preserved, cooked or embryonated	030202				
030301	Swine, live	030301				
030302	Other animals, live; by-products and services related to animal farming	030302	030303	030304		
040001	Forestry and logging products (except fuel wood) and related services	040001	040003	040005	040004	
040002	Fuel wood	040002				
050100	Fishing products, fish farming and related services	050101	050102	050300	050200	
060000	Mineral coal	060001	060003			
070001	Crude petroleum, services related to petroleum and natural gas extraction, except those of prospection	070001	070003			
070002	Natural gas and other energy sources (uranium and thorium)	070002				
080101	Iron ores and concentrates	080101				
080102	Other metallic ores	080102	080103	080104		
080201	Ores mainly composed of gold	080201				
080202	Other precious metal ores	080202	080203			
090100	Monumental or building rock or stone, services related to mining except those related to oil and natural gas	090100	090500			
090201	Rock and sea salt	090201	090202			
090300	Non-metallic ores for industrial uses	090300				
090400	Emeralds and other precious and semiprecious stones	090400				
100101	Meat of bovine animals, swine meat, meat of ovine, sheep, goat, equine and other animals, fresh or chilled; Hides and skins of bovine, sheep, goat, equine and other animals; Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis	100101	100102	100300	100103	100104
		100105				
100106	Meat and edible offal of poultry and other meats, fresh or chilled	100106				

100108	Preserves and preparations of meat	100108					
100200	Fish and sea products	100201	100202	100203			
		110001	110003	110004	110005	110006	
110000	Animal and vegetable oils and fats, Cocoa, chocolate and sugar confectionery, food products n.e.c	110007	160100	160200	160300	170101	
		170102	170103	170104	170201	170202	
		170203	170299	170300			
120000	Dairy products	120001	120002	120003	120004	120005	
		120006	120007				
130100	Grain mill products, starches and starch products, services related to the elaboration of grain mill products, starches and its products	130101	130102	130300	130103	130104	
		130105					
130200	Bakery products and pasta	130201	130202				
140100	Coffee milling services	140101	140102				
140200	Industrial products of coffee	140201	140202	140203			
150001	Raw cane or beet sugar, refined or not; services related to elaboration and refining of sugar and panela	150001	150004				
150002	Panela; honey and molasses	150002	150003				
180000	Beverages	180101	180102	180103	180105	180200	
		180301	180303				
190000	Tobacco products	190000					
200000	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	200100	200200	200301	200302	200401	
		200403	200500				
210000	Textile articles other than apparel	210001	210002	210003	210004		
220000	Knitted and crocheted fabrics; wearing apparel	220100	220201	220202	220203	220204	
		220205	220300	220400			
230100	Tanned leather; composition leather	230100					
230200	Leather products and footwear	230201	230202	230203	230204	230205	
240000	Products of wood, cork, straw and plaiting materials	240100	240201	240202	240299	240300	
250000	Paper products, paperboard and its products	250001	250002	250003	250004		

260000	Printed matters and analogous products	260100	260201	260299	260300	260400
270000	Refined petroleum products; nuclear fuel	270100	270201	270202	270203	270400
		270205	270206	270300		
280100	Basic chemicals	280101	280102	280103	280104	280105
		280106	280107			
280200	Other chemical products; man-made fibres; services related to the manufacture of chemical substances and products on a fee or contract basis	280201	280202	280203	280204	280205
		280400				
280300	Chemical products of illegal use	280301	280302			
290000	Rubber and plastics products	290100	290201	290202	290204	290300
		290203				
300100	Glass and glass products; ceramic ware and refractory products	300101	300102	300103		
300200	Cement and other non mineral products n.e.c.; Services related to non metallic mineral products manufacture, on a fee or contract basis	300201	300202	300203	300300	
310101	Basic metals, fabricated metal products, except basic precious metals and metals clad with precious metals; except machinery and equipment	310101	310102	310104		
310103	Basic precious metals and metals clad with precious metals	310103				
310200	Fabricated metal products, except machinery and equipment; services related to the elaboration and repair of metal product, except machinery and equipment	310201	310202	310299	310301	310302
		320101	320102	320103	320104	320105
320000	Machinery and equipment	320199	320201	320202	320203	320204
		320205	320206	320299	320207	320208
		320300				
330000	Other machinery; electrical machinery and apparatus	330101	330102	330201	330202	330203
		330204	330205	330299	330301	330302
		330303	330304	330305	330401	330402
		330403	330404	330500		

340000	Transport equipment	340101	340102	340103	340104	340105
		340203	340204	340299	340301	340302
350000	Furniture	350100	350200			
360000	Other manufactured goods n.e.c	360100	360201	360202	360203	360204
		360300				
380000	Electrical energy	380001	380002	380003		
390000	Gas distributed through mains	390000				
400000	Water, wastes or scraps; sewage and refuse disposal, sanitation and other environmental protection services	400000	370001	370002	370003	370004
		370005	370006	580001	580002	
410100	General construction services of residential buildings	410100				
410200	General construction services of non-residential buildings	410200				
410300	Installation, building completion and finishing services; Renting services related to equipment for construction or demolition of buildings or civil engineering works, with operator	410300	410400			
420000	Construction works, civil engineering works and leasing services of equipment with operator	420101	420103	420104	420106	420199
		420200				
430000	Distributive trade services	430000				
440000	Repair services of motor vehicles, household electrical appliances and other goods	440100	440200			
450100	Lodging services	450100				
450200	Food and beverage serving services	450201	450202			
460100	Land transport services of passengers	460101	460102	460103	460104	
460200	Road transport services of freight including railroad	460201	460202			
460300	Transport services via pipeline	460300				
480100	Scheduled and non scheduled air transport services of passengers; rental services of aircraft with operator	480100				
480200	Air transport services of freight	480200				
490000	Water transport services; supporting and auxiliary transport services	470100	470200	490101	490103	490104

		490105	490299	490201					
500100	Postal and courier services	500100							
500201	Fixed telephony services, mobile telecommunication services, telecommunication services other than data transmission and programme distribution services	500201							
500203	Data transmission services; programme distribution services	500203	500204						
510101	Financial intermediation services indirectly measured - FISIM	510101							
510102	Other financial intermediation services	510102							
510201	General insurance; life and reinsurance	510201							
510202	Health and pension compulsory social security services and professional risks	510202							
5103	Supporting financial intermediation services, insurance, pension funds and cesantias	510301	510303						
520101	Renting or leasing services involving residential property on own account	520101							
520102	Renting or leasing services involving own or leased residential property to third parties	520102							
520103	Renting or leasing services involving non-residential own or leased property	520103							
520200	Real estate services on a fee or contract basis	520200							
530000	Business services except financial and real estate services	530101	530102	530103	530104	530201			
		530202	530203	530204	530205	530206			
540100	Public administration and defence; direction, administration and control of compulsory social security services; non -market education services	540100	540200	560001	560002	560003			
		560004	560005						
550000	Market education services	550001	550002	550003	550004	550005			
570000	Market human health and social services	570000							
590000	Services of membership organizations, cultural, sports and other market and non market services	590001	590002	590003	590004	590005			
		590006	590007	590008	590009	590010			
		590011	600001	600002					
610000	Domestic services	610000							

Source: DANE, DSCN

**Annex B - Activity classification used in the quarterly national accounts and its equivalence with the classification used in the annual national accounts
2005 Base**

Quarterly Accounts		Annual Accounts	
Codes	Description	Codes	Description
01	Specialized production of coffee	01	Specialized production of coffee
02	Agriculture, and related service activities except specialized production of coffee	02	Agriculture, and related service activities except specialized production of coffee
03	Farming of animals and hunting	03	Farming of animals and hunting
04	Forestry, logging and related service activities; Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing	04	Forestry, logging and related service activities
		05	Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing
06	Mining of coal and lignite; extraction of peat	06	Mining of coal and lignite; extraction of peat
07	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying; mining of uranium and thorium ores	07	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying; mining of uranium and thorium ores
08	Mining of metal ores	08	Mining of metal ores
09	Quarrying of non-metallic minerals	09	Quarrying of non-metallic minerals
10	Production, processing and preservation of meat and fish	10	Production, processing and preservation of meat and fish
11	Manufacture of vegetable and animal oils and fats; of cocoa, chocolate and sugar confectionery; manufacture of other food products	11	Manufacture of vegetable and animal oils and fats
		16	Manufacture of cocoa, chocolate and sugar confectionery
		17	Manufacture of other food products n.e.c.
12	Manufacture of dairy products	12	Manufacture of dairy products
13	Manufacture of grain mill products, starches and starch products, prepared animal feeds, bakery products, macaroni, noodles, couscous and similar farinaceous products	13	Manufacture of grain mill products, starches and starch products, prepared animal feeds, bakery products, macaroni, noodles, couscous and similar farinaceous products
14	Manufacture of coffee products	14	Manufacture of coffee products
15	Sugar mills and refineries	15	Sugar mills and refineries
18	Manufacture of beverages	18	Manufacture of beverages
19	Manufacture of tobacco products	19	Manufacture of tobacco products

20	Preparation and spinning of textile fibres, weaving of textiles, and finishing of textiles produced in other production unit	20	Preparation and spinning of textile fibres, weaving of textiles, and finishing of textiles produced in other production unit
21	Manufacture of other textiles	21	Manufacture of other textiles
22	Manufacture of wearing apparel, including knitted and crocheted fabrics and articles; dressing and dyeing of fur; manufacture of articles of fur	22	Manufacture of wearing apparel, including knitted and crocheted fabrics and articles; dressing and dyeing of fur; manufacture of articles of fur
23	Tanning and dressing of leather; manufacture of footwear; manufacture of travel accessories, luggage, handbags, saddlery and harness	23	Tanning and dressing of leather; manufacture of footwear; manufacture of travel accessories, luggage, handbags, saddlery and harness
24	Processing of wood, manufacture of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	24	Processing of wood, manufacture of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
25	Manufacture of paper, paperboard and paper and paperboard products	25	Manufacture of paper, paperboard and paper and paperboard products
26	Publishing and printing	26	Publishing and printing
27	Manufacture of coke, refined petroleum products and nuclear fuel	27	Manufacture of coke, refined petroleum products and nuclear fuel
28	Manufacture of basic chemicals and chemical products except synthetic rubber in primary forms	28	Manufacture of basic chemicals and chemical products except synthetic rubber in primary forms
29	Manufacture of rubber and plastics products including synthetic rubber in primary forms	29	Manufacture of rubber and plastics products including synthetic rubber in primary forms
30	Manufacture of other non-metallic mineral products	30	Manufacture of other non-metallic mineral products
31	Manufacture of basic metallurgical products and of fabricated metal products, except machinery and equipment	31	Manufacture of basic metallurgical products and of fabricated metal products, except machinery and equipment
32	Manufacture of machinery and equipment n.e.c.	32	Manufacture of machinery and equipment n.e.c.
33	Manufacture of office, accounting and computing machinery, electrical machinery, radio, television and communication equipment, medical, precision and optical instruments, watches and clocks and apparatus n.e.c	33	Manufacture of office, accounting and computing machinery, electrical machinery, radio, television and communication equipment, medical, precision and optical instruments, watches and clocks and apparatus n.e.c
34	Manufacture of motor vehicles, trailers and semi-trailers and of other transport equipment	34	Manufacture of motor vehicles, trailers and semi-trailers and of other transport equipment
35	Manufacture of furniture;	35	Manufacture of furniture;

36	Other manufacturing n.e.c.	36	Other manufacturing n.e.c.
38	Production, transmission and distribution of electricity	38	Production, transmission and distribution of electricity
39	Manufacture of gas including that of coke oven products; distribution of gaseous fuels through mains; steam and hot water supply	39	Manufacture of gas including that of coke oven products; distribution of gaseous fuels through mains; steam and hot water supply
40	Water collection, treatment and supply; sewage and refuse disposal, sanitation and similar activities; recycling	40	Water collection, treatment and supply;
		58	Sewage and refuse disposal, sanitation and similar activities
		37	Recycling
41	Building construction (for residential and non residential use) including land preparation; Renting of construction or demolition equipment with operator	41	Building construction (for residential and non residential use) including land preparation; Renting of construction or demolition equipment with operator
42	Site preparation for civil work;Civil engineering	42	Site preparation for civil work;Civil engineering
43	Wholesale and retail trade	43	Wholesale and retail trade
44	repair of motor vehicles, motorcycles and personal and household goods	44	Repair of motor vehicles, motorcycles and personal and household goods
45	Hotels, restaurants, bars and similar establishments	45	Hotels, restaurants, bars and similar establishments
46	Land transport; transport via pipelines	46	Land transport; transport via pipelines
48	Air transport	48	Air transport
49	Supporting and auxiliary transport activities; activities of travel agencies	49	Supporting and auxiliary transport activities; activities of travel agencies
47	Water transport	47	Water transport
50	Post and telecommunications	50	Post and telecommunications
51	Financial intermediation, including insurance and pension and severance funds	51	Financial intermediation, including insurance and pension and severance funds
52	Real estate activities and rentals of dwellings	52	Real estate activities and rentals of dwellings
53	Renting and business activities	53	Renting and business activities
54	Public administration and defence; compulsory social security; non market education	54	Public administration and defence; compulsory social security
		56	Non market education
55	Market education	55	Market education
57	Market health and social work	57	Market health and social work

59	Other market and non market community, social and personal service activities except Sewage and refuse disposal, sanitation and similar activities	}	59	Other market community, social and personal service activities except Sewage and refuse disposal, sanitation and similar activities
			60	Other non market community, social and personal service activities except Sewage and refuse disposal, sanitation and similar activities,
61	Private households with employed persons		61	Private households with employed persons

Source: DANE, DSCN

Annex C Relationship between the QNA economic activities classification and the activities of the Annual National Accounts

QNA economic activities ¹	Annual national accounts economic activities	
Description	Code	Description
(1) Agriculture, forestry and fishing	01	Specialized production of coffee
	02	Agriculture, and related service activities except specialized production of coffee
	03	Farming of animals and hunting
	04	Forestry, logging and related service activities; Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing
(2) Mining and quarrying	06	Mining of coal and lignite; extraction of peat
	07	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying; mining of uranium and thorium ores
	08	Mining of metal ores
	09	Quarrying of non-metallic minerals
(3) Manufacturing	10	Production, processing and preservation of meat and fish
	11	Manufacture of vegetable and animal oils and fats; of cocoa, chocolate and sugar confectionary; manufacture of other food products
	12	Manufacture of dairy products
	13	Manufacture of grain mill products, starches and starch products, prepared animal feeds, bakery products, macaroni, noodles, couscous and similar farinaceous products
	14	Manufacture of coffee products
	15	Sugar mills and refineries
	18	Manufacture of beverages
	19	Manufacture of tobacco products
	20	Preparation and spinning of textile fibres, weaving of textiles, and finishing of textiles produced in other production unit
	21	Manufacture of other textiles
	22	Manufacture of wearing apparel, including knitted and crocheted fabrics and articles; dressing and dyeing of fur; manufacture of articles of fur
	23	Tanning and dressing of leather; manufacture of footwear; manufacture of travel accessories, luggage, handbags, saddlery and harness

		24	Processing of wood, manufacture of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
		25	Manufacture of paper, paperboard and paper and paperboard products
		26	Publishing and printing
		27	Manufacture of coke, refined petroleum products and nuclear fuel
		28	Manufacture of basic chemicals and chemical products except synthetic rubber in primary forms
		29	Manufacture of rubber and plastics products including synthetic rubber in primary forms
		30	Manufacture of other non-metallic mineral products
		31	Manufacture of basic metallurgical products and of fabricated metal products, except machinery and equipment
		32	Manufacture of machinery and equipment n.e.c.
		33	Manufacture of office, accounting and computing machinery, electrical machinery, radio, television and communication equipment, medical, precision and optical instruments, watches and clocks and apparatus n.e.c
		34	Manufacture of motor vehicles, trailers and semi-trailers and of other transport equipment
		35	Manufacture of furniture;
		36	Other manufacturing n.e.c.
		38	Production, transmission and distribution of electricity
(4) Electricity, gas, steam and air conditioning supply; Water supply; sewerage, waste management and remediation	}	39	Manufacture of gas including that of coke oven products; distribution of gaseous fuels through mains; steam and hot water supply
		40	Water collection, treatment and supply; sewage and refuse disposal, sanitation and similar activities; recycling
(5) Construction	}	41	Building construction (for residential and non residential use) including land preparation; Renting of construction or demolition equipment with operator
		42	Site preparation for civil work; Civil engineering
(6) Wholesale and retail trade; repair of motor vehicles and motorcycles; accommodation and food service activities	}	43	Wholesale and retail trade
		44	repair of motor vehicles, motorcycles and personal and household goods
		45	Hotels, restaurants, bars and similar establishments
(7) Transportation and storage; communication	}	46	Land transport; transport via pipelines
		48	Air transport
		49	Supporting and auxiliary transport activities; activities of travel agencies
		47	Water transport

(8) Financial and insurance activities; Real estate activities; business activities	}	50	Post and telecommunications
		51	Financial intermediation, including insurance and pension and severance funds
		52	Real estate activities and rentals of dwellings
		53	renting and business activities
(9) Social, community and personal services	}	54	Public administration and defence; compulsory social security; non market education
		55	Market education
		57	Market health and social work
		59	Other market and non market community, social and personal service activities except Sewage and refuse disposal, sanitation and similar activities
		61	Private households with employed persons

1 Also called main tabulation categories

Source: DANE - DSCN

Annex D. Benchmarking Procedure

The sum of the quarters is adjusted to the annual value, using the “Benchmarking” software, developed by Pierre Cholette of Statistics Canada, based on the General Least Square (GLS) technique. In this technique, data that correspond to the same variable observed with different frequency (annual and quarterly in our case) are adjusted, in such a way that the sum of the four quarters is equal to the value of the annual variable, preserving to the extent possible the movements existing among the quarters of the original series.

The benchmarking adjustment is performed due to the fact that in general, the indicators used to estimate the quarterly data are not as accurate as those used for the annual estimations, which produces discrepancies between the sum of the quarters and the annual estimation.

The benchmarking procedure presents two fundamental features in the QNA:

- a) The quarterization of the annual data in order to elaborate historical time series of the QNA (back-casted series) and the revision of the preliminary estimations of the QNA, in order to align them with the new annual data available.
- b) The extrapolation of the series in order to update them using the changes of the indicator corresponding to the most up-to-date period (extrapolated series).

The model that is used is known as the Proportional Denton Method, which preserves the period-to-period percentage change of the original series, meaning that the adjusted quarterly series is close to the original series. This method is more appropriate for series showing seasonality, which is generally the case for economic series.

The equation that describes the procedure of the Proportional Denton Method is expressed as follows:

$$\min_{(X_1, \dots, X_{4\beta}, \dots, X_T)} \sum_{t=2}^T w_t \left[\frac{X_t}{I_t} - \frac{X_{t-1}}{I_{t-1}} \right]^2$$

For $t \in \{1, \dots, 4\beta, \dots, T\}$ and under the restriction that, for the series of flows

$$\sum_{t=4y-3}^{4y} X_t = A_y \quad \text{con } y \in \{1, \dots, \beta\}$$

Meaning that the sum of the quarters must be equivalent to the annual data corresponding to each year of reference. Knowing that:

- t *The time, for example $t = 1y$, means t is the first quarter of year y , and $t = 4y$ means t is the fourth quarter of year y*
- X_t *The estimation or indicator of the variable X in the QNA for quarter t*
- I_t *The level of the indicator I corresponding to quarter t*
- A_y *The annual data corresponding to year y in ANA*
- β *The last year for which annual reference data are available*
- T *The last quarter for which source data are available*
- w *The quarterly weight*

The program presents some statistics on the discrepancies, both for the original series, and for the adjusted series. The average of the discrepancies measures the difference of level between the annual values and the sums of the original series. Using the Denton method, once the quarterly series has been adjusted, the discrepancies must be null. The minimum and maximum value of the discrepancies measures the spread. A small spread indicates that the Benchmarking process has been successful. If the spread is high, the process to adjust the series to the annual values will distort the movements of the original series.

In order to carry out this procedure, the program shows an analysis coefficient called annual ratio (RI), which represents the ratio between the annual data or of reference and the sum of the indicator of the four quarterly data.

The changes of the annual ratio (RI) obey to differences between the long term movements of the indicator as compared to the annual data, so that long term changes in the RI coefficient enables identifying the need for improving the sources of annual and quarterly data.

The example below shows the ratio RI for the product banana in which the quarterly indicator is the same as the one used in the annual accounts, therefore the value of the coefficient (near to one) shows the coherence between the quarterly indicator and the annual value.

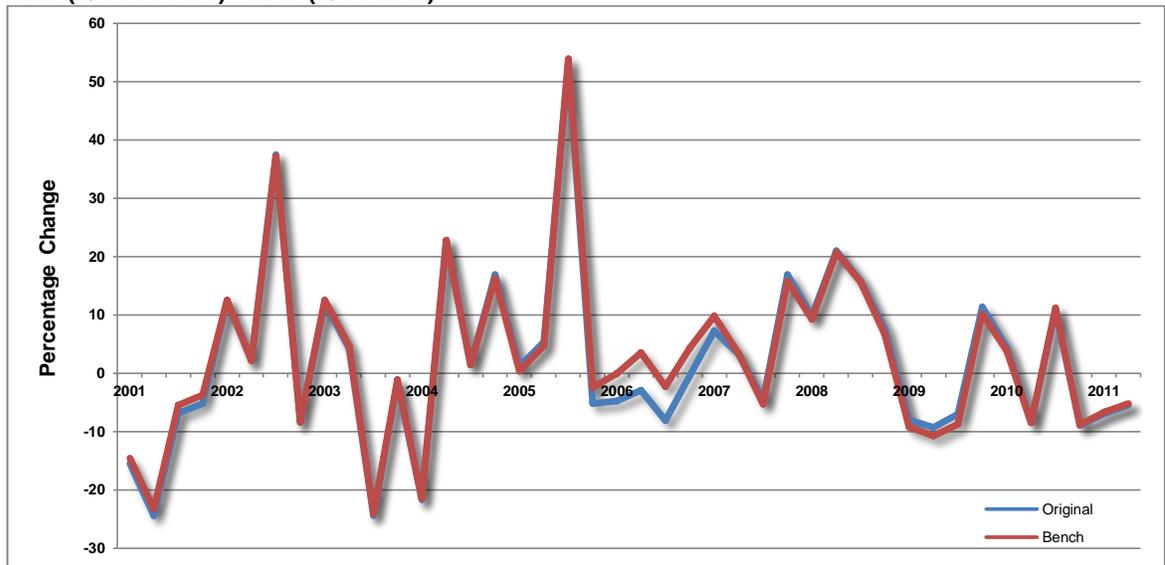
**RI ratio for the product banana
2000-2010^{Pr}**

Year	Annual Value		Change %		Ratio RI
	Original	Bench	Original	Bench	
2000	1.140	1.115			0,98
2001	989	981	-13,2	-12,0	0,99
2002	1.072	1.063	8,4	8,4	0,99
2003	1.049	1.044	-2,1	-1,8	1,00
2004	1.085	1.079	3,4	3,4	0,99
2005	1.195	1.195	10,1	10,8	1,00
2006	1.148	1.213	-3,9	1,5	1,06
2007	1.216	1.286	5,9	6,0	1,06
2008	1.379	1.452	13,4	12,9	1,05
2009	1.344	1.394	-2,5	-4,0	1,04
2010pr	1.320	1.369	-1,8	-1,8	1,04

Source: DANE, DSCN
pr: Preliminary Data

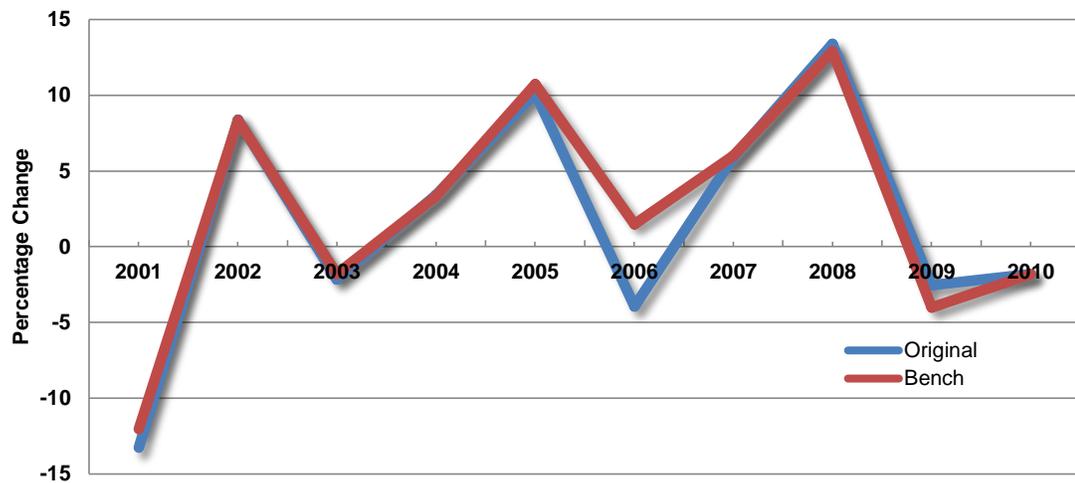
In this exercise the tendency of the indicator is the same as that shown in the annual accounts; therefore, the behavior of the original series and of that adjusted by the benchmarking method is the same. This can be seen in the following graph, where the annual changes and the total of the quarters annual changes are compared.

**Product banana
Annual Percentage Change
2001 (Quarters I-IV) - 2011 (Quarter III)**



Source: DANE, DSCN

**Product banana
Percentage Change - Total Year
2001-2010**



Source: DANE, DSCN

Analysis of the outcomes resulting from the execution of the Benchmarking program

Some important aspects of the execution and analysis of the results of the program are presented below:

1. Execution

Files: The benchmarking program uses four files that must have the adequate specifications and formats according to the recommendations of the manual, so that the program can perform the adjustment in an optimal way:

- A file containing the names and the format of the other files being used
- A file specifying the selected options of the program
- A file with the original series that must be adjusted
- A file containing the annual values (Benchmarks)

Results: The program produces output files that contain statistical information, graphs and error messages about the processing. These files are of vital importance to know the quality of the adjustment to the annual level; therefore the analysis of results will be focused on the information that these provide.

2. Analysis of Results

Significance of the estimated bias: The program calculates the typical spread of the estimated bias. A high value of this statistics indicates that the estimated bias is not significantly different from zero.

Statistics of the discrepancies: These statistics are compiled for the original and the adjusted series. The average of the discrepancies measures the difference of level between the original and the adjusted series. In the Denton method, important discrepancies may appear since the two series (the original and the adjusted one) may have the same movements, but be at very different levels.

Statistics on the preservation of the movement: They provide information on the average discrepancy of the movement between the original series and the adjusted one, using the absolute differences of the growth rates. The two statistics that are calculated are:

- The statistical proof cm , which measures the changes in the period-to-period growth rate.
- In the cases of additive benchmarking, a statistics is defined that measures the changes in the differences, period to period. High values of this statistics correspond to erratic discrepancies and low values to relatively constant ones.

Graphs: The program presents the graph of the original series, the adjusted series and the annual values (*Benchmarks*). In addition, it represents graphically the corrections made to the original series, obtaining the series adjusted along with the discrepancies.

Annex E: Procedure X-12 ARIMA

The series of the quarterly accounts are seasonally adjusted using the X-12 ARIMA program, developed by the US Census Bureau, which is an updated version of X-11 ARIMA. This program uses the most efficient and common methodology to deseasonalize series in massive form, which has turned it into one of the most used by national statistics offices worldwide.

The procedure used by the X-12 ARIMA for the estimation of the components of a time series is summarized in the following four steps:

1. Adjustment of the original series by the significant presence of atypical values, changes of level and calendar effects, which can be previously specified or be identified automatically by the program.
2. Adjustment of a Box - Jenkins (1970) type model to the data. This model can be specified by the user or be chosen automatically by the program from pre-established SARIMA models⁷³.
3. Using the specified model, backcasts and forecasts are generated. This new information is added to the series to conform the so-called extended series.
4. The program carries out the seasonal adjustment through several iterations using the calculation of moving averages on the extended series. In this iterative process the trend-cycle and irregular components are also identified.

One of the advantages of using this method is that it combines the use of SARIMA models for the creation of the extended series along with the filter proposed by the X-11 using movable averages, and thus reduces the impact on the seasonal adjustment when new information is added. That means that the addition of new information will not produce great discrepancies between the growth rates calculated before or after adding the information. This is an important feature in view of the fact that the calculated growth rates are used for short and medium term economic analysis.

Another relevant feature of the program is that it automatically performs different tests of hypothesis in order to determine the presence of stable seasonality, movable seasonality and the possibility of identifying seasonality. This analysis is made by means of tests based on the analysis of the variance of the ratios (or differences, according to the decomposition used) seasonal component and irregular component.

Finally, the X-12 ARIMA program shows a family of statistics with respect to the quality of the adjustment summarized in the Q statistic. These statistics (eleven for long series, seven for short ones) make it possible to evaluate the quality of the adjustment according to different aspects of the result. They are devised in such a form that they vary from 0 to 3, and are considered as acceptable if they are less than 1.

This procedure is applied to each of the series adjusted to the annual level that are included in the calculation of the quarterly GDP from the production and the expenditure approach.

As an illustration, the following example presents the seasonal adjustment of the series of the product 360000 - Other manufactured goods.

1. The program is run with the specifications required to make the seasonal adjustment.

```
#OtherManufacturedGoods.spc  
#Created using X-12 version 0.3 build 192
```

```
series{
```

⁷³A SARIMA model is one including an ARIMA model and a seasonal component. An ARIMA model is an integrated autoregressive moving average model that uses changes and regressions on statistical data to find patterns in order to predict the future.

```

    title= "OtherManufacturedGoods.spc"
    file= "OtherManufacturedGoods.txt"
    format= "Datevalue"
    period=4
    savelog=peaks
}
transform{
    function=log
}
regression{
    variables= ()
    #aicstest= (TD Easter) savelog=aicstest
}
outlier{
    types=all
    lsrn=3
}
arima{model= (1 0 0)/([3] 1 0)}
forecast{
    maxlead=4
    print=none
}
estimate{print=(roots regcmatrix) savelog=aicc}
check {print=all savelog=lbq}
}
force{
    target=original
    save=saa
}
x11{
    seasonalma=s3x5
    trendma=5
    savelog= (M1 M7 M8 M9 M10 M11 Q Q2)
}
slidingspans{savelog=percent additivesa=percent}
history{estimates= (fcst aic sadj sadjchng trend trendchng)}

```

The specifications that determine how the seasonal adjustment is performed are: the transformation of the series, the auto regressing factors, the SARIMA model, the moving averages (seasonalma) and the filter used for the identification of the trend (trendma). These specifications can change if:

- In the general review that is performed on average once a year, specifications are identified that might improve the adjustment.
 - In the consolidation of information for the quarterly GDP, great discrepancies are identified between the annual growth rates of the original series and that of the seasonally adjusted one for that period and other specifications are identified that might reduce the discrepancy while maintaining the quality of the adjustment.
2. The information deriving from the application of the seasonal adjustment program using the defined specifications is analyzed.

Main statistical items reviewed in the deseasonalization process

Items		Analysis and Conclusions
SARIMA Model	(1, 0, 0) ([3], 1.0) ₄	The specified coefficients turn out to be significant
Processing	Logarithmic	The transformation used stabilizes the variance throughout the series
Seasonal Difference (#)	1	The average throughout the quarterly groups (first, seconds, third and fourth quarters) turns out to be constant after the seasonal difference
Regression variables	None	No additional effect is considered
Outliers	None	The program did not identify atypical values throughout the series
MAPE (%)	11,3	The level of the percentage of Average Absolute Error is less than 15%; the model is considered to produce suitable estimations
D8: Fe (Stability)	110,6	The value of the Fe statistic is greater than Fm (movable), which indicates that seasonality present in the series is stable
D8: Fm (Movable)	1,8	The value of the Fm statistic is smaller than Fe, which indicates that there is no movable seasonality in the series
Fei (Identifiable Seasonality)	Identifiable Seasonality Present	Joint F test of movable and stable seasonality, the final criterion sample that has identified a seasonal component in the series, thus the series must have a seasonal adjustment
Residual Seasonality	0,06	The value is less than 1.2, which indicates that there is no seasonal component in the residuals since the model has recorded it in a suitable manner
M1	0,76	Acceptable
M2	0,43	Acceptable
M3	4,42	Unacceptable
M4	0,64	Acceptable
M5	0,81	Acceptable
M6	0,09	Acceptable
M7	0,23	Acceptable
M8	0,70	Acceptable
M9	0,11	Acceptable
M10	0,60	Acceptable
M11	0,60	Acceptable
Q Statistics	0,57	Acceptable
Q Statistics (without M2)	0,58	Acceptable
General Conclusion	Initially the F tests identified the existence of a seasonal component; which means that it was necessary to deseasonalize the series. The seasonal adjustment was carried out in an optimum manner taking into consideration some statistics and particularly the summary Q statistics that shows a good quality in the adjustment.	

The next section presents aspects that need to be taken into consideration in the statistical analysis of the deseasonalization process for each series:

a) Previous Stage

Graphic Analysis: This part corresponds to a stage prior to the adjustment, and it enables observing the behavior of the series and possible atypical movements or extreme values: additionally, it provides indications about the level of seasonality, the need for a transformation due to the observation of a high variability or of possible orders of differentiation due to the behavior of the average.

Augmented Dickey Fuller Test: This test enables verifying that the series has constant average or if it is necessary to use differences: this is an important information for the specification of the model.

Box-Cox Transformation: It is the method that is used to transform the series if it is necessary to stabilize its variance. The value of λ is chosen so that the coefficient of variation of the series is small. The values of λ that are used are 0, 0,5 and 1 which correspond to transformation into logarithm, square root and no transformation respectively.

b) Identification

Identification of the model: The identification of the model that follows the series is of vital importance; it might derive from the self-regulation made by the X-12 ARIMA procedure or be simply specified; it shall model the behavior followed by the series in a suitable manner. The specification of the model has to be based on the previous stage and a deep analysis of the autocorrelation pattern of the series.

F Statistics of seasonality identification: This test will define whether it is necessary to perform or not a seasonal adjustment to the series, using the information of the Fe test corresponding to the stable seasonality and the Fm test of the movable seasonality, aiming to establish whether it is possible or not to identify a seasonal component in the series.

c) Quality of the adjustment

Functions of residual autocorrelation: The expected result from these functions is the independence of the residuals between quarters. X-12 presents value for the eight first lags, which will have to be within the mentioned limits, and show that are not significant.

Level of relative error (MAPE): It is a measure of the quality of the seasonal adjustment, specifically of its prediction capability. X-12 presents the percentage error of prediction for one, two and three years of prediction. For a model to be acceptable, the MAPE must be below 15%; the smaller the errors the better the prediction adjustment.

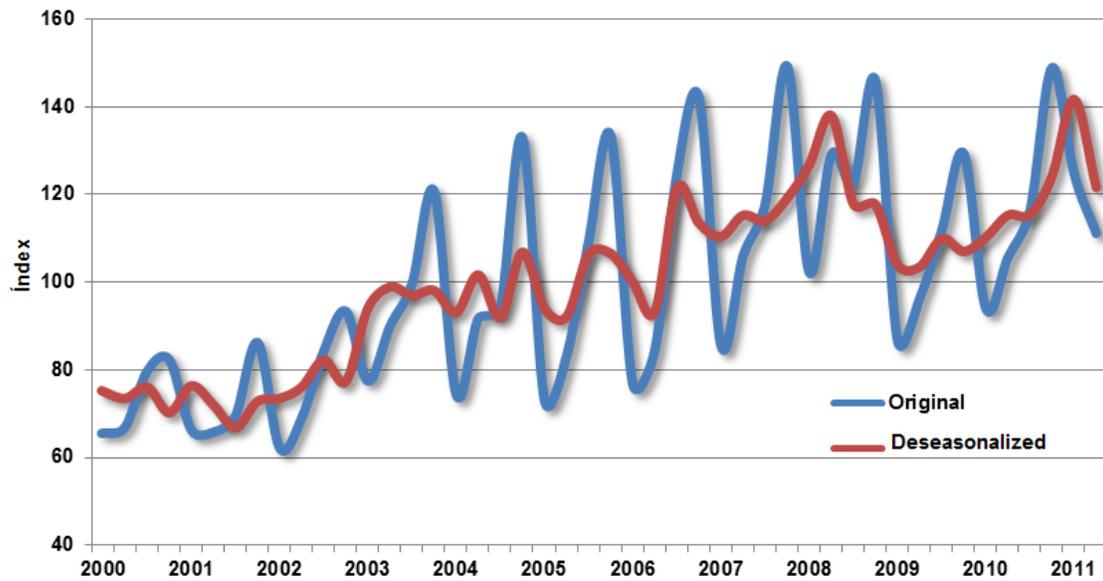
Proof of residual seasonality: Once the results of the seasonal adjustment are obtained, X-12 ARIMA performs a proof of residual seasonality on the entire series and for the last three years. It is recommended to accept the models whose F value is less than or equal to 1,2; although models with F values greater than 1.2 can be accepted but with a different level of significance.

Q Statistics: It measures the quality of the seasonal adjustment. It is calculated as the average of statistics M1 to M11 and must be less than 1. At the same time, the M7 statistic that is the amount of movable seasonality as compared to the stable seasonality is reviewed. It must also be below 1.

3. Finally the results of the original and seasonally adjusted series are compared by means of the quarterly and annual changes; their consistency is analyzed and they are published.

The graph presenting the original and seasonally adjusted graphic series can be found below.

Product: Other manufactured goods
2005 Base
2001 (Quarters I-IV) - 2011 (Quarter III)



Source: DANE, DSCN

**Annex F: Price Index according to classification and variable
2005 Base**

Quarterly Accounts		Annual Accounts		P.1 Production		P.7 Imports		P.6 Exports	
Codes	Description	Codes	Description	Source	Codes	Source	Codes	Source	Codes
010001	Parchment coffee and low quality beans	010001	Parchment coffee and low quality beans	IP_T_Sect	010001	--	--	--	--
010002	Coffee tree	010002	Coffee tree	PPI - P and C	011	--	--	--	--
020101	Wheat and meslin	020101	Wheat and meslin	PPI - P and C	01110	Calculation CN UV	'020101	PPI Exported	01
020102	Maize (corn)	020102	Maize (corn)	PPI - P and C	01120	Calculation CN UV	'020102	PPI Exported	01
020103	Rice, not husked	020103	Rice, not husked	PPI - P and C	01130	PPI Imported	0115	PPI Exported	011
020199	Barley , rye and oats grains, sorghum grains and other cereals	020104	Barley	PPI - P and C	01170	PPI Imported	0115	PPI Exported	011
		020199	Rye and oats grains, sorghum grains and other cereals	PPI - P and C	01170	PPI Imported	0115	PPI Exported	011
020201	Potatoes	020201	Potatoes	PPI - P and C	01210	PPI Imported	0118	PPI Exported	'0118
020202	Fresh and dried leguminous vegetables;	020202	Fresh and dried leguminous vegetables;	CPI	0132000	PPI Imported	0118	PPI Exported	'0118
020204	Tomato; other vegetables, fresh or chilled n.ep (onion, garlic, beet, mushrooms, etc.)	020204	Tomato	PPI - P and C	01230	PPI Imported	0116	PPI Exported	011
		020205	Other vegetables, fresh or chilled n.ep (onion, garlic, beet, mushrooms, etc.)	PPI - P and C	01230	Calculation CN UV	'020205	PPI Exported	011
020207	Cassava; other edible roots and tubers with high starch or inulin content	020207	Cassava	PPI - P and C	01240	PPI Imported	0118	PPI Exported	'0118
		020299	Other edible roots and tubers with high starch or inulin content	PPI - P and C	01240	PPI Imported	0118	PPI Exported	'0118

020301	Fresh bananas	020301	Fresh bananas	PPI - P and C	01311-2	FMI	24876U.DZF	Calculation CN UV	'020301
020302	Fresh plantains	020302	Fresh plantains	PPI - P and C	01311-1	FMI	24876U.DZF	Calculation CN UV	'020302
020303	Citrus fruits (lemon, mandarin and other citric ones (grapefruit, tangelo, etc.)). Other fresh fruits and nuts; Coconuts, pineapples, figs, mangoes, guavas, fresh or dried	020303	Citrus fruits (lemon, mandarin and other citric ones (grapefruit, tangelo, etc.))	PPI - P and C	01320	PPI Imported	0117	PPI Exported	'0117
		020399	Other fresh fruits and nuts; Coconuts, pineapples, figs, mangoes, guavas, fresh or dried	PPI - P and C	01340	PPI Imported	0117	PPI Exported	'0117
020400	Oil seeds and oleaginous fruit	020401	Oil palm nut	PPI - P and C	01450	--	--	--	--
		020403	Soya bean	PPI - P and C	01450	PPI Imported	0117	PPI Exported	01
		020499	Other oil seeds and oleaginous fruits	PPI - P and C	01450	PPI Imported	0117	PPI Exported	01
020500	Living plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds	020501	Roses	IUV_Expos	'020501	PPI Imported	011	Calculation CN UV	'020501
		020502	Carnations	IUV_Expos	020502	PPI Imported	011	Calculation CN UV	'020502
		020503	Dahlia; orchids and other cut flowers	IUV_Expos	'020503	PPI Imported	011	Calculation CN UV	'020503
		020599	Living plants: Flower buds, and seeds of flower, fruits and vegetables	IUV_Expos	020501	PPI Imported	0117	PPI Exported	0112
020600	Beverage and spice crops	020601	Cocoa beans, raw or roasted	PPI - P and C	01623	PPI Imported	01623	PPI Exported	0117
		020699	Other beverage crops and spices, whether or not processed	PPI - P and C	'01632	PPI Imported	0117	PPI Exported	'0117

020700	Unmanufactured tobacco	020700	Unmanufactured tobacco	PPI - P and C	01710	FMI	11176M.DZF	PPI Exported	01790
020800	Sugar cane	020800	Sugar cane	PPI - P and C	01810	--	--	PPI Exported	011
020900	Raw vegetable material n.e.c.	020901	Ginned cotton	PPI - P and C	01921	PPI Imported	01921	PPI Exported	0118
		020999	Other raw vegetable material n.e.c.	PPI - P and C	01921	PPI Imported	0118	PPI Exported	0118
021000	Plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes	021001	coca leaf	Indirect calculation		PPI Imported	'011	PPI Exported	0118
		021002	Opium poppy and marijuana						
		021099	Other plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes						
		021101	African palm plantations	PPI - P and C	011	--	--	--	--
		021102	Sugar cane plantations	PPI - P and C	011	--	--	--	--
		021103	Orchards, cultivated grassland and others	PPI - P and C	011	--	--	--	--
		021104	aerial spraying	PPI - P and C	011	--	--	--	--
021100	Developing areas and other services related to agricultural production	021105	cotton ginning	PPI - P and C	011	--	--	--	--
		021199	Other services related to agriculture	PPI - P and C	011	--	--	--	--
		030101	Bovine cattle, live	IP_M_Sect	030101	PPI Imported	'011	PPI Exported	01
030102	Raw milk and milk cream	030102	Raw milk and milk cream	PPI - P and C	02910	--	--	--	--

030201	Poultry, live	030201	Poultry, live	PPI - P and C	02122	PPI Imported	'011	PPI Exported	01
030202	Eggs, in shell, fresh, preserved, cooked or embryonated	030202	Eggs, in shell, fresh, preserved, cooked or embryonated	PPI - P and C	02920	PPI Imported	'011	PPI Exported	01
030301	Swine, live	030301	Swine, live	PPI - P and C	02121	PPI Imported	'011	PPI Exported	01
		030302	Sheep and goats, Horses, asses, mules and hinnies, live	Indirect calculation		PPI Imported	'011	PPI Exported	01
030302	other animals, live; by-products and services related to animal farming	030303	Other live animals, raised or captured, n.e.c; other by-products whether edible or not	Indirect calculation		PPI Imported	'011	PPI Exported	01
		030304	Veterinary services and other animal husbandry services	Indirect calculation		--	--	--	--
		040001	Logs of wood	PPI - P and C	03000	PPI Imported	A	PPI Exported	A
		040003	Fuel wood	PPI - P and C	03000	PPI Imported	A	PPI Exported	A
040001	Forestry and logging products except logs of wood and related services	040005	Planted forests; by-products related to forestry (natural rubber, plant resins, cork, etc.)	PPI - P and C	03000	--	--	--	--
		040004	Protective planted forests	PPI - P and C	03000	--	--	--	--
040002	Logs of wood	040002	Services related to forestry	CPI	000000	PPI Imported	A	PPI Exported	A
		050101	Saltwater fishes, live, fresh or chilled	PPI - P and C	0501	PPI Imported	A	PPI Exported	04110
050100	Fishing products, fish farming and related services	050102	Freshwater fishes, live, fresh or chilled	PPI - P and C	0501	--	--	--	--

		050300	Services related to fishing and fish farming	PPI - P and C	0501	--	--	--	--
		050200	Crustaceans; oysters; other aquatic invertebrates; other aquatic products	PPI - P and C	0501	PPI Imported	A	PPI Exported	04110
060000	Mineral coal	060001	Mineral coal	IUV_Expos	060001	FMI	19976CODZF	Calculation CN UV	060001
		060003	Services related to coal mining	IUV_Expos	060001	--	--	--	--
070001	Crude petroleum, services related to petroleum and natural gas extraction, except those of prospection	070001	Crude petroleum	IUV_Expos	070001	FMI	00176AADZF	Calculation CN UV	70001
		070003	<i>Mineral coal</i>	IUV_Expos	070001	--	--	--	--
070002	Natural gas and other energy sources (uranium and thorium)	070002	Natural gas and other energy sources (uranium and thorium)	PPI - P and C	12020	FMI	11176NGDZF	PPI Exported	1110
080101	Iron ores and concentrates	080101	Iron ores and concentrates	PPI - P and C	271	FMI	22376GADZF	PPI Exported	133
		080102	Copper	IUV_Expos	080103	PPI Imported	14290	PPI Exported	133
080102	Other metallic ores	080103	Nickel ores and concentrates (ferronickel)	IUV_Expos	080103	FMI	15676PTDZF	Calculation CN UV	080103
		080104	Aluminum and other metallic ores	IUV_Expos	080103	FMI	15676DRDZF	PPI Exported	133
080201	Ores mainly composed of gold	080201	Ores mainly composed of gold	IP_M_Sect	080201	FMI	11276KRDZF	Info Mining	080201
080202	Other precious metal ores	080202	Platinum ores	IP_M_Sect	080202	FMI	11176Y.DZF	Calculation CN UV	880202
		080203	Silver ores	IP_M_Sect	080203	FMI	11176Y.DZF	--	--
090100	Monumental or building rock or	090100	Monumental or building rock or	Indirect calculation		PPI Imported	14290	IP BEA	EIUIPV

	stone, services related to mining except those related to oil and natural gas	090500	stone Services related to mining except those related to oil and natural gas	Indirect calculation		PPI Imported	2013+2014	--	--
090201	Rock and sea salt	090201	Rock salt	IP_M_Sect	090201	--	--	--	--
		090202	Sea Salt	IP_M_Sect	090202	PPI Imported	16200	IP BEA	EIUIPV
090300	Non-metallic ores for industrial uses	090300	Non-metallic ores for industrial uses	Indirect calculation		PPI Imported	14	IP BEA	EIUIPV
090400	Emeralds and other precious and semiprecious stones	090400	Emeralds and other precious and semiprecious stones	IP_M_Sect	090400	IP BEA	EIUIDXIV	Info Mining	090400
		100101	Meat of bovine animals, fresh or chilled	PPI - P and C	21111	PPI Imported	1511	Calculation CN UV	100101
	Meat of bovine animals, swine meat, meat of ovine, sheep, goat, equine and other animals, fresh or chilled;	100102	Swine meat, fresh or chilled	PPI - P and C	21113	PPI Imported	1511	PPI Exported	151
	Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis	100300	Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis	PPI - P and C	21111	--	--	PPI Exported	151
100101	Hides and skins of bovine, sheep, goat, equine and other animals; Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis	100103	Meat of ovine, goat and other animals, fresh or chilled	PPI - P and C	21111	PPI Imported	1511	Calculation CN UV	100103
		100104	Edible offal of bovine, swine, and other animals, fresh or chilled.	PPI - P and C	21111	PPI Imported	1511	PPI Exported	151
		100105	Hides and skins of bovine, sheep, goat, equine and other animals	PPI - P and C	21111	PPI Imported	19	PPI Exported	1910

100106	Meat and edible offal of poultry and other meats, fresh or chilled	100106	Meat and edible offal of poultry and other meats, fresh or chilled	PPI - P and C	21121	PPI Imported	1511	PPI Exported	151
100108	Preserves and preparations of meat	100108	Preserves and preparations of meat	MMM	1510	PPI Imported	1511	PPI Exported	151
		100201	Fish fillets; fish, dried, salt or smoked	PPI - P and C	1512	PPI Imported	1512	PPI Exported	151
100200	Fish and sea products	100202	Crustaceans, frozen; molluscs and other aquatic invertebrates, frozen, dried, salted or in brine	PPI - P and C	1512	PPI Imported	1512	PPI Exported	151
		100203	Flours, meals and pellets, inedible, of fish, crustaceans, molluscs or other aquatic invertebrates	PPI - P and C	1512	PPI Imported	21140	PPI Exported	151
		110001	Fats of bovine animals, sheep, goats, pigs and poultry, raw or rendered; wool grease	MMM	1520 - 1580	PPI Imported	21613	PPI Exported	152
110000	Animal and vegetable oils and fats, Cocoa, chocolate and sugar confectionery, food products n.e.c	110003	Raw vegetable oils	MMM	1520 - 1580	PPI Imported	'0115	PPI Exported	01
		110004	Refined vegetable oils	MMM	1520 - 1580	PPI Imported	21630	PPI Exported	1522
		110005	Margarine and analogue products	MMM	1520 - 1580	Calculation CN UV	110005	Calculation CN UV	110005
		110006	palm kernel, linters, flours and meals of oil seeds or vegetable waxes	MMM	1520 - 1580	PPI Imported	'0115	PPI Exported	01

110007	Services related to animal and vegetable oils and fats	MMM	1520 - 1580	--	--	--	--
160100	By-products of cocoa, cocoa and chocolate	MMM	1520 - 1580	PPI Imported	1581	PPI Exported	0117
160200	sugar confectionery with or without chocolate	MMM	1520 - 1580	Calculation CN UV	160200	Calculation CN UV	160200
160300	Services related to the elaboration of cocoa, chocolate and sugar confectionery	MMM	1520 - 1580	--	--	--	--
170101	Vegetables; frozen, dehydrated; canned or preserved	MMM	1520 - 1580	Calculation CN UV	170101	PPI Exported	152
170102	Fruit and vegetables juices	MMM	1520 - 1580	Calculation CN UV	170102	PPI Exported	152
170103	fruits and nuts; dried, boiled or not, roasted or salted peanuts; fruit pulp and other preserved fruits	MMM	1520 - 1580	Calculation CN UV	170103	PPI Exported	1589
170104	Jams, fruit jellies and fruit or nut puree and pastes	MMM	1520 - 1580	PPI Imported	21400	PPI Exported	1589
170201	Homogenised preparations of meat, vegetables, fruit or nuts; preparations of milk, flour, meal, starch or malt extract, for infant use n.e.c.;	MMM	1520 - 1580	Calculation CN UV	170201	PPI Exported	1589

		homogenised composite food preparations							
		170202	Soups and broths and preparations thereof	MMM	1520 - 1580	PPI Imported	23999	PPI Exported	1589
		170203	Sauces; mixed condiments; and other	MMM	1520 - 1580	Calculation CN UV	170203	PPI Exported	1589
		170299	Other food products n.e.c. juices and vegetable extracts	MMM	1520 - 1580	PPI Imported	1589	PPI Exported	1589
		170300	Services related to the elaboration of other food products n.e.c.	MMM	1520 - 1580	--	--	PPI Exported	15
		120001	Pasteurized and ultrapasteurized milk	MMM	1530	PPI Imported	1530	PPI Exported	15
		120002	Concentrated milk and cream in solid forms	MMM	1530	PPI Imported	1530	PPI Exported	15
		120003	Cheese and curd	MMM	1530	PPI Imported	1530	PPI Exported	15
120000	Dairy products	120004	Yoghurt and other fermented milk	MMM	1530	PPI Imported	1530	PPI Exported	15
		120005	Butter and other fats and oils derived from milk or cream	MMM	1530	PPI Imported	1530	PPI Exported	15
		120006	Other dairy products	MMM	1530	PPI Imported	1530	PPI Exported	15
		120007	Services related to the elaboration of dairy products	MMM	1530	--	--	--	--
130100	Grain mill products, starches	130101	Flour from wheat or other cereal,	MMM	1540	Calculation CN UV	130101	PPI Exported	15

	and starch products, services related to the elaboration of grain mill products, starches and its products		meal or groats						
		130102	Milled rice (polished or white) semi- or wholly milled; mixes for bakery	MMM	1540	PPI Imported	23160	PPI Exported	15
		130300	Services related to the elaboration of grain mill products, starches and its products	MMM	1540	--	--	PPI Exported	155
		130103	Other vegetable flours and meals; and mixes for bakery	MMM	1540	PPI Imported	23160	PPI Exported	15
		130104	Starches and starch products; sugars and sugar syrups n.e.c.	MMM	1540	Calculation CN UV	130104	Calculation CN UV	130104
		130105	Preparations used in animal feeding	MMM	1540	PPI Imported	1543	PPI Exported	15
130200	Bakery products and pasta	130201	Bakery products and pasta	MMM	1550	PPI Imported	155	PPI Exported	1551
		130202	Macaroni, noodles, and similar farinaceous products	MMM	1550	Calculation CN UV	130202	PPI Exported	155
140100	Coffee milling services	140101	Milling on a fee or contract basis	MMM		--	--	--	--
		140102	Green coffee	IP Implicit		PPI Imported	'011	Info FNC	Info FNC
140200	Industrial products of coffee	140201	Roasted or non roasted coffee, decaffeinated or not, in grains or ground	MMM	1580	PPI P and C	23812	Calculation CN UV	140201
		140202	Instant coffee and substitutes and Coffee extract	MMM	1580	PPI P and C	156	Calculation CN UV	140202

		140203	Other services related to the elaboration of coffee products	MMM	1580	--	--	--	--
150001	Raw cane or beet sugar, refined or not; services related to elaboration and refining of sugar and panela	150001	Raw cane or beet sugar, refined or not	MMM	1570	PPI Imported	1589	Calculation CN UV	150001
		150004	Services relater to elaboration and refining of sugar and panela	MMM	1570	--	--	--	--
150002	Panela; honey and molasses	150002	Panela	PPI - P and C	1572	PPI Imported	1589	PPI Exported	155
		150003	Honey and molasses	PPI - P and C	1572	PPI Imported	1589	PPI Exported	157
		180101	Ethyl alcohol and other alcohols	MMM	1590	Calculation CN UV	180101	PPI Exported	1591
		180102	Aguardiente and rum	MMM	1590	PPI Imported	1591	Calculation CN UV	180102
		180103	other destyled alcoholec beverages (Whiskey, brandy, gin, vodka, etc)	MMM	1590	PPI Imported	1591	PPI Exported	1591
180000	Beverages	180105	wine of fresh grapes, syudra and other fermented beverages	MMM	1590	PPI Imported	24212	PPI Exported	159
		180200	Beer, malt liquors and mixes based on beer or malt carbonated soft drinks, waters (including mineral and aerated waters) and other non alcoholic beverages; ice and snow	MMM	1590	Calculation CN UV	180200	PPI Exported	159
		180301		MMM	1590	PPI Imported	159	PPI Exported	159

		180303	Services related to beverage manufacture	MMM	1590	--	--	--	--
190000	Tobacco products	190000	Tobacco products (cigars, cigarillos and cigarettes of tobacco or tobacco substitutes)	MMM	1600	Calculation CN UV	190000	PPI P and C	25010
		200100	Natural textile fibres prepared for spinning	MMM	1720	Calculation CN UV	200100	PPI Exported	26410
		200200	Staple artificial fibres, manufacture for textile yarn	MMM	1720	PPI Imported	26440	PPI Exported	26430
		200301	Natural and synthetic fibers yarn and thread; man-made or stapled fibers	MMM	1720	Calculation CN UV	200301	PPI Exported	26430
200000	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	200302	Cotton yarns and threads	MMM	1720	PPI Imported	26440	PPI Exported	1710
		200401	cotton and natural fibers fabrics other than cotton	MMM	1720	PPI Imported	26620	PPI Exported	26610
		200403	Man-made filaments or staple fibres; special fabrics	MMM	1720	PPI Imported	26620	PPI Exported	26610
		200500	Services related to yarn and fabrics manufacturing; on a fee or contract basis	MMM	1720	--	--	--	--
210000	Textile articles other than apparel	210001	bed linen, blankets, table linen, towels, kitchen linen, sleeping bags, curtains and other	MMM	1740	PPI Imported	174	PPI Exported	1741

		furnishing articles n.e.c.						
	210002	Other made-up textile articles	MMM	1740	PPI Imported	174	PPI Exported	1741
	210003	Carpets and other floor coverings; textile articles n.e.c.	MMM	1740	PPI Imported	27220	PPI Exported	174
	210004	Services related to textile articles manufacturing; on a fee or contract basis	MMM	1740	--	--	PPI Exported	174
	220100	Knitted or crocheted fabrics	MMM	1750 - 1800	PPI imported	17	PPI Exported	26610
	220201	Panty hose, stockings, socks and similar	MMM	1750 - 1800	PPI imported	1810	PPI Exported	1810
	220202	Wearing apparel of yarn, knitted or crocheted	MMM	1750 - 1800	PPI imported	1810	PPI Exported	1810
	220203	Wearing apparel of yarn, other than knitted or crocheted	MMM	1750 - 1800	PPI Imported	1810	Calculation CN UV	220203
220000		Knitted and crocheted fabrics; wearing apparel						
	220204	Brassieres, corsets, suspenders and similar articles, whether or not knitted or crocheted	MMM	1750 - 1800	PPI imported	28237	PPI Exported	1810
	220205	Apparel and clothing accessories, of other materials	MMM	1750 - 1800	PPI imported	1810	PPI Exported	1810
	220300	Tanned or dressed furskins and artificial fur;	MMM	1750 - 1800	PPI Imported	1810	PPI Exported	18

			articles thereof (except headgear)						
		220400	Services related to knitted fabrics and wearing apparel, on a fee or contract basis	MMM	1750 - 1800	--	--	PPI Exported	181
230100	Tanned leather; composition leather	230100	Tanned leather; composition leather	MMM	1910	PPI Imported	1910	PPI Exported	1910
		230201	Luggage, handbags and the like, of leather, travel sets for personal toilet, sewing or shoe or clothes cleaning, of leather	MMM	1920 - 1930	PPI imported	1910	PPI Exported	29221
230200	Leather products and footwear	230202	Footwear, with outer soles and uppers of rubber or plastics, or with uppers of leather or textile materials, (other than sports footwear, footwear incorporating a protective metal toe- cap, skating boots and miscellaneous special footwear)	MMM	1920 - 1930	PPI Imported	29490	Calculation CN UV	280106
		230203	Sports footwear, (except skating boots)	MMM	1920 - 1930	PPI Imported	29490	PPI Exported	192
		230204	Parts of footwear; removable in- soles, heel cushions and similar articles;	MMM	1920 - 1930	PPI Imported	29600	PPI Exported	29600

			gaiters, leggings and similar articles, and parts thereof						
		230205	Services related to leather manufacture, leather products and footwear, on a fee or contract basis.	MMM	1920 - 1930	--	--	--	--
		240100	Wood, sawn or chipped, continuously shaped, in the rough or treated	MMM	2020 - 2030 - 2090	PPI Imported	31430	PPI Exported	20
		240201	Boards and panels; Veneer sheets; sheets for plywood; densified wood	MMM	2020 - 2030 - 2090	PPI Imported	31430	PPI Exported	31210
240000	Products of wood, cork, straw and plaiting materials	240202	Builders' joinery and carpentry of wood	MMM	2020 - 2030 - 2090	PPI Imported	20	PPI Exported	20
		240299	Other products made with wood, cork, plaiting materials or husks.	MMM	2020 - 2030 - 2090	PPI Imported	202	PPI Exported	31701
		240300	Services related to the elaboration of wood and wood products, on a fee or contract basis.	MMM	2020 - 2030 - 2090	--	--	--	--
		250001	Pulps of wood or other fibrous cellulosic material	MMM	2100	Calculation CN UV	250001	PPI Exported	2101
250000	Paper products, paperboard and its products	250002	Paper and elaborated paperboard; and	MMM	2100	PPI Imported	2101	PPI Exported	2102

		other uncoated paper and paperboard							
		Paper and paperboard products	MMM	2100	PPI Imported	210	PPI Exported	2109	
		Services related to paper manufacture and paper products on a fee or contract basis	MMM	2100	--	--	--	--	
		Books, brochures and leaflets printed, printed maps; music	MMM	2210 - 2220 - 2230	PPI Imported	32230	PPI Exported	2212	
		Newspapers, journals and periodicals; other printed material	MMM	2210 - 2220 - 2230	PPI Imported	2212	PPI Exported	22	
260000	Printed matters and analogous products	Other printed materials	MMM	2210 - 2220 - 2230	PPI Imported	32230	PPI Exported	221	
		Composed type, prepared printing plates or cylinders, or other impressed media for use in printing	MMM	2210 - 2220 - 2230	PPI Imported	22	PPI Exported	22	
		Editorial; printing and reproduction services on a fee or contract basis	MMM	2210 - 2220 - 2230	--	--	--	--	
270000	Refined petroleum products; nuclear fuel	Coke and semi-coke of coal, of lignite or of peat; retort carbon; mineral tars	MMM	2321 - 2322	PPI Imported	23	Calculation CN UV	300000	
		Gasolines and other fuels	MMM	2321 - 2322	PPI Imported	23	PPI P and C	33311+33312	

	270202	Other light petroleum oils and light oils obtained from bituminous mineral and oils obtained from bituminous mineral; other heavy petroleum oils.	MMM	2321 - 2322	FMI	00176AADZF	PPI Exported	232
	270203	Kerosene; gas oils and fuel oils	MMM	2321 - 2322	--	--	--	--
	270400	Manufacturing services related with coke, refined petroleum product and nuclear fuel	MMM	2321 - 2322	--	--	--	--
	270205	Petroleum gas and other gas hydrocarbons	MMM	2321 - 2322	PPI Imported	33360	PPI P and C	33381
	270206	Petroleum jelly; paraffin wax and other products from petroleum and bituminous mineral	MMM	2321 - 2322	PPI Imported	2322	PPI Exported	232
	270300	Uranium and other nuclear fuels	MMM	2321 - 2322	FMI	00176UMDZF	FMI	00176UMDZF
	280101	Basic organic chemicals	MMM	2410	PPI Imported	2411	IP BEA	EIUIP29
	280102	Basic inorganic chemicals n.e.c	MMM	2410	PPI Imported	2411	IP BEA	EIUIP28
280100	Basic chemicals	Tanning or dyeing extracts; tannins and their derivatives; colouring matters, etc.	MMM	2410	Calculation CN UV	280103	PPI Exported	242
	280104	Activated natural mineral products and Miscellaneous	MMM	2410	PPI Imported	2411	PPI Exported	242

			basic chemical products						
		280105	Fertilizers and pesticides	MMM	2410	PPI Imported	2412	PPI Exported	241
		280106	Plastics in primary forms	MMM	2410	Calculation CN UV	280106	Calculation CN UV	280106
		280107	Synthetic rubber and factice	MMM	2410	PPI Imported	34801	PPI Exported	241
		280201	Paints and varnishes and related products	MMM	2420	PPI Imported	35111	Calculation CN UV	280201
		280202	Pharmaceutical products	MMM	2420	PPI Imported	2423	PPI Exported	2423
	Other chemical products; man-made fibres; services related to the manufacture of chemical substances and products on a fee or contract basis	280203	Soap, cleaning preparations, perfumes and toilet preparations	MMM	2420	Calculation CN UV	280203	PPI Exported	2424
280200		280204	Chemical products n.e.c.	MMM	2420	PPI Imported	242	PPI Exported	2429
		280205	Man-made fibres	MMM	2420	Calculation CN UV	280205	Calculation CN UV	280205
		280400	Services related to the manufacture of chemical substances and products on a fee or contract basis	MMM	2420	--	--	PPI Exported	241
280300	Chemical products of illegal use	280301	Cocaine	Enclave		Enclave		--	--
		280302	Heroin						
		290100	Rubber tyres and tubes	MMM	2510 - 2520	Calculation CN UV	290100	Calculation CN UV	290100
		290201	Other rubber products	MMM	2510 - 2520	Calculation CN UV	290201	PPI Exported	2519
290000	Rubber and plastics products	290202	Semi-manufactures of plastics	MMM	2510 - 2520	PPI Imported	2521	PPI Exported	2521
		290204	other plastic products	MMM	2510 - 2520	PPI Imported	2529	PPI Exported	2529

		290300	Services related to rubber and plastics products manufacture on a fee or contract basis	MMM	2510 - 2520	--	--	PPI Exported	25
		290203	Packaging products of plastics	MMM	2510 - 2520	PPI Imported	2529	PPI Exported	36410
		300101	Glass and glass products	MMM	2610 - 2691	PPI Imported	2610	Calculation CN UV	300101
300100	Glass and glass products; ceramic ware and refractory products	300102	non-structural ceramic articles	MMM	2610 - 2691	PPI Imported	2691	PPI Exported	2691
		300103	Refractory products and structural non-refractory clay products	MMM	2610 - 2691	PPI Imported	2692	PPI Exported	269
		300201	Cement, lime and plaster	MMM	2699	PPI Imported	269	Calculation CN UV	300201
		300202	Articles of concrete, cement and plaster	MMM	2699	PPI Imported	269	Calculation CN UV	300202
300200	Cement and other non mineral products n.e.c.; Services related to non metallic mineral products manufacture, on a fee or contract basis	300203	Monumental or building stone and articles thereof; other non metallic mineral products n.e.c.	MMM	2699	PPI Imported	269	PPI Exported	269
		300300	Services related to non metallic mineral products manufacture, on a fee or contract basis	MMM	2699	--	--	--	--
		310101	Basic iron and steel	MMM	2710	PPI Imported	2710	PPI Exported	2710
310101	Basic metals, fabricated metal products, except basic precious metals and metals	310102	hot or cold-rolled, drawn and folded products of iron	MMM	2710	PPI Imported	2710	PPI Exported	2710

	clad with precious metals; except machinery and equipment		and steel						
		310104	Semi-finished products of copper, nickel, aluminium, lead, zinc and tin or their alloys	MMM	2710	PPI Imported	14290	PPI Exported	27
310103	Basic precious metals and metals clad with precious metals	310103	Precious metal ores and concentrates	IP_M_Sect	310103	PPI Imported	369	Info Mining	080201
		310201	Structural metal products and parts thereof	MMM	2800	PPI Imported	2811	PPI Exported	28
		310202	Tanks, reservoirs and containers of iron, steel or aluminium; steam generators, and parts thereof	MMM	2800	PPI Imported	281	PPI Exported	28
	Fabricated metal products, except machinery and equipment; services related to the elaboration and repair of metal product, except machinery and equipment	310299	Other fabricated metal products	MMM	2800	PPI Imported	2899	PPI Exported	289
310200		310301	Services related to the elaboration and repair of metal product, except machinery and equipment	MMM	2800	--	--	--	--
		310302	Services related to the elaboration and repair of metal product, except machinery and equipment on a fee or contract basis	MMM	2800	PPI Imported	28	PPI Exported	28
320000	Machinery and equipment	320101	Internal combustion piston engines	MMM	2910 - 2920 - 2930	PPI Imported	2911	PPI Exported	291

320102	Pumps, compressors, hydraulic engines, and parts thereof	MMM	2911 - 2920 - 2930	PPI Imported	2912	PPI Exported	43220
320103	Bearings, gears, gearing and driving elements, and parts thereof	MMM	2912 - 2920 - 2930	PPI Imported	2913	PPI Exported	291
320104	Ovens and furnace burners and parts thereof	MMM	2913 - 2920 - 2930	PPI Imported	2914	PPI Exported	291
320105	Lifting and handling equipment and parts thereof	MMM	2914 - 2920 - 2930	PPI Imported	2915	PPI Exported	291
320199	Other general purpose machinery and parts thereof	MMM	2915 - 2920 - 2930	PPI Imported	2919	PPI Exported	2919
320201	Agricultural or forestry machinery and parts thereof	MMM	2916 - 2920 - 2930	PPI Imported	2921	PPI Exported	44160
320202	Machine-tools and parts and accessories thereof	MMM	2917 - 2920 - 2930	PPI Imported	2922	PPI Exported	29
320203	Machinery for metallurgy and parts thereof	MMM	2918 - 2920 - 2930	PPI Imported	292	PPI Exported	29
320204	Machinery for mining, quarrying and construction, and parts thereof	MMM	2919 - 2920 - 2930	PPI Imported	2924	PPI Exported	29
320205	Machinery for food, beverage and tobacco processing, and parts thereof	MMM	2920 - 2920 - 2930	PPI Imported	2925	PPI Exported	29
320206	Machinery for textile, apparel and leather	MMM	2921 - 2920 - 2930	PPI Imported	2926	PPI Exported	29

		production, and parts thereof						
	320299	Other special purpose machinery and parts thereof	MMM	2922 - 2920 - 2930	PPI Imported	2929	PPI Exported	29
	320207	Weapons and ammunition and parts thereof	MMM	2923 - 2920 - 2930	IP BEA	EIUID84	IP BEA	EIUIP84
	320208	Domestic appliances and parts thereof	MMM	2924 - 2920 - 2930	PPI Imported	2930	PPI Exported	44811
	320300	Maintenance and repair services of fabricated metal products, machinery and equipment on a fee or contract basis.	MMM	2925 - 2920 - 2930	PPI Imported	2929	PPI Exported	29
	330101	Office and accounting machinery, and parts and accessories thereof	MMM	3100 - 3200 - 3300	PPI Imported	30	PPI Exported	29
330000	330102	Other machinery; electrical machinery and apparatus Computing machinery and parts and accessories thereof	MMM	3100 - 3200 - 3300	PPI Imported	30	IP BEA	EIUIP8471
	330201	Electric motors, generators and transformers, and parts thereof	MMM	3100 - 3200 - 3300	PPI Imported	3110	IP BEA	EIUIP8501
	330202	Electricity distribution and control apparatus, and parts thereof	MMM	3100 - 3200 - 3300	PPI Imported	3120	IP BEA	EIUIP8536

330203	Insulated wire and cable; optical fibre cables	MMM	3100 - 3200 - 3300	PPI Imported	3130	PPI Exported	3120
330204	Accumulators, primary cells and primary batteries, and parts thereof	MMM	3100 - 3200 - 3300	PPI Imported	3140	PPI Exported	46420
330205	Electric filament or discharge lamps; arc lamps; lighting equipment; parts thereof	MMM	3100 - 3200 - 3300	PPI Imported	3150	Calculation CN UV	330205
330299	Other electrical equipment and parts thereof	MMM	3100 - 3200 - 3300	PPI Imported	3190	PPI Exported	31
330301	Electronic components; electronic valves and tubes; parts thereof	MMM	3100 - 3200 - 3300	PPI Imported	3210	Calculation CN UV	330301
330302	Television and radio transmitters and apparatus for line telephony or telegraph	MMM	3100 - 3200 - 3300	PPI Imported	3220	IP BEA	EIUIP8517
330303	Radio broadcast and television receivers; apparatus for sound and video recording and reproducing; microphones, loudspeakers, amplifiers, etc.	MMM	3100 - 3200 - 3300	PPI Imported	3230	IP BEA	EIUIP8525
330304	Parts for radio, television and communication equipment and apparatus.	MMM	3100 - 3200 - 3300	PPI Imported	32	IP BEA	EIUIP8529

		330305	Audio and video records and tapes	MMM	3100 - 3200 - 3300	PPI Imported	47520	IP BEA	EIUIPXVI
		330401	Medical and surgical equipment and orthopaedic appliances	MMM	3100 - 3200 - 3300	PPI Imported	48150	IP BEA	EIUIP9018
		330402	Instruments and appliances for measuring, checking, testing, navigating; industrial process control equipment; parts and accessories thereof	MMM	3100 - 3200 - 3300	PPI Imported	48220	IP BEA	EIUIP90
		330403	Optical instruments and photographic equipment, and parts and accessories thereof	MMM	3100 - 3200 - 3300	Calculation CN UV	330403	IP BEA	EIUIP90
		330404	Watches and clocks, and parts thereof	MMM	3100 - 3200 - 3300	PPI Imported	3330	IP BEA	EIUIP91
		330500	Services related to the manufacture and repair of these instruments	MMM	3100 - 3200 - 3300	BEA	EIUID84	IP BEA	EIUIPXVI
340000	Transport equipment	340101	Special purpose motor vehicles; road motor units; crane lorries; bodies; trailers and semi-trailers and containers	MMM	3410 - 3420 - 3430 - 3500	PPI Imported	49113	PPI Exported	34
		340102	Public-transport type passenger	MMM	3410 - 3420 -	PPI Imported	49113	PPI Exported	3410

		motor vehicles		3430 - 3500				
340103		Motor vehicles, for the transport of persons (private)	MMM	3410 - 3420 - 3430 - 3500	PPI Imported	49113	IP BEA	EIUIP8704
340104		Motor vehicles n.e.c. for the transport of goods	MMM	3410 - 3420 - 3430 - 3500	PPI Imported	49114	PPI Exported	34
340105		Parts and accessories of motor vehicles	MMM	3410 - 3420 - 3430 - 3500	PPI Imported	49129	PPI Exported	3430
340203		Aircraft and spacecraft, and parts thereof	MMM	3410 - 3420 - 3430 - 3500	BEA	EIUID8803	IP BEA	EIUIPXVII
340204		Motorcycles, bicycles and parts thereof	MMM	3410 - 3420 - 3430 - 3500	Calculation CN UV	340204	PPI Exported	34
340299		Ships; railway and tramway locomotives and rolling stock, other transport equipment n.e.c. and parts thereof	MMM	3410 - 3420 - 3430 - 3500	BEA	EIUIDXVII	IP BEA	EIUIPXVII
340301		Services related to transport equipment manufacturing	MMM	3410 - 3420 - 3430 - 3500	BEA	EIUIDXVII	IP BEA	EIUIPXVII
340302		Services related to transport equipment repair on a fee or contract basis	MMM	3410 - 3420 - 3430 - 3500	--	--	--	--
350000	Furniture	Furniture	MMM	3610	PPI Imported	36	IP BEA	EIUIP94

		350200	Furniture manufacturing services	MMM	3610	--	--	--	--
		360100	Jewellery and related articles	MMM	3690	PPI Imported	369	PPI Exported	369
		360201	Music instruments	MMM	3690	PPI Imported	3692	PPI Exported	369
		360202	Sports articles	MMM	3690	PPI Imported	3693	IP BEA	EIUIP95
360000	Other manufactured goods n.e.c	360203	Games and toys; Roundabouts, swings, shooting galleries and other fairground amusements	MMM	3690	PPI Imported	3694	IP BEA	EIUIP95
		360204	Prefabricated constructions	MMM	3690	PPI Imported	3699	PPI Exported	369
		360300	Services related to the manufacture of other articles n.e.c. on a fee or contract basis	MMM	3690	--	--	--	--
		380001	Generation of electrical energy	IP_M_Sect	380000	IP_M_Sect	380000	CPI Electricity	2220100
380000	Electrical energy	380002	Transmission of electrical energy and related services	IP_M_Sect	380000	--	--	--	--
		380003	Transmission of electrical energy and related services	IP_M_Sect	380000	--	--	--	--
390000	Gas distributed through mains	390000	Gas distributed through mains	CPI	2210100	CPI Gas	2,00E+06	CPI Gas	22101
		400000	Water	CPI	2220200	CPI Water distribution and sewage	22202	--	--
400000	Water, wastes or scraps; sewage and refuse disposal, sanitation and other environmental	370001	Waste and scrap of paper or paperboard	CPI	2220200	Calculation CN UV	370001	PPI Exported	210
		370002	Waste and scrap	CPI	2220200	PPI	261	PPI Exported	261

	protection services		of glass			Imported			
		370003	Metal waste and scrap	CPI	2220200	PPI Imported	271	PPI Exported	28
		370004	Non metal waste and scrap	CPI	2220200	PPI Imported	269	PPI Exported	26
		370005	Wastes from food and tobacco industry	CPI	2220200	PPI Imported	15	PPI Exported	15
		370006	Materials recovery services (recycling), on a fee or contract basis	CPI	2220200	--	--	--	--
		580001	Sewage services	CPI	2220200	--	--	--	--
		580002	Refuse disposal services; sanitation and similar services to protect the environment	CPI	2220200	CPI	9400000	--	--
410100	General construction services of residential buildings	410100	General construction services of residential buildings	IP_T_Sect	410100	--	--	--	--
410200	General construction services of non-residential buildings	410200	General construction services of non-residential buildings	IP_T_Sect	410200	--	--	--	--
	Installation, building completion and finishing services;	410300	Installation, building completion and finishing services	ICCV	Total	--	--	--	--
410300	Renting services related to equipment for construction or demolition of buildings or civil engineering	410400	Renting services related to equipment for construction or demolition of buildings or civil engineering	ICCV	Machinery	--	--	--	--

	works, with operator		works, with operator						
		420101	General construction services of highways, streets, roads, railways, tunnels and subways, and airfield runways	ICCP	Total	--	--	--	--
		420103	General construction services of harbours, waterways, dams, irrigation and other waterworks	ICCP	Total	--	--	--	--
420000	Construction works, civil engineering works and leasing services of equipment with operator	420104	General construction services of long distance and local pipelines, communication and power lines (cables), and related works	ICCP	Total	--	--	--	--
		420106	General construction services of mines	ICCP	Total	--	--	--	--
		420199	General construction services of others	ICCP	Total	--	--	--	--
		420200	Renting services related to machinery with operator for construction or demolition of civil engineering works	ICCP	Total	--	--	--	--

430000	Distributive trade services	430000	Distributive trade services	Implicit PI		--	--	--	--
440000	Repair services of motor vehicles, household electrical appliances and other goods	440100	Repair services of motor vehicles	IP_M_Sect	440000	--	--	--	--
		440200	Repair services of electrical household appliances and other goods	IP_M_Sect	440000	--	--	--	--
450100	Lodging services	450100	Lodging services	CPI	6310200	--	--	--	--
450200	Food and beverage serving services	450201	Food serving services	CPI	1900000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	CPI meals away from home	19000
		450202	Beverage serving services for consumption on the premises	CPI	1900000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	CPI meals away from home	19000
460100	Land transport services of passengers	460101	Scheduled transport services, of passengers (urban and suburban) including special purpose services	CPI	7210000	IMF Ind. international Inflation weighted + Internal Devaluation	CPI_FMI	--	--
		460102	Scheduled transport services of passengers (interurban and others) including special purpose services	CPI	7210000	--	--	--	--
		460103	Taxi services	CPI	7210000	--	--	--	--

		460104	Non-scheduled road transport services of passengers, except taxi services	CPI	7210000	--	--	--	--
460200	Road transport services of freight including railroad	460201	Road transport services of freight	Implicit PI			Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	CPI Intermunicipal bus transport 72201
		460202	Railroad transport (freight and passengers)	Implicit PI		--	--	--	--
460300	Transport services via pipeline	460300	Transport services via pipeline	TC	TC	--	--	--	--
480100	Scheduled and non scheduled air transport services of passengers; rental services of aircraft with operator	480100	Scheduled and non scheduled air transport services of passengers; rental services of aircraft with operator	CPI	7230100		Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	CPI Air ticket 72301
480200	Air transport services of freight	480200	Air transport services of freight	PPI - P and C	Total		Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	CPI Air ticket 72301
490000	Water transport services; supporting and auxiliary transport services	470100	Coastal and transoceanic water transport services;	CPI	0000000		Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Weighted average IMF International Inflation Index and Internal Devaluation CPI_FMI
		470200	Inland water transport services	CPI	0000000	--	--	--	--

		490101	Storage and warehousing; and cargo handling services	CPI	0000000	--	--	--	--
		490103	Supporting services for road and railway transport	IP_T_Sect	490103	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI
		490104	Supporting services for water transport	Indirect calculation		Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI
		490105	Supporting services for air or space transport	ER	ER	IMF Ind. international Inflation weighted + Internal	CPI_FMI	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI
		490299	Auxiliary and other supporting transport services	Indirect calculation		--	--	--	--
		490201	Travel agency, tour operator and tourist guide services	IP_M_Sect	490201	Ind. Inflation internacional FMI weighted + Devaluación interna	CPI_FMI	CPI Air ticket	72301
500100	Postal and courier services	500100	Postal and courier services	CPI	8110000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	CPI Mail services	73100

500201	fixed telephony services, mobile telecommunication services, telecommunication services other than data transmission and programme distribution services	500201	fixed telephony services, mobile telecommunication services, telecommunication services other than data transmission and programme distribution services	IP_M_Sect	50020101-50020102-50020103				
		500203	Data transmission services	CPI	0000000	--	--	--	--
500203	Data transmission services; programme distribution services	500204	Programme distribution services	CPI	0000000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	CPI Television services	63101
510101	Financial intermediation services indirectly measured - FISIM	510101	Financial intermediation services indirectly measured - FISIM	IP_T_Sect	510101	CN calculation	IP_SIFMI_M	CN calculation	IP_SIFMI_X
510102	Comisiones y otros servicios de intermediación financiera	510102	Other financial intermediation services	CPI	9410100	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	CPI Financial services	84100
		510103	Tax on financial movements	IP_T_Sect	510103	--	--	--	--
510201	General insurance; life and reinsurance	510201	General insurance; life and reinsurance	CPI	9410200	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI

510202	Health and pension compulsory social security services and professional risks	510202	Health and pension compulsory social security services and professional risks	IP_T_Sect	510202	--	--	--	--
5103	Supporting financial intermediation services, insurance, pension funds and cesantias	510301	Supporting financial intermediation services; Brokerage and related securities; foreign exchange	CPI	9410200	--	--	--	--
		510303	Supporting administration services of pension funds and cesantias	CPI	9410200	--	--	--	--
520101	Renting or leasing services involving residential property on own account	520101	Renting or leasing services involving residential property on own account	CPI	2110100	--	--	--	--
520102	Renting or leasing services involving own or leased residential property to third parties	520102	Renting or leasing services involving own or leased residential property to third parties	CPI	2110100	--	--	--	--
520103	Renting or leasing services involving non-residential own or leased property	520103	Renting or leasing services involving non-residential own or leased property	CPI	0000000	--	--	--	--
520200	Real estate services on a fee or contract basis	520200	Real estate services on a fee or contract basis	CPI	0000000	--	--	--	--
530000	Business services except financial and real estate services	530101	Leasing or rental services concerning machinery and	CPI	0000000	PPI Total Imported	PPI_TOTAL_M	PPI Total Exported	PPI_TOTAL_X

530102	equipment and other goods without operator Licensing services for the right to use computer software; Computer consultancy services; Online information provision services; Data processing services; Computer hardware servicing, repair and maintenance, etc.	CPI	0000000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Basic inflation (except food)	CPI_SINAL
530103	Research and development services	CPI	0000000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Basic inflation (except food)	CPI_SINAL
530104	Legal, accounting, auditing, tributary advisory services; marketing studies, administration consultants; architecture, engineering and other technical services.	CPI	0000000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Basic inflation (except food)	CPI_SINAL
530201	Advertising services	CPI	0000000	Weighted average IMF International Inflation	CPI_FMI	Basic inflation (except food)	CPI_SINAL

					Index and Internal Devaluation				
		530202	Employment agency services and supply of personnel services Private	CPI	0000000	--	--	--	--
		530203	investigation and security services	CPI	0000000	--	--	--	--
		530204	Cleaning services	CPI	0000000	--	--	--	--
		530205	Photographic services	CPI	0000000	--	--	--	--
		530206	Packaging services and other business services n.e.c.	CPI	0000000	PPI Total Imported	PPI_TOTAL_M	PPI Total Exported	PPI_TOTAL_X
		540100	Public administration services (collective)and for the community in general	IP_T_Sect	540100	--	--	--	--
		540200	Services of compulsory social security schemes	IP_T_Sect	540100	--	--	--	--
540100	Public administration and defence; direction, administration and control of compulsory social security services; non -market education services	560001	Preschool non-market education services	IP_T_Sect	540100	--	--	--	--
		560002	Primary non-market education services	IP_T_Sect	540100	--	--	--	--
		560003	Secondary non-market education services	IP_T_Sect	540100	--	--	--	--
		560004	Higher non-market education services	IP_T_Sect	540100	--	--	--	--
		560005	Education services for adults	IP_T_Sect	540100	--	--	--	--

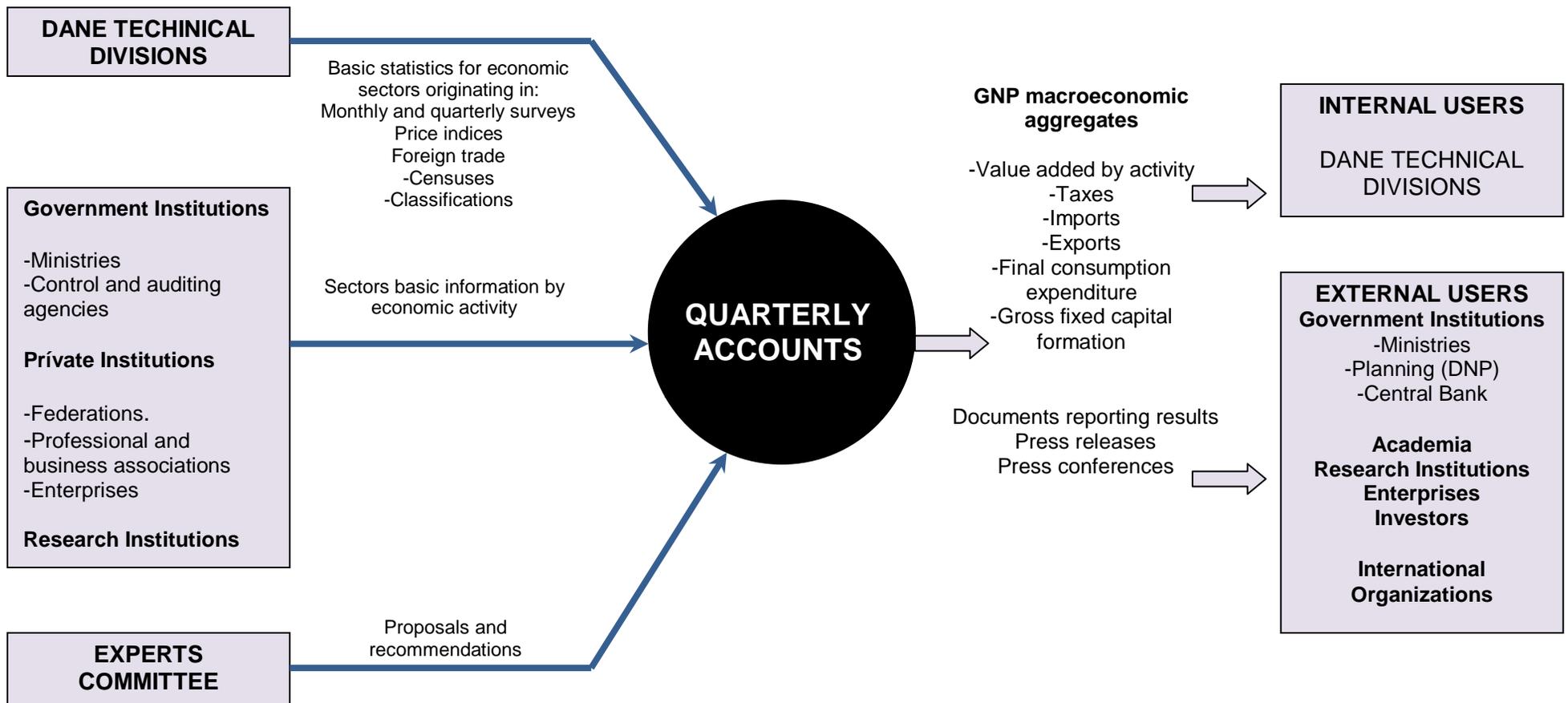
			and other non market education services n.e.c.						
		550001	Preschool market education services	CPI	5110100	--	--	--	--
		550002	Primary market education services	CPI	5110100	--	--	--	--
		550003	Secondary market education services	CPI	5110100	--	--	--	--
550000	Market education services	550004	Higher market education services	CPI	5120100	--	--	--	--
		550005	Education services for adults and other market education services n.e.c.	CPI	5120100	--	--	--	--
570000	Market human health and social services	570000	Market human health and social services	CPI	4100000	--	--	--	--
		590001	Market services of membership organizations, Motion picture, video tape, television and radio programme production and distribution services	CPI	6310000	--	--	--	--
		590002	Services of membership organizations, cultural, sports and other market and non market services	CPI	6310000	Weighted average IMF Inflation Index and Internal Devaluation	CPI_FMI	CPI video and electronic games rental	63102
590000	Services of membership organizations, cultural, sports and other market and non market services	590003	Motion picture projection services	CPI	6310000	--	--	--	--
		590004	Radio and television production and broadcasting services	CPI	0000000	Weighted average IMF Inflation Index and Internal Devaluation	CPI_FMI	CPI Television Services	63101

590005	Artistic and promotion services; shows organization	CPI	6310000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI
590006	News agency services	CPI	6310000	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI	Weighted average IMF International Inflation Index and Internal Devaluation	CPI_FMI
590007	Library and archive services	CPI	6310000	--	--	--	--
590008	Gambling and betting services	CPI	6320100	--	--	--	--
590009	Sports and recreational sports services	CPI	6310000	--	--	--	--
590010	Other recreational services	CPI	6310000	--	--	--	--
590011	Washing, cleaning and dyeing services; beauty and physical well-being services; funeral services and other miscellaneous personal services n.e.c.	CPI	6310000	--	--	--	--
600001	Services of membership organizations, cultural, sports and other non market services provided by institutions mainly	CPI	6310000	--	--	--	--

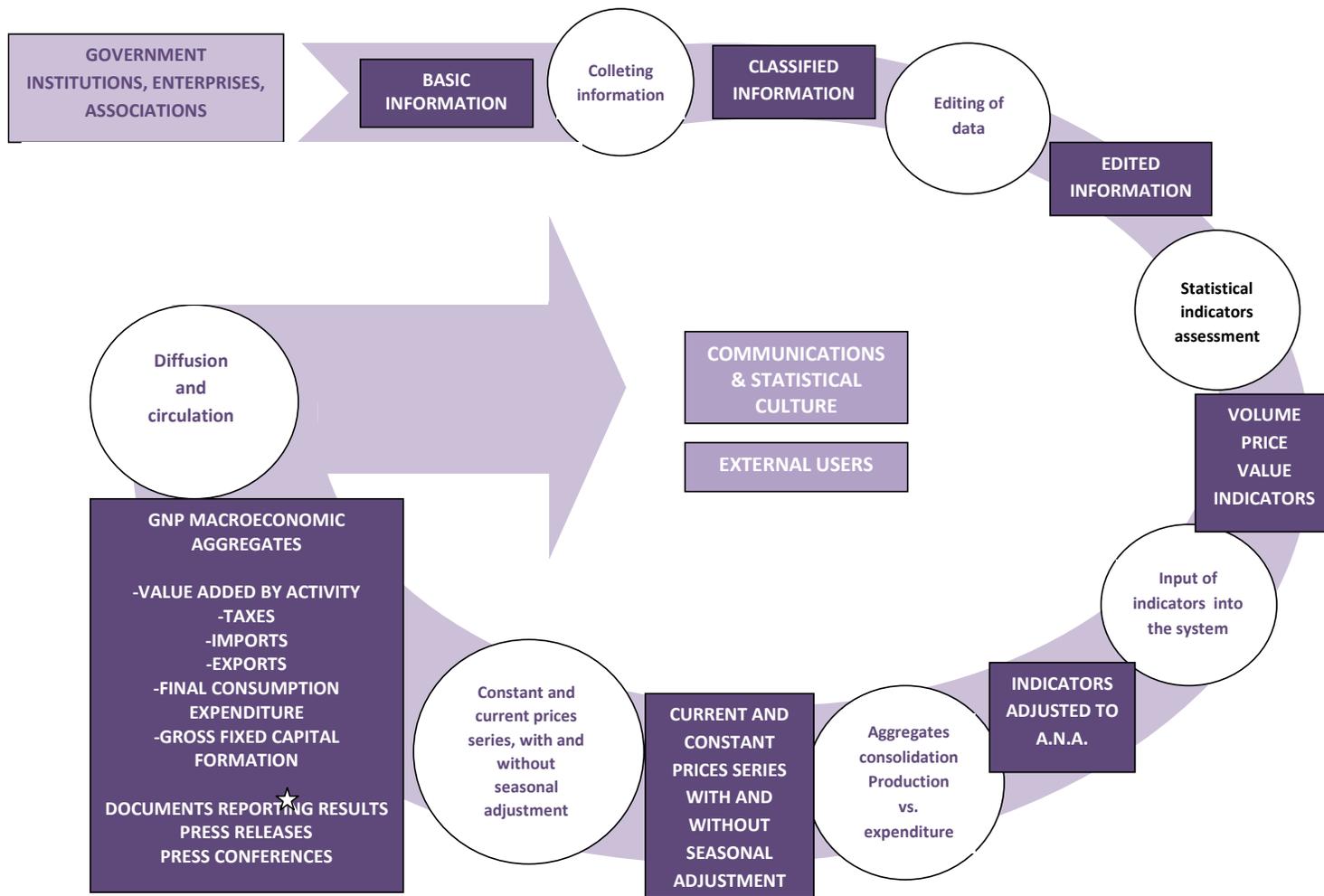
			financed by government						
		600002	Services of membership organizations, cultural, sports and other non market services provided by institutions mainly financed by non profit institutions serving households	CPI	6310000	--	--	--	--
610000	Domestic services	610000	Domestic services	IP_M_Sect	6100000	--	--	--	--

Source: DANE - DSCN

Annex G. GENERAL (OR CONTEXT) DIAGRAM FOR QUARTERLY NATIONAL ACCOUNTS



Annex H. ZERO LEVEL DIAGRAM FOR QUARTERLY NATIONAL ACCOUNTS (QNA)



Annex I. Calculation of Quarterly GDP according to the production approach

Indicators and information sources

2005 Base

Item	Codes	Description	Indicators	Fuentes	Price Index
1	010001	Parchment coffee and low grade beans	<ul style="list-style-type: none"> • Purchases of Green Coffee by the domestic milling industry • Inventories of green coffee • Exports of green coffee • Imports of green coffee <p>Note: A coefficient is used to transform green coffee into parchment coffee and pasilla beans</p>	National Federation of Coffee Growers of Colombia	Reference price for dry parchment coffee and pasilla beans (60 kilos) FNC
2	010002	Coffee trees	Unproductive Area of coffee in hectares	National Federation of Coffee Growers of Colombia	PPI - P and C 011 - Production of agriculture
3	020101	Wheat and meslin	Production of wheat in tons	Ministry of Agriculture and Rural Development - Agricultural National Survey	PPI - P y C - 01110 - Wheat and morcajo o tranquillón
4	020102	Maize (corn)	Maize production in tons	Ministry of Agriculture and Rural Development - Agricultural National Survey	PPI - P y C - 01120 - Maize (corn)
5	020103	Rice, not husked	Production of rice with rind in tons	DANE - National Federation of Rice Producers	PPI - P y C - 01130 - Rice, not husked
6	020199	Barley , rye and oats grains, sorghum grains and other cereals	Production of sorghum and barley in tons	Ministry of Agriculture and Rural Development - Agricultural National Survey	PPI - P y C - 01170 - Barley
7	020201	Potatoes	Potatoes production in tons	Ministry of Agriculture and Rural Development - Agricultural National Survey	PPI - P y C - 01210 - Potatoes
8	020202	Fresh and dried leguminous vegetables;	Production of kidney bean in tons	Ministry of Agriculture and Rural Development - Agricultural National Survey	CPI - 1320000 - vegetables and leguminous vegetables

9	020204	Tomato; other vegetables, fresh or chilled n.e.c (onion, garlic, beet, mushrooms, etc.)	Production of vegetables (onion, tomato, etc.) in tons	Ministry of Agriculture and Rural Development - Agricultural National Survey	PPI - P and C - 01230 - Other vegetables, fresh or chilled n.e.c
10	020207	Cassava; other edible roots and tubers with high starch or inulin content	Cassava production in tons	Ministry of Agriculture and Rural Development - farming Evaluations by consensus	PPI - P and C - 01240 - Edible roots and tubers with high starch or inulin content
11	020301	Fresh bananas	Fresh banana production in tons for domestic consumption Fresh banana Export in tons	Ministry of Agriculture and Rural Development Colombian Group of Banana Producers - AUGURA	PPI - P and C - 01311-2 - Fresh banana Price calculation of foreign trade database - Dane
12	020302	Fresh plantains	Fresh plantain Production in tons	Ministry of Agriculture and Rural Development - farming Evaluations by consensus	PPI - P and C - 01311-1 - Fresh plantains
13	020303	Citrus fruits (lemon, mandarin and other citric ones (grapefruit, tangelo, etc.)). other fresh fruits and nuts; coconuts, pineapples, figs, mangoes, guavas, fresh or dried	Production of fruits in tons	Ministry of Agriculture and Rural Development - farming Evaluations by consensus	• PPI - P and C - - 01320 - Citrus fruit, fresh or dried PPI - P and C - 01340 - Other fresh fruits
14	0204	Oil seeds and oleaginous fruit (oil palm nut, soya bean and other oleaginous fruits)	Fruit of oil palm Soya bean	National Federation of Oil Palm Producers - FEDEPALMA Ministry of Agriculture and Rural Development	PPI - P and C - 01450 - Oil seeds and oleaginous fruit
15	020500	Living plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds	Value of the export of flowers	Dane (Foreign trade)	Price calculation of foreign trade database - Dane
16	020600	Cocoa beans; Other beverage crops and spices	Production of cacao in tons	National Cacao Producers Federation - FEDECACAO	• PPI - P and C - 01623 - Cocoa beans, raw or roasted • PPI - P and C - 01632 - Processed spices
17	0207	Unmanufactured tobacco	Tobacco production in tons	Ministry of Agriculture and Rural Development - Agricultural National Survey	PPI - P and C - 01710 - Unmanufactured tobacco leaves

18	0208	Sugar cane	Production of sugar cane in tons	Association of cultivators of sugar cane ASOCAÑA	PPI - P and C - 01810 - Sugar cane
19	00900	Raw vegetable material n.e.c.	Production of cotton in tons	Colombian Confederation of cotton CONALGODON	PPI - P and C - 01921 - Cotton ginned or not
20	0210	Plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes		Quarterly National Accounts	Indirect calculation
21	021100	Developing areas and other services related to agricultural production	Developing areas for the plantations of:	• Oil Palm Producers National Federation - FEDEPALMA Association of cultivators of sugar cane ASOCAÑA Ministry of Agriculture and Rural Development	PPI P y C 011 Production of agriculture
		Developing areas and other services related to agricultural production	▪ African Palm ▪ Sugar cane ▪ Fruit in hectares		
22	030101	Bovine cattle, live	Bovine Cattle Slaughter, (Kg live) for the internal market	• National Federation of Cattle Producers - FEDEGAN • DANE - Cattle slaughter	Livestock market prices of Bogotá, Medellín y Cali
		Bovine cattle, live	Demographic Model establishing increases (births and imports) and decrease (slaughter, Exports, natural death) of the cattle stock (in heads)		
23	030102	Raw milk and milk cream	Raw milk and milk cream production in liters	• Ministry of Agriculture and Rural Development • International Corporation of Colombia - CCI	PPI - P and C - 02910 - Raw milk and milk cream
		Raw milk and milk cream			
24	030201	Poultry, live	Production of chicken in tons	National Federation of Poultry Producers - FENAVI	PPI - P and C - 02122 - Poultry live
25	030202	Eggs, in shell, fresh, preserved, cooked or embryonated	Egg production in units	National Federation of Poultry Producers - FENAVI	PPI - P and C - 02920 - Eggs, in shell, fresh, preserved, cooked
26	030301	Swine, live	Swine slaughter, in tons	DANE - Cattle slaughter	PPI - P and C - 02121 - Swine live
27	030302	Other animals, live; by-products and services related to animal farming	Production calculated indirectly from the behavior of products 03	Quarterly National Accounts	Indirect calculation

28	040001	Forestry and logging products except logs of wood and related services	Production of wood pulp Production of industrial sawed wood	National Association of Entrepreneurs of Colombia ANDI DANE - Monthly Manufacturing Survey	PPI - P and C - 03000 - Forestry and logging products
29	040002	Fuel wood	Rural Population census 2005	DANE - population Census	CPI - 0000000 - Total
30	0501	Fishes, live, fresh or chilled	Production of transformation and conservation of fish and derivatives of the fish Rural population census 2005	DANE - ▪ Monthly Manufacturing Survey ▪ population Census	PPI - P and C - 0501 - Fishing, operation of fish hatcheries and fish farmspiscícolas
31	0600	Mineral coal	Coal production in tons	Drummond Colombia Hillock Colombian Institute of Geology and Mining - INGEOMINAS	Price calculation of foreing trade database - DANE
32	070001	Crude petroleum	Petroleum production in barrels	Ministry of Mines and Energy	Price calculation of foreing trade database - DANE
33	070002	Natural gas and other energy sources (uranium and thorium), services related to petroleum and natural gas extraction, except those of prospection	Natural gas production in MCF	Ministry of Mines and Energy	PPI - P and C - 12020 - Natural gas including pure methane liquefied or gaseous
34	080101	Iron ores and concentrates	Iron production in tons	Acerías Paz del Río, S.A.	PPI - P and C - 271 - Basic industries of iron and steel
35	080102	Nickel ores and concentrates (ferronickel), copper; and Aluminum and other metallic ores	Nickel production in pounds	Cerro Matoso S.A. Colombia	Price calculation of foreing trade database - DANE
36	080201	Ores mainly composed of gold	<ul style="list-style-type: none"> • IC for the Production of Basic precious metals and metals clad with precious metals 310103 • Δ Inventories • Gold Exports 	DANE - Foreign Trade Colombian Institute of Geology and Mining - INGEOMINAS	London Precious Metals Exchange KITCO

37	080202	Platinum ores and silver ores	Production of silver and platinum in grams	Colombian Institute of Geology and Mining - INGEOMINAS	London Precious Metals Exchange - KITCO
38	090101	Monumental or building rock or stone	Indirect calculation from the indicators of the production of sectors 41 and 42 - construction of civil constructions and works	QNA	Indirect calculation
39	090201	Rock and sea salt	Production of rock salt and sea salts in tons	Colombian Institute of Geology and Mining - INGEOMINAS IFI Concession of Salinas	Price regulated by the Ministry of Mines and Energy
40	090300	Non-metallic ores for industrial uses	Indirect calculation from the indicators of the production of products 2801, 3001 and 3002	Quarterly National Accounts	Indirect calculation
41	0904	Emeralds and other precious and semiprecious stones	Value of exports FOB	Colombian Institute of Geology and Mining - INGEOMINAS	Indirect calculation from gold, silver and platinum prices
42	100101	Meat of bovine animals, fresh or chilled; and Edible offal of bovine, swine, and other animals, fresh or chilled; and Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis.	Slaughter of bovine cattle Slaughter of swine	DANE - slaughter of cattle	PPI - P and C - 21111 - Meat of bovine animals, fresh or chilled PPI - P and C - 21113 - Swine meat, fresh or chilled
43	100106	Meat and edible offal of poultry and other meats, fresh or chilled	Production of chicken in tons	National Federation of Poultry Producers - FENAVI	PPI - P and C - 21121 - Meat and edible offal of poultry and other meats, fresh or chilled
44	100108	Meat and edible offal of poultry and other meats, fresh or chilled	Volume index of ISIC Rev. 3 1510 - Production, processing and preservation of meat and fish	DANE - Monthly Manufacturing Survey	Implicit index
45	1002	Preserves and preparations of meat	Indirect calculation from indicators of the production of product 0501	Quarterly National Accounts	Implicit index of product 0501
46	1100	Animal and vegetable oils and fats	Volume index ISIC Rev. 3 1520 - Processing of fruit, legumes, vegetables, oils and fat	DANE - Monthly Manufacturing Survey	Implicit index

			Volume index ISIC Rev. 3 1580 - Manufacture of other food products				
47	1200	Dairy products	Volume index ISIC Rev. 3 1530 - Manufacture of dairy products	DANE	-	Monthly	Implicit index Manufacturing Survey
48	1301	Grain mill products, starches and starch products	Volume index ISIC Rev. 3 1540 - Manufacture of grain mill products, starches and starch products, and prepared animal feeds	DANE	-	Monthly	Implicit index Manufacturing Survey
49	1302	Bakery products and pasta	volume index ISIC Rev. 3 1550 - Manufacture of bakery products, macaroni, noodles, couscous and similar farinaceous products	DANE	-	Monthly	Implicit index Manufacturing Survey
50	1401	Coffee milling services	Purchases of Green Coffee by the domestic milling industry	National Federation of Coffee Growers of Colombia			Price of reference for dry parchment coffee and pasilla beans (60 kilos) FNC
			<ul style="list-style-type: none"> • Inventories of green coffee • Exports of green coffee • Imports of green coffee 				
51	1402	Industrial products of coffee	volume index ISIC Rev. 3 1580 - Manufacture of other food products	DANE	-	Monthly	Implicit index Manufacturing Survey
52	150001	Raw cane or beet sugar, refined or not	volume index ISIC Rev. 3 1570 - Sugar mills and refineries	DANE	-	Monthly	Implicit index Manufacturing Survey
53	150002	Raw cane or beet sugar, refined or not; services related to elaboration and refining of sugar and panela (brown sugar)	Raw cane production in tons	Ministry of Agriculture and Rural Development			PPI - P and C - 1572 - Raw cane
54	18	Raw cane; honey and molasses	Volume index ISIC Rev. 3 1590 - Manufacture of beverage	DANE	-	Monthly	Implicit index Manufacturing Survey
55	190000	Tobacco products (cigars, cigarillos and cigarettes of tobacco or tobacco substitutes)	Volume index ISIC Rev. 3 1600 - Manufacture of tobacco products	DANE	-	Monthly	Implicit index Manufacturing Survey
56	20	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	Volume index ISIC Rev. 3 1720 - Weaving of textiles	DANE	-	Monthly	Implicit index Manufacturing Survey
57	2100	Textile articles other than apparel	Volume index ISIC Rev. 3 1740 - Manufacture of other textiles	DANE	-	Monthly	Implicit index Manufacturing Survey

58	22	Knitted and crocheted fabrics; wearing apparel	Volume index ISIC Rev. 3 1750 - Manufacture of knitted and crocheted fabrics and articles and 1800 - Manufacture of wearing apparel; dressing and dyeing of fur	DANE	-	Monthly	Implicit index
59	230100	Tanned leather; composition leather	Volume index ISIC Rev. 3 1910 - Tanning and dressing of leather	DANE	-	Monthly	Implicit index
60	230200	Leather products and footwear	Volume index ISIC Rev. 3 1920 - Manufacture of footwear and 1930 - Manufacture of travel accessories, luggage, handbags; saddlery and harness	DANE	-	Monthly	Implicit index
61	24	Products of wood, cork, straw and plaiting materials	Volume index ISIC Rev. 3 2020 - Manufacture of veneer sheets; manufacture of plywood, laminboard, particle board and other panels and boards; 2030 - Manufacture of builders' carpentry and joinery; 2090 - Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials	DANE	-	Monthly	Implicit index
62	2500	Products of wood, cork, straw and plaiting materials	Volume index ISIC Rev. 3 2100 - Manufacture of paper, paperboard and paper and paperboard products	DANE	-	Monthly	Implicit index
63	26	Printed matters and analogous products	volume index ISIC Rev. 3 2210 - editing; 2220 - publishing; 2230 - Service activities related to printing	DANE	-	Monthly	Implicit index
64	27	Refined petroleum products; nuclear fuel	Volume index ISIC Rev. 3 2321 - Manufacture of refined petroleum products, inside the refinery; 2322 - Manufacture of refined petroleum products, outside the refinery	DANE	-	Monthly	Implicit index
65	2801	Basic chemicals	Volume index ISIC Rev. 3 2410 - Manufacture of basic chemicals	DANE	-	Monthly	Implicit index
66	2802	Other chemical products; man-made fibres	Volume index ISIC Rev. 3 2420 - Manufacture of other chemical products	DANE	-	Monthly	Implicit index
67	2803	Chemical products of illegal use	Enclave	Enclave			Implicit index

68	29	Rubber and plastics products	Volume index ISIC Rev. 3 2510 - Manufacture of rubber products; 2520 - Manufacture of plastics products	DANE	-	Monthly	Implicit index	Manufacturing Survey
69	3001	Glass and glass products; ceramic ware and refractory products	Volume index ISIC Rev. 3 2610 - Manufacture of glass and glass products; 2691 - Manufacture of non- structural non-refractory ceramic ware	DANE	-	Monthly	Implicit index	Manufacturing Survey
70	3002	Cement and other non mineral products n.e.c.	Volume index ISIC Rev. 3 2699 - Manufacture of other non-metallic mineral products n.e.c.	DANE	-	Monthly	Implicit index	Manufacturing Survey
71	310101	Basic iron and steel	Volume index ISIC Rev. 3 2710 - Manufacture of basic iron and steel	DANE	-	Monthly	Implicit index	Manufacturing Survey
72	310103	Basic metals, fabricated metal products, except basic precious metals and metals clad with precious metals; except machinery and equipment Basic precious metals and metals clad with precious metals	<ul style="list-style-type: none"> • IC: volume index of 3690 Other manufacturing n.e.c. • Valuable Goods of the Bank of the Republic • Exports of transformed gold 	DANE			London Stock Exchange	<ul style="list-style-type: none"> • Foreign Trade • Monthly Manufacturing Survey • Central Bank • Colombian Institute of Geology and Mining - INGEOMINAS
73	3102	Fabricated metal products, except machinery and equipment	Volume index ISIC Rev. 3 2800 - Manufacture of fabricated metal products, except machinery and equipment	DANE	-	Monthly	Implicit index	Manufacturing Survey
74	32	Machinery and equipment	Volume index ISIC Rev. 3 2910 - Manufacture of general purpose machinery; 2920 - Manufacture of special purpose machinery; 2930 - Manufacture of domestic appliances n.e.c.	DANE	-	Monthly	Implicit index	Manufacturing Survey

75	33	Other machinery; electrical machinery and apparatus	Volume index ISIC Rev. 3 3100 - Manufacture of electrical machinery and apparatus n.e.c.; 3200 - Manufacture of radio, television and communication equipment and apparatus; 3300 - Manufacture of medical, precision and optical instruments, watches and clocks	DANE - Manufacturing Survey	Monthly	Implicit index
76	34	Transport equipment	Volume index ISIC Rev. 3 3410 - Manufacture of motor vehicles and their engines; 3420 - Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers; 3430 - Manufacture of parts and accessories (luxuries) for motor vehicles and their engine; 3500 - Manufacture of other transport equipment	DANE - Manufacturing Survey	Monthly	Implicit index
77	35	Furniture	Volume index ISIC Rev. 3 3610 - Manufacture of furniture;	DANE - Manufacturing Survey	Monthly	Implicit index
78	36	Other manufactured goods n.e.c	Volume index ISIC Rev. 3 3690 - Other manufacturing industries n.e.c	DANE - Manufacturing Survey	Monthly	Implicit index
79	3800	Electrical energy	Regulated and not regulated demand	XM -filial enterprise of Interconexión Eléctrica S.A.		CPI 2220100 Electric energy Price index of non residential contracts
80	390000	Gas distributed through mains	Natural gas consumption by economic sectors.	National Council of Natural Gas Operation CNO-Gas		CPI - 2210100 - Gas
81	400000	Water, wastes or scraps; sewage and refuse disposal, sanitation and other environmental protection services	Income generated by sales of water, sewage and cleaning services	National Accounting Office "Financial Statements of lending enterprises"		CPI - 2220200 - water, sewage and cleaning services
82	410100	General construction services of residential buildings	Production at constant prices of residential construction works of: • Urban Area of the cities included in the census • Other urban area • Rural Dwelling	DANE: • Census of constructions - CEED • Construction licenses • Dwelling stock		Implicit index from Building Census ICCV Cost Index of Dwelling Construction

			<ul style="list-style-type: none"> • Dwelling without License 	<ul style="list-style-type: none"> • Urban dwelling stock • Financing of new dwellings 	
83	410200	General construction services of non-residential buildings	Production at constant prices of the nonresidential construction works corresponding to: <ul style="list-style-type: none"> • Urban area cities of the census • Other urban area 	DANE: <ul style="list-style-type: none"> • Census of constructions - ICCV Cost Index of CEED • Construction licenses 	Implicit index from Building Census ICCV Cost Index of Dwelling Construction
84	410300	Installation, building completion and finishing services; Renting services related to equipment for construction or demolition of buildings or civil engineering works, with operator.	Volume index of the stock of dwellings Volume index of the stock of nonresidential constructions Behavior of production 410100 and 410200	DANE: National Accounts and Synthesis Division	ICCV Cost Index of Dwelling Construction
85	42	Construction works, civil engineering works and leasing services of equipment with operator	Indicator of Investment in civil work	DANE: DIMPE	ICCP Heavy Construction Cost Index
86	430000	Distributive trade services	Marketable Supply	Quarterly National Accounts	Implicit index
87	44	Repair services of motor vehicles, household electrical appliances and other goods	<ul style="list-style-type: none"> • Stock of the vehicles • Real Indices of spare parts and lubricants of the MMCM 	Ministry of transport DANE - Monthly Sample of Wholesale and retail trade retail	Legal minimum wage salary index CPI-2110100-Actual leasing
88	450100	Lodging services	Real Income perceived by hotels	DANE - MMH - Hotels Monthly Survey	CPI - 6310200 - Tourism
89	4502	Food and beverage serving services	Real Income perceived by restaurants	DANE - MTS - Quarterly Services Survey	CPI - 1900000 - Food consumed outside the home
90	4601		<ul style="list-style-type: none"> • Number of registered students (basic education to superior) • Persons Occupied in 13 metropolitan areas 	<ul style="list-style-type: none"> • Ministry of National Education DANE Integrated Household Survey 	CPI - 7210000 - Urban Transportation

91	4602	Road transport services of freight including railroad	Transportable Supply from the behavior of products 01, 02, 10 to 36, and the import of goods	Quarterly National Accounts	Implicit price index
92	460300	Transport services via pipeline	<ul style="list-style-type: none"> • Transported Volumes of crude and refined petroleum • Gas Production 	<ul style="list-style-type: none"> • ECOPETROL • Ministry of Mines and Energy 	Exchange rate
93	480100	Scheduled and non scheduled air transport services of passengers; rental services of aircraft with operator	Income of the airlines which principal activity is the transport of passengers	DANE - Survey of quarterly income of enterprises	CPI - 7230100 - Airfare
94	480200	Air transport services of freight	Income of air cargo transport companies	DANE - Survey of quarterly income of enterprises	PPI - P and C - 000000 - Total
95	49	Supporting and auxiliary transport services; Water transport services (passenger and freight)	<ul style="list-style-type: none"> • Income of general warehouses • Volume index of Import and Exports • Collection of tolls • Volume index of passengers and freight air transport • Number of passengers by river • Marketable Supply of 02 and 030101 	<ul style="list-style-type: none"> Superintendency of Finance Ministry of Transport National Roads Institute (INVÍAS) National Concessions Institute DANE: or quarterly Sample of Travel Agencies or Foreign trade 	<ul style="list-style-type: none"> CPI - 0000000 - Total Exchange rate Tariffs fixed by the Ministry of Transport CPI - 7230100 - Airfare
96	500100	Postal and courier services	Income of mail and courier enterprises	DANE - Quarterly Services Survey	CPI - 8110000 - Courier services
97	500201	Fixed telephony services, mobile telecommunication services, telecommunication services other than data transmission and programme distribution services	Income: international Long distance call - LID; national long distance call	<ul style="list-style-type: none"> • Ministry of Technologies of Information and telecommunications • Ministry of telecommunications • National Television Commission • Enterprises of the sector 	<ul style="list-style-type: none"> CPI - Basic index of international long distance call CPI - Basic index of national long distance call CPI - 8100000 - Communications CPI - 8120100 - Telephony service
			Income of the Ministry of telecommunications from mobile telephon service		

				<ul style="list-style-type: none"> • DANE - Quarterly Services Survey 	<ul style="list-style-type: none"> CPI - 8120200 - Other telephony services
		Internet Services			
		<ul style="list-style-type: none"> • Fixed Line Number in good condition • Indicators of the Quarterly Services Survey in Communications • Income of the National Commission of Television due to television by subscription 		<ul style="list-style-type: none"> • National Commission of Television 	<ul style="list-style-type: none"> CPI - 0000000 - Total
98	500203	Data transmission services; programme distribution services	<ul style="list-style-type: none"> • Indicators of the Quarterly Services Survey in Communications 	<ul style="list-style-type: none"> • DANE - Quarterly Services Survey 	
99	510101	Financial intermediation services indirectly measured - FISIM	<ul style="list-style-type: none"> • Amount and rate of received interests • Amount and rate of paid interests • Stock of loans and deposits of the resident monetary corporations and other resident financial intermediaries • Midpoint reference rate • Libor Rate 6 months (6m) 	<ul style="list-style-type: none"> • Central Bank • DANE • Superintendency of Finance • Quarterly National Accounts • Portfolio of mortgaged properties 	<ul style="list-style-type: none"> • CPI without food and fuels • Midpoint Rate 2005 base • Implicit index per economic activities • Libor rate for year 2005
100	510102	Other financial intermediation services	<ul style="list-style-type: none"> Income of the deposit corporations and financial intermediaries due to commissions, honoraria and other payments directly invoiced to the client for the administration of its resources and the use of the financial services 	<ul style="list-style-type: none"> • Superintendency of Finance 	<ul style="list-style-type: none"> CPI - 9410100 - Banking services
	510103	Tax on Financial movements	<ul style="list-style-type: none"> Net income reported by the natural persons and legal entities in their income tax report 	<ul style="list-style-type: none"> • Central Bank Quarterly National Accounts 	<ul style="list-style-type: none"> Implicit index from the QNA for intermediate consumption For final consumption total CPI

101	510201	General insurance; life and reinsurance	Payments by FOSYGA of UPC through compensation process (Number of affiliates to a EPS) General premiums and claims for life and non life insurance	• Solidarity and Guarantee Fund (Fosyga) Colombian Federation of Insurance Companies - FASECOLDA	CPI - 9410200 - Other financial services
103	5103	Supporting financial intermediation services, insurance, pension funds and retirement savings allowance funds	Income of the trust companies and AFP for commissions, honoraria and other payments directly invoiced to the client for the administration of its resources and the use of the auxiliary financial services	Superintendency of Finance	CPI - 9410200 - Other financial services
104	520101	Renting or leasing services involving residential property on own account	• Stock of residential construction by categories of dwelling, type and department • Value of the average rental according to: stratum, type and department	DANE - Census of constructions	CPI - 2110100 - Actual Rental
105	520102	Renting or leasing services involving own or leased residential property to third parties	• Stock of residential construction by: stratum, type and department	DANE - Census of constructions	CPI - 2110100 - Actual Rental
106	520103	Renting or leasing services involving non-residential own or leased property	• Stock of nonresidential construction by: stratum and average rental by stratum	DANE - Census of constructions	CPI - 0000000 - Total
107	520200	Real estate services on a fee or contract basis	Deflated real estate Transactions	Supervision Of Notary and Registry	CPI - 0000000 - Total
108	53	Business services except financial and real estate services	• Investment in publicity • Income of employment agencies • Income of security and supervision activities • Indirect Calculation from the production indices corresponding to: 02, 22, 26, 28, 30, 31, 38, 41, 50, 51, 52, 54, 55, 57 and 59	• IBOPE • DANE: • Quarterly Services Survey • QNA	CPI - 0000000 - Total
109	540100	Public administration and defence; direction, administration and control of compulsory social security services; non-market education services	Value of the items of the financial statements of a sample of government entities, corresponding to:	General Accountant's Office	Price index of the salaries of public servants

			<ul style="list-style-type: none"> • Intermediate Consumption • Compensation of Employees • Consumption of fixed capital 			Specific index calculated for Intermediate Consumption PPI of total capital goods
110	5500	Market education services	Number of registered students in private education in each one of the levels of education	Ministry of Education	Nacional	CPI - 5110100 - Tuitions of basic, middle and vocational education CPI - 5120100 - Tuitions in higher and non formal education
111	570000	Market human health and social services	<ul style="list-style-type: none"> • Purchases of UPC by Fosyga (Solidarity sub-account) • System of General Participation; financing of provision of services to the subsidized systema and public health according to law 715, 2001. 	<ul style="list-style-type: none"> • Solidarity and Guarantee Fund • Ministry of Finance 		CPI - 4100000 - Health care services
112	5900	Services of membership organizations, cultural, sports and other market services	<ul style="list-style-type: none"> • Total Employed Population • Income of movie theaters • Income radio and television • Income of chance game 	<ul style="list-style-type: none"> • DANE: • Integrated Household Survey • Quarterly Sample of services • ETESA (sales Baloto); Superintendency of Health (permanent sales of lotteries and bets) 		CPI 6310000-Services for entertainment CPI 6310000-Services for entertainment CPI total 0000000 CPI 6320100-Gambling
113	610000	Domestic services	Employed in domestic services	DANE	Integrated Household Survey	CPI of domestic services

Source: DANE, DSCN

**Annex J. Classification of household final consumption expenditure according to PURPOSE
2005 base**

Purpose	N.A. Codes	Description	Factor
01 Food and non-alcoholic beverages	020102	Maize (corn)	1,00
	020201	Potatoes	1,00
	020202	Fresh and dried leguminous vegetables;	1,00
	020204	Tomato; other vegetables, fresh or chilled n.e.c. (onion, garlic, beet, mushrooms, etc.)	1,00
	020207	Cassava; other edible roots and tubers with high starch or inulin content	1,00
	020301	Fresh bananas	1,00
	020302	Fresh plantains	1,00
	020303	Citrus fruits (lemon, mandarin and other citric ones (grapefruit, tangelo, etc.)). other fresh fruits and nuts; Coconuts, pineapples, figs, mangoes, guavas, fresh or dried	1,00
	020400	Oil seeds and oleaginous fruits	1,00
	030102	Raw milk and milk cream	1,00
	030202	Eggs, in shell, fresh, preserved, cooked or embryonated	1,00
	030302	Sheep and goats, Horses, asses, mules and hinnies, live; other by-products whether edible or not	0,31
	050100	Fishes, live, fresh or chilled	1,00
	100101	Meat of bovine animals, swine meat, meat of ovine, sheep, goat, equine and other animals, fresh or chilled; Hides and skins of bovine, sheep, goat, equine and other animals; Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis	1,00
	100106	Meat and edible offal of poultry and other meats, fresh or chilled	0,93
	100108	Preserves and preparations of meat	1,00
	100200	Fish and other sea products	0,97
	110000	Animal and vegetable oils and fats, Cocoa, chocolate and sugar confectionery, food products n.e.c	0,89
	120000	Dairy products	0,95
	130100	Grain mill products, starches and starch products, services related to the elaboration of grain mill products, starches and its products	0,77
	130200	Bakery products and pasta	1,00
	140200	Industrial products of coffee	1,00
	150001	Raw cane or beet sugar, refined or not; services related to elaboration and refining of sugar and brown sugar (panela)	1,00
150002	Brown sugar (panela); honey and molasses	1,00	
180000	Beverages	0,20	
02 Alcoholic beverages, tobacco and narcotics	021001	Illicit plants	1,00
	180000	Beverages	0,44
	190000	Tobacco products	1,00

	280300	Chemical products of illegal use	1,00
03 Wearing apparel and footwear	200000	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	0,38
	220000	Knitted and crocheted fabrics; wearing apparel	0,93
	230200	Leather products and footwear	0,93
	290000	Rubber and plastics products	0,05
	360000	Other manufactured goods n.e.c	0,01
	440000	Repair services of motor vehicles, household electrical appliances and other goods	0,03
	530100	Leasing services	0,03
	590000	Services of membership organizations, cultural, sports and other market and non market services	0,09
04 Lodging services; electricity, water, gas and other fuels	040002	Fuel wood	1,00
	270000	Refined petroleum products; nuclear fuel	0,20
	380000	Electrical energy	1,00
	390000	Gas distributed through mains	1,00
	400000	Water, wastes or scraps; sewage and refuse disposal, sanitation and other environmental protection services	1,00
	520101	Renting or leasing services involving residential property on own account	1,00
	520102	Renting or leasing services involving own or leased residential property to third parties	1,00
	520200	Real estate services on a fee or contract basis	1,00
	530100	Leasing services	0,62
05 Furniture, furnishing articles for households	200000	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	0,23
	250000	Paper products, paperboard and its products	0,10
	280100	Basic chemicals	1,00
	280200	Other chemical products; man-made fibres; services related to the manufacture of chemical substances and products on a fee or contract basis	0,24
	290000	Rubber and plastics products	0,73
	300100	Glass and glass products; ceramic ware and refractory products	1,00
	310200	Fabricated metal products, except machinery and equipment; services related to the elaboration and repair of metal product, except machinery and equipment	0,50
	320000	Machinery and equipment	0,50
	330000	Other machinery; electrical machinery and apparatus	0,10
	350000	Furniture	1,00
	360000	Other manufactured goods n.e.c	0,22
	440000	Repair services of motor vehicles, household electrical appliances and other goods	0,03
	530100	Leasing services	0,04
	610000	Domestic services	1,00
06 Health	200000	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	0,10
	280200	Other chemical products; man-made fibres; services related to the manufacture of chemical substances and products on a fee or contract basis	0,25

	290000	Rubber and plastics products	0,06	
	330000	Other machinery; electrical machinery and apparatus	0,05	
	510202	Health and pension compulsory social security services and professional risks	1,00	
	570000	Market human health and social services	0,83	
07	Transport	210000	Textile articles other than apparel	0,30
		270000	Refined petroleum products; nuclear fuel	0,80
		290000	Rubber and plastics products	0,15
		340000	Transport equipment	1,00
		440000	Repair services of motor vehicles, household electrical appliances and other goods	0,94
		460100	Land transport services of passengers	1,00
		460200	Road transport services of freight including railroad	1,00
		480100	Scheduled and non scheduled air transport services of passengers; rental services of aircraft with operator	1,00
		490000	Water transport services; supporting and auxiliary transport services	0,75
		530100	Leasing services	0,01
08	Telecommunications	330000	Other machinery; electrical machinery and apparatus	0,14
		500100	Postal and courier services	1,00
		500201	Fixed telephone services, mobile telecommunication services, telecommunication services other than data transmission and programme distribution services	1,00
09	Entertainment and cultural activities	20500	Living plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds	1,00
		030302	Sheep and goats, Horses, asses, mules and hinnies, live; other by-products whether edible or not	0,69
		250000	Paper products, paperboard and its products	0,08
		260000	Printed matters and analogous products	0,85
		330000	Other machinery; electrical machinery and apparatus	0,68
		360000	Other manufactured goods n.e.c	0,47
		490000	Water transport services; supporting and auxiliary transport services	0,25
		500203	Data transmission services; programme distribution services	1,00
		530100	Leasing services	0,14
		590000	Services of membership organizations, cultural, sports and other market and non market services	0,45
10	Education	220000	Knitted and crocheted fabrics; wearing apparel	0,07
		550000	Market education services	1,00
11	Restaurants and hotels	100106	Meat and edible offal of poultry and other meats, fresh or chilled	0,07
		100200	Fish and other sea products	0,03
		110000	Animal and vegetable oils and fats, Cocoa, chocolate and sugar confectionery, food products n.e.c	0,11
		120000	Dairy products	0,05
		130100	Grain mill products, starches and starch products, services related to the elaboration of grain mill products, starches and its products	0,23
		180000	Beverages	0,36
		450100	Lodging services	1,00

	450200	Food and beverage serving services	1,00
12 Other goods and services	200000	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	0,29
	210000	Textile articles other than apparel	0,70
	230200	Leather products and footwear	0,07
	240000	Products of wood, cork, straw and plaiting materials	1,00
	250000	Paper products, paperboard and its products	0,82
	260000	Printed matters and analogous products	0,15
	280200	Other chemical products; man-made fibres; services related to the manufacture of chemical substances and products on a fee or contract basis	0,51
	290000	Rubber and plastics products	0,01
	310200	Fabricated metal products, except machinery and equipment; services related to the elaboration and repair of metal product, except machinery and equipment	0,50
	320000	Machinery and equipment	0,50
	330000	Other machinery; electrical machinery and apparatus	0,03
	360000	Other manufactured goods n.e.c	0,30
	510101	Financial intermediation services indirectly measured - FISIM	1,00
	510102	Other financial intermediation services	1,00
	510103	Tax on financial movements (GMF)	1,00
	510201	General insurance; life and reinsurance	1,00
	510300	Supporting financial intermediation services, insurance, pension funds and retirement savings allowances funds	1,00
	530100	Leasing services	0,16
	540100	Public administration and defence; direction, administration and control of compulsory social security services; non -market education services	1,00
	570000	Market human health and social services	0,17
	590000	Services of membership organizations, cultural, sports and other market and non market services	0,46

Source: DANE, DSCN

**Annex J. Classification of household final consumption expenditure according to DURABILITY
2005 base**

Durability	N.A. Codes	Description	Factor
Durables	320000	Machinery and equipment	0,90
	330000	Other machinery; electrical machinery and apparatus	0,44
	340000	Transport equipment	1,00
	350000	Furniture	1,00
	360000	Other manufactured goods n.e.c	0,14
Non durables	020102	Maize (corn)	1,00
	020201	Potatoes	1,00
	020202	Fresh and dried leguminous vegetables;	1,00
	020204	Tomato; other vegetables, fresh or chilled n.ep (onion, garlic, beet, mushrooms, etc.)	1,00
	020207	Cassava; other edible roots and tubers with high starch or inulin content	1,00
	020301	Fresh bananas	1,00
	020302	Fresh plantains	1,00
	020303	Citrus fruits (lemon, mandarin and other citric ones (grapefruit, tangelo, etc.)). other fresh fruits and nuts; Coconuts, pineapples, figs, mangoes, guavas, fresh or dried	1,00
	020400	Oil seeds and oleaginous fruit	1,00
	020500	Living plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds	1,00
	21001	Illicit plants	1,00
	30102	Raw milk and milk cream	1,00
	30202	Eggs, in shell, fresh, preserved, cooked or embryonated	1,00
	30302	Sheep and goats,Horses, asses, mules and hinnies, live; other by-products whether edible or not	0,34
	40002	Fuel wood	1,00
	50100	Fishes, live, fresh or chilled	1,00
	100101	Meat of bovine animals,swine meat, meat of ovine, sheep, goat, equine and other animals, fresh or chilled; Hides and skins of bovine, sheep, goat, equine ans other animals; Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis	1,00
	100106	Meat and edible offal of poultry and other meats, fresh or chilled	1,00
	100108	Preserves and preparations of meat	0,93
	100200	Fish and sea products	1,00
110000	Animal and vegetable oils and fats,Cocoa, chocolate and sugar confectionery, food products n.e.c	0,70	
120000	Dairy products	0,89	

	130100	Grain mill products, starches and starch products, services related to the elaboration of grain mill products, starches and its products	1,00
	130200	Bakery products and pasta	0,77
	140200	Industrial products of coffee	1,00
	150001	Raw cane or beet sugar, refined or not; services related to elaboration and refining of sugar and brown sugar (panela)	1,00
	150002	Brown sugar (panela); honey and molasses	1,00
	180000	Beverages	0,64
	190000	Tobacco products	1,00
	200000	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	0,39
	210000	Textile articles other than apparel	0,74
	250000	Paper products, paperboard and its products	1,00
	260000	Printed matters and analogous products	0,23
	270000	Refined petroleum products; nuclear fuel	1,00
	280100	Basic chemicals	1,00
	280200	Other chemical products; man-made fibres; services related to the manufacture of chemical substances and products on a fee or contract basis	1,00
	280300	Chemical products of illegal use	1,00
	290000	Rubber and plastics products	0,71
	310200	Fabricated metal products, except machinery and equipment; services related to the elaboration and repair of metal product, except machinery and equipment	0,59
	360000	Other manufactured goods n.e.c	0,52
	380000	Electrical energy	1,00
	390000	Gas distributed through mains	1,00
	400000	Water, wastes or scraps; sewage and refuse disposal, sanitation and other environmental protection services	0,65
Semi-durables	200000	Natural textile fibers; yarn and thread; woven and tufted textile fabrics	0,61
	210000	Textile articles other than apparel	0,26
	220000	Knitted and crocheted fabrics; wearing apparel	1,00
	230200	Leather products and footwear	1,00
	240000	Products of wood, cork, straw and plaiting materials	1,00
	260000	Printed matters and analogous products	0,62
	290000	Rubber and plastics products	0,29
	300100	Glass and glass products; ceramic ware and refractory products	1,00
	310200	Fabricated metal products, except machinery and equipment; services related to the elaboration and repair of metal product, except machinery and equipment	0,41

	320000	Machinery and equipment	0,10
	330000	Other machinery; electrical machinery and apparatus	0,56
	360000	Other manufactured goods n.e.c	0,34
	440000	Repair services of motor vehicles, household electrical appliances and other goods	0,15
Services	30302	Sheep and goats,Horses, asses, mules and hinnies, live; other by-products whether edible or not	0,66
	100108	Preserves and preparations of meat	0,07
	110000	Animal and vegetable oils and fats,Cocoa, chocolate and sugar confectionery, food products n.e.c	0,30
	120000	Dairy products	0,11
	130200	Bakery products and pasta	0,23
	180000	Beverages	0,36
	260000	Printed matters and analogous products	0,15
	400000	Water, wastes or scraps; sewage and refuse disposal, sanitation and other environmental protection services	0,35
	440000	Repair services of motor vehicles, household electrical appliances and other goods	0,85
	450100	Lodging services	1,00
	450200	Food and beverage serving services	1,00
	460100	Land transport services of passengers	1,00
	460200	Road transport services of freight including railroad	1,00
	480100	Scheduled and non scheduled air transport services of passengers; rental services of aircraft with operator	1,00
	490000	Water transport services; supporting and auxiliary transport services	1,00
	500100	Postal and courier services	1,00
	500201	Fixed telephony services, mobile telecommunication services, telecommunication services other than data transmission and programme distribution services	1,00
	500203	Data transmission services; programme distribution services	1,00
	510101	Financial intermediation services indirectly measured - FISIM	1,00
	510102	Other financial intermediation services	1,00
	510103	Tax on financial movements	1,00
	510201	General insurance; life and reinsurance	1,00
	510202	Health and pension compulsory social security services and professional risks	1,00
	510300	Supporting financial intermediation services, insurance, pension funds and cesantias	1,00
	520101	Renting or leasing services involving residential property on own account	1,00
	520102	Renting or leasing services involving own or leased residential property to third parties	1,00

520200	Real estate services on a fee or contract basis	1,00
530100	Leasing services	1,00
540100	Public administration and defence; direction, administration and control of compulsory social security services; non -market education services	1,00
550000	Market education services	1,00
570000	Market human health and social services	1,00
590000	Services of membership organizations, cultural, sports and other market and non market services	1,00
610000	Domestic services	1,00

Source: DANE, DSCN

Annex K. Classification of quaterly final consumption. Indicators used

2005 base

Item	N.A. Codes	Description	Indicators
1	010001	Parchment coffee and low grade beans	Quarterly rural population
2	020102	Maize (corn)	Changes based on CPI and population growth
3	020103	Rice, not husked	Quarterly rural population
4	020201	Potatoes	Changes based on CPI and population growth
5	020202	Fresh and dried leguminous vegetables;	Changes based on CPI and population growth
6	020204	Tomato; other vegetables, fresh or chilled n.e.c. (onion, garlic, beet, mushrooms, etc.)	Changes based on CPI and population growth
7	020207	Cassava; other edible roots and tubers with high starch or inulin content	Changes based on CPI and population growth
8	020301	Fresh bananas	Quarterly rural population
9	020302	Fresh plantains	Changes based on CPI and population growth
10	020303	Citrus fruits (lemon, mandarin and other citric ones (grapefruit, tangelo, etc.)). other fresh fruits and nuts; Coconuts, pineapples, figs, mangoes, guavas, fresh or dried	Changes based on CPI and population growth
11	0204	Oil seeds and oleaginous fruit (Oil palm nut, soya bean and Other oil seeds and oleaginous fruits)	Changes based on CPI and population growth
12	0205	Living plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds	The indicator is Quarterly rural population
13	0206	Cocoa beans, raw or roasted and Other beverage crops and spices, whether or not processed	Changes based on CPI and population growth
14	0210	Plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes	Consumer population of psychoactive substances
15	030102	Raw milk and milk cream	Changes based on CPI and population growth
16	030202	Eggs, in shell, fresh, preserved, cooked or embryonated	Changes based on CPI and population growth
17	030302	other animals, live; by-products and services related to animal farming	Changes based on CPI and population growth
18	040002	Fuel wood	Changes based on CPI and population growth
19	050100	Fishing products, fish farming and related services	Changes based on CPI and population growth

20	100101	Meat of bovine animals, swine meat, meat of ovine, sheep, goat, equine and other animals, fresh or chilled; Hides and skins of bovine, sheep, goat, equine and other animals; Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis	Livestock Slaughter
21	100106	Meat and edible offal of poultry and other meats, fresh or chilled	Poultry production
22	100108	Preserves and preparations of meat	Monthly Survey of Manufacturing
23	100200	Fish and sea products	Fish production
24	1100	Oils, fats, Cocoa, chocolate and sugar confectionery and food products	Monthly Survey of Retail Stores
25	1200	Dairy products	Monthly Survey of Retail Stores
26	1301	Grain mill products, starches and starch products	Monthly Survey of Retail Stores
27	1302	Bakery products and pasta	Monthly Survey of Retail Stores
28	1402	Industrial products of coffee	Monthly Survey of Retail Stores
29	150001	Raw cane or beet sugar, refined or not; services related to elaboration and refining of sugar and panela	Changes based on CPI and population growth
30	150002	Panela; honey and molasses	Changes based on CPI and population growth
31	18	Beverages	Changes based on CPI and population growth
32	19	Tobacco products	
33	20	yarn and thread; woven and tufted textile fabrics	Changes based on CPI and population growth
34	2100	Textile articles other than apparel	Monthly Survey of Retail Stores
35	22	Knitted and crocheted fabrics; wearing apparel	Monthly Survey of Retail Stores
36	2302	Leather products and footwear	Monthly Survey of Retail Stores
37	24	Products of wood, cork, straw and plaiting materials	Changes based on CPI and population growth
38	25	Paper products, paperboard and its products	Monthly Survey of Retail Stores
39	26	Printed matters and analogous products	Monthly Survey of Retail Stores
40	27	Refined petroleum products	Changes based on CPI and population growth
41	2801	Basic chemicals	Monthly Survey of Retail Stores
42	2802	Other chemical products; man-made fibres	Monthly Survey of Retail Stores
43	2803	Chemical products of illegal use	Consumer population of psychoactive substances by age
44	29	Rubber and plastics products	Monthly Survey of Retail Stores
45	3001	Glass and glass products; ceramic ware and refractory products	Monthly Survey of Retail Stores
46	3102	Fabricated metal products, except machinery and equipment; Services related to the elaboration and repair of metal product, except machinery and equipment on a fee or contract basis	Monthly Survey of Retail Stores

47	32	Machinery and equipment	Monthly Survey of Retail Stores
48	33	Other machinery; electrical machinery and apparatus	Monthly Survey of Retail Stores
49	34	Transport equipment	Vehicle survey
50	35	Furniture	Monthly Survey of Retail Stores
51	36	Other manufactured goods	Monthly Survey of Retail Stores
52	3800	Electrical energy	Independent calculation
53	390000	Gas distributed through mains	Independent calculation
54	400000	Water, wastes or scraps; sewage and refuse disposal, sanitation and other environmental protection services	Changes based on production
55	44	Repair services of motor vehicles, household electrical appliances and other goods	Changes based on production
56	450100	Lodging services	Changes based on production
57	4502	Food and beverage serving services	Changes based on production
58	4601	Land transport services of passengers	Changes based on production
59	4602	Road transport services of freight including railroad	Changes based on production
60	480100	Scheduled and non scheduled air transport services of passengers; rental services of aircraft with operator	Changes based on production
61	49	Supporting and auxiliary transport services; Water transport services (passengers and freight)	Changes based on production
62	500100	Postal and courier services	Changes based on production
63	500201	fixed telephony services, mobile telecommunication services, telecommunication services other than data transmission and programme distribution services	Changes based on production
64	510101	Financial intermediation services indirectly measured - FISIM	Independent calculation
65	510102	Comisiones y otros servicios de intermediación financiera	Changes based on production
66	510103	Tax on financial movements	Independent calculation
67	510201	General insurance; life and reinsurance	Changes based on production
68	510202	Health and pension compulsory social security services and professional risks	Changes based on production
69	5103	Supporting financial intermediation services, insurance, pension funds and cesantias	Changes based on production
70	520101	Renting or leasing services involving residential property on own account	Changes based on production
71	520102	Renting or leasing services involving own or leased residential property to third parties	Changes based on production

72	520200	Real estate services on a fee or contract basis	Changes based on production
73	530101	Leasing or rental services concerning machinery and equipment and other goods without operator	Changes based on production
74	530102	Computer, research and development; professional, scientific and technical services; Legal, accounting, auditing, tributary advisory services; marketing studies, administration consultants; architecture, engineering and other technical services.	Changes based on production
75	540100	Public administration and defence; direction, administration and control of compulsory social security services; non -market education services	Changes based on production
76	5500	Market education services	Changes based on production
77	570000	Market human health and social services	Changes based on production
78	5900	Services of membership organizations, cultural, sports and other market services	Changes based on production
79	610000	Domestic services	Changes based on production

Source: DANE, DSCN

**Annex L. Price indexes of final consumption of quaterly accounts
2005 base**

Item	Codes	Description	Consumer price index		
			Codes	Weight	Description
1	010001	Parchment coffee and low grade beans	1820100	1,00	Coffee
2	020102	Maize (corn)	1110000	1,00	Cereals
3	020103	Rice, not husked	1110100	1,00	Rice
4	020201	Potatoes	1210100	1,00	Potatoes
5	020202	Fresh and dried leguminous vegetables;	1320000	1,00	Fresh vegetables and leguminous vegetables
6	020204	Tomato; other vegetables, fresh or chilled n.e.p. (onion, garlic, beet, mushrooms, etc.)	1310000	1,00	Fresh or chilled vegetables and legumes
7	020207	Cassava; other edible roots and tubers with high starch or inulin content	1210000	1,00	Tubers
8	020301	Fresh bananas	1410200	1,00	Bananas
9	020302	Fresh plantains	1220000	1,00	Plantains
10	020303	Citrus fruits (lemon, mandarin and other citric ones (grapefruit, tangelo, etc.)). other fresh fruits and nuts; Coconuts, pineapples, figs, mangoes, guavas, fresh or dried	1410000	1,00	Fresh fruits
11	0204	Oil seeds and oleaginous fruit (Oil palm nut, soya bean and Other oil seeds and oleaginous fruits)	1730100	1,00	Oils
12	0205	Living plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable seeds	0	1,00	Total
13	0206	Cocoa beans, raw or roasted and Other beverage crops and spices, whether or not processed	1310500	0,30	Other fresh vegetables and legumes
			1830200	0,70	Other spices
14	0210	Plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes	0	1,00	Total
15	030102	Raw milk and milk cream	1720100	1,00	Milk
16	030202	Eggs, in shell, fresh, preserved, cooked or embryonated	1710000	1,00	Eggs
17	030302	Other animals, live; by-products and services related to animal farming	1510000	0,13	Meat

			1840400	0,12	Other grocery
			6320000	0,75	Other expenses related to recreation and leisure
18	040001	Forestry and logging products and related services	0	1,00	Total
19	050100	Fishing products, fish farming and related services	1600000	1,00	Fish and other sea products
20	100101	Meat of bovine animals, swine meat, meat of ovine, sheep, goat, equine and other animals, fresh or chilled; Hides and skins of bovine, sheep, goat, equine and other animals; Slaughter, slaughterhouse and other services related to manufacturing of meat and fish, on a fee or contract basis	1510100	0,78	Beef
			1510200	0,22	Pork
21	100106	Meat and edible offal of poultry and other meats, fresh or chilled	1510300	1,00	Chicken
22	100108	Preserves and preparations of meat	1520100	1,00	Cold meat and sausages
23	100200	Fish and sea products	1610000	1,00	Fresh, frozen, canned fish
24	1100	Oils, fats, Cocoa, chocolate and sugar confectionery and food products	1730000	0,32	Oils and fats
			1000000	0,38	Food
			1800000	0,30	Other food
25	1200	Dairy products	1720000	1,00	Milk and derivatives
26	1301	Grain mill products, starches and starch products	1110000	1,00	Cereals
27	1302	Bakery products and pasta	1100000	0,80	Cereals and bakery products
			1920200	0,20	Hot fast food
28	1402	Industrial products of coffee	1820000	1,00	Coffee and chocolate
29	150001	Raw cane or beet sugar, refined or not; services related to elaboration and refining of sugar and panela	1810200	1,00	Sugar
30	150002	Brown sugar (panela); honey and molasses	1810000	1,00	Brown sugar and sugar
31	18	Beverages	1850000	0,48	Non alcoholic beverages
			9110000	0,52	Alcoholic beverages
32	19	Tobacco products	9120000	1,00	Cigarettes and tobacco
33	20	Yarn and thread; woven and tufted textile fabrics	2610100	0,26	Bedding and pillowcases

			3310100	0,35	Tailoring and rental services of wearing apparel
			9210200	0,39	Articles for personal hygiene
34	2100	Textile articles other than apparel	2600000	0,31	Household linen
			3140200	0,26	Diapers and others
			9210200	0,43	Articles for personal hygiene
35	22	Knitted and crocheted fabrics; wearing apparel	3100000	1,00	Clothing
36	2302	Leather products and footwear	3200000	1,00	Footwear
37	24	Products of wood, cork, straw and plaiting materials	9320000	1,00	Other personal articles
38	25	Paper products, paperboard and its products	9210200	1,00	Articles for personal hygiene
39	26	Printed matters and analogous products	5200000	0,89	Educational materials
			6110000	0,11	Cultural products
40	27	Refined petroleum products	7120000	0,77	Expenses for personal transportation
			2210100	0,23	Gas
41	2801	Basic chemicals	2720200	1,00	Insecticides
42	2802	Other chemical products; man-made fibres	4210000	0,26	Pharmaceutical products and other related expenses
			9210000	0,50	Articles for personal hygiene
			2700000	0,24	Cleaning articles
43	2803	Chemical products of illegal use	0	1,00	Total
44	29	Rubber and plastics products	7120000	0,08	Expenses for personal transportation
			2730000	0,68	Other cleaning articles
			4210000	0,06	Medicines and other related expenses
			2500000	0,18	Kitchen ware
45	3001	Glass and glass products; ceramic ware and refractory products	2520000	1,00	Table ware
46	3102	Fabricated metal products, except machinery and equipment; Services related to the elaboration and repair of metal product, except machinery and equipment on a fee or contract basis	2500000	0,53	Household utensils
			9210300	0,47	Hygiene and skin care

47	32	Machinery and equipment	2410000	1,00	Household appliances
48	33	Other machinery; electrical machinery and apparatus	6200000	0,56	Devices for recreation and leisure
			2530000	0,15	Other household utensils
			8130000	0,18	Mobile telephones and similar
			4220100	0,11	Orthopaedic appliances
49	34	Transport equipment	7100000	1,00	Personal transportation
50	35	Furniture	2300000	0,89	Furniture
			2610000	0,11	Furniture for bedroom
51	36	Other manufactured goods	9300000	0,20	Jewelry articles and other personal articles
			6000000	0,53	Recreation services
			5200000	0,15	Articles for school
			2530000	0,12	Other domestic utensils
52	3800	Electrical energy	2220100	1,00	Electric energy
53	390000	Gas distributed through mains	2210100	1,00	Gas
54	400000	Water, wastes or scraps; sewage and refuse disposal, sanitation and other environmental protection services	2220200	1,00	Aqueduct, sewerage and cleaning services
55	44	Repair services of motor vehicles, household electrical appliances and other goods	7100000	0,94	Personal transportation
			2410000	0,06	Household appliances
56	450100	Lodging services	5130000	0,21	Other educational expenses
			6310000	0,79	Recreation and leisure services
57	4502	Food and beverage serving services	1900000	1,00	Food consumed outside the home
58	4601	Land transport services of passengers	7200000	1,00	Public transportation
59	4602	Road transport services of freight including railroad	7200000	1,00	Public transportation
60	480100	Scheduled and non scheduled air transport services of passengers; rental services of aircraft with operator	7230000	1,00	Transportation by air
61	49	Supporting and auxiliary transport services; Water transport services (passengers and freight)	7120000	0,77	Personal transportation expenses
			6310200	0,23	Tourism
62	500100	Postal and courier services	8110100		Mail delivery and other services

63	500201	fixed telephony services, mobile telecommunication services, telecommunication services other than data transmission and programme distribution services	8120000	1,00	Telephon services
64	510101	Financial intermediation services indirectly measured - FISIM	0	1,00	Total
65	510102	Comisiones y otros servicios de intermediación financiera	9400000	1,00	Other goods and services
66	510103	Tax on financial movements	0	1,00	Total
67	510201	General insurance; life and reinsurance	0	1,00	Total
68	510202	Health and pension compulsory social security services and professional risks	9410200	1,00	Other financial services
69	5103	Supporting financial intermediation services, insurance, pension funds and cesantias	9400000	1,00	Other goods and services
70	520101	Renting or leasing services involving residential property on own account	2100000	1,00	Housing services
71	520102	Renting or leasing services involving own or leased residential property to third parties	2100000	1,00	Housing services
72	520200	Real estate services on a fee or contract basis	2100000	1,00	Housing services
73	530101	Leasing or rental services concerning machinery and equipment and other goods without operator	2410000	0,13	Household appliances
			3300000	0,22	Wearing apparel services
			9400000	0,66	Other goods and services
74	530102	Computer, research and development; professional, scientific and technical services; Legal, accounting, auditing, tributary advisory services; marketing studies, administration consultants; architecture, engineering and other technical services.	2130000	0,83	Other goods and services
			6310000	0,16	Recreation and leisure services
75	540100	Public administration and defence; direction, administration and control of compulsory social security services; non -market education services	5000000	1,00	Education services
76	5500	Market education services	5000000	1,00	Education services
77	570000	Market human health and social services	4000000	1,00	Health services
78	5900	Services of membership organizations, cultural, sports and other marketand non-market services	6000000	1,00	Recreation services

79	610000	Domestic services	2130100	1,00	Domestic services and household services
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Source: DANE, DSCN.

ANNEX M. QUALITY CONTROL MECHANISMS

Quality Management System (QMS)

With the purpose of improving the processes and products of its statistical research, and of enhancing and upholding a customer-focused work environment and statistical culture, involving and committing the whole entity, DANE has implemented the QMS, in compliance with the requirements established by ISO 9001:2000 and NTC GP 1000 – 2004 standards. Such requirements are directed towards the Mission, Vision, Quality Policy, Strategic Objectives and QMS Manual of the Department, and they pursue the integration and harmonization of the Integrated Management System (SIG) established for all public entities through Act 872 of 2003 and Decree 1599 of 2005, by means of which the Government of Colombia adopts the Standard Model for Internal Control (MECI).

Within the mission statements of the entity, the Quarterly National Accounts currently are within the scope of QMS under ISO 9001:2000 of Quality Management granted to DANE by the Colombian Institute of Technical Standards (ICONTEC). As part of this certification and with the purpose of continuous improvement, all the processes and by-products required for the preparation of quarterly national accounts have been identified and documented.

Documentation of Quarterly National Accounts (QNA)

In order to keep each stage in the development of the activities of the QNA documented, DANE has created an Institutional Documentary System (SDI) as part of the Integrated System of Institutional Management (SIGI), which is the name under which the technical process and quality standards are designated. With respect to the management of information, the procedures enable objectively describing and preserving the information used in each of the steps followed in each quarter.

Within the Institutional Documentary System, by means of the Functional Model and diagrams of context, level zero and one, QNA make it possible to visualize the research and determine the sources that provide the information needed for its development; which suggest or recommend the fulfillment of new requirements, the main system processes, information flows from one process to another and the identification of customers, both internal and external, to whom the results of products from this process are addressed. (Refer to Annexes G and H).

Indicators for the quality control of the processes followed in the research

To fulfill the objectives of control, monitoring and ongoing self-assessment under the provisions set forth in the QMS, QNA rely upon a tool called Integrated Quarterly Indicator (IQI), which aims at the self-assessment of the process of elaboration of the accounts, so as to continually improve the production of results through the periodic evaluation of the following elements:

- The coverage of the basic statistics that serve as input in the compilation of QNA, with the purpose of maintaining or redefining the sources of information;
- The consistency and coherence of the indicators used in the process, so as to guarantee the historical comparability and the fulfillment of the objectives of quarterly accounts;
- The opportunity from the analysis of the report of the required information and of the necessary actions for the processing of quarterly national accounts, with the purpose of guaranteeing the efficiency of results that are derived from them.

The IQI measures the coverage, timeliness and consistency of the information as well as that of the preparation of quarterly national accounts. *Coverage* is defined as the amount of information obtained from each source and the number of sources that report information within the period, *timeliness* refers to the availability of information at the moment when it is required, that is, adjusted to schedule and planned stages for the calculation of quarterly GDP, and *consistency* is the evaluation of information within the context and economic coherence of the moment of analysis.

The IQI is calculated by the staff during the process of compilation of GDP and its consolidation is completed once the GDP of the corresponding quarter has been published.

ANNEX N. CALCULATION OF PRODUCTION AND INTERMEDIATE CONSUMPTION BY ACTIVITY.

1. Calculation of production by activity.

It is based on the quarterly series of production by product (elementary series). These values are distributed among the activities using the structure of the production matrix elaborated for each individual year. The production for each activity is obtained by aggregating all the products that constitute the output of the activity under analysis. For the quarters where no annual accounts are available, the last structure available is applied.

As an example, a hypothetical reduced matrix for year n , consisting of three activities and three products, presents the values of the corresponding production. (Table AX.1). It is used to establish the coefficients of production by activity (share of the production of a product corresponding to each activity) (Table AX.2).

Table AX.1 Annual production matrix (year n)

Product	Total	monetary units		
		Activity		
		X	Y	Z
Total	38.805	13.400	16.260	9.145
A	13.195	13.000	110	85
B	16.410	350	16.000	60
C	9.200	50	150	9.000

Source : DANE - DSCN

Table AX.2. Product production coefficients by activity (year n)

Product	Total	Activity		
		X	Y	Z
A	1,00	0,99	0,01	0,01
B	1,00	0,02	0,98	0,00
C	1,00	0,01	0,02	0,98

Source . Dane - DSCN

Assumption is made that output for the first quarter of year $(n+1)$, for products A, B, and C is 3200, 4250 and 2550 monetary units, respectively. The production of the activities is obtained by applying to the output figures by products the production coefficients of year n , and adding up the values obtained for each individual product, to obtain the production by activity (Table AX.3).

Tabla AX.3 Estimated quarterly production (QI, year (n+1)) by product and activity

Product	Total	monetary units		
		Activity		
		X	Y	Z
Total	10.000	3.257	4.212	2.531
A	3.200	3.153	27	21
B	4.250	91	4.144	16
C	2.550	14	42	2.495

Source : DANE - DSCN

2. Adjustment to the level of annual production by activity and seasonal adjustment of the series.

Quarterly production calculated by activity is adjusted to the levels given in the national accounts using the benchmarking procedure and is then seasonally adjusted using X-12 ARIMA.

3. Calculation of Intermediate Consumption (IC).

Once the production by activity has been obtained, IC is obtained following an analogous procedure. IC is obtained by multiplying the value of the quarterly production of the activity (adjusted by benchmarking) by the technical coefficients ($CT_{[j]}$) derived from the annual accounts. The same coefficient is used for the four quarters of a year. The technical coefficient is defined as:

$$CT_{(j)n} = \frac{IC_{-pc_{(j)n}}}{P_{-pc_{(j)n}}}$$

Where,

P_{-pc} = Production by activity at current prices

IC_{-pc} = Intermediate consumption of the activity at current prices

$(j)n$ = Activity j in year n

In the quarters where no annual data are available (quarters of the current year) the technical coefficients ($CT_{[j]}$) are estimated from the last intermediate consumption matrix and the last production matrix by activity, projected in volume as the volume of production, and in price as the current prices.

The procedure is developed in two stages: In the first one, the IC matrix for year (n+1) is estimated at year (n) constant prices, by multiplying the CI matrix of year n at current prices (Table AX.4) by the volume indices of the activity

production matrix of year (n+1) with respect to year n (Table AX.5)⁷⁴, an assumption that is often employed internationally and theoretically valid in the short term.

$$M_IC_pk_{(n)} = M_IC_pc_{(n)} * V_Vol_ind_Pr_{(n+1)}$$

Where:

$M_IC_pk_{(n)}$ = Matrix of annual intermediate consumption of year (n+1) at year (n) prices

$M_ICi_pc_{(n)}$ = Matrix of annual intermediate consumption year (n)

$V_Vol_ind_Pr_{(n+1)}$ = Vector of volume indices for production by activity in year (n+1) with respect to year (n)

Tabla AX.4 Intermediate consumption matrix, year n, at current prices

Product	Total	monetary units		
		Activity		
		X	Y	Z
Total	5.200	2.000	1.300	1.900
A	1.500	200	1.000	300
B	1.500	1.400	100	0
C	2.200	400	200	1.600

Source : Dane - DSCN

Table AX.5 Laspeyres volume indices vector for activities (year n+1 with respect to year n)

Volume index	Activity		
	X	Y	Z
	104	106	102

Source : Dane - DSCN

In the second stage the intermediate consumption matrix for year (n+1) at current prices is obtained (Table AX.8) by multiplying the last available matrix (Table AX.6) by the vector of CI price indices by product for year (n+1) with respect to year n (Table AX.7). For each one of the products of CI a price index is defined, it maybe the PPI, the CPI or the implicit production price index, among others.

$$M_IC_pc_{(n+1)} = M_IC_pk_{(n)} * V_Price_ind_IC_Prod_{(n+1)}$$

In which

$M_IC_pc_{(n+1)}$ = Annual IC matrix year (n+1) at current prices

$V_Price_ind_IC_Prod_{(n+1)}$ = Vector of price indices of IC by product year (n+1) respect of year n

⁷⁴ The volume indexes are obtained from the matrix of production by activity at constant prices as it was previously explained.

Table AX.6 Intermediate consumption matrix of year n+1 at year n prices

monetary units				
Product	Total	Activity		
		X	Y	Z
Total	5.396	2.080	1.378	1.938
A	1.574	208	1.060	306
B	1.562	1.456	106	0
C	2.260	416	212	1.632

Source : Dane- DSCN

Table AX.7. Price indices vector for Intermediate Consumption of year n+1 with respect to year n

Product	Price index
A	95
B	105
C	108

Source : Dane - DSCN

Table AX.8 Intermediate consumption matrix of year n+1 at current prices

monetary units				
Product	Total	Activity		
		X	Y	Z
Total	5.576,2	2.175,7	1.347,3	2.053,3
A	1.495,3	197,6	1.007,0	290,7
B	1.640,1	1.528,8	111,3	0,0
C	2.440,8	449,3	229,0	1.762,6

Source : Dane - DSCN

With this method the price indices for inputs are weighted by the share of the value of each of them in the total IC of the activity at last year's prices.

Finally, the technical coefficients of CI by activity for year (n+1) are obtained by combining the calculated CI and the production of the activities at current prices.

In the presented example, if the production at current prices of activities X, Y and Z are respectively 2.311, 1060 and 2.619 monetary units, the intermediate consumption coefficients in the activities will be X= 0,47, Y= 0,64 and Z= 0,39 (Table AX.9).

Tabla AX.9 Intermediate consumption coefficients at current prices for year (n+1)

Concepts	monetary units		
	Activity		
	X	Y	Z
a. Activity production, current prices	4.622,0	2.120,0	5.238,0
b. Intermediate consumption, current prices	2.175,7	1.347,3	2.053,3
c. IC Coefficient = b / a	0,47	0,64	0,39

ANNEX O. ACRONYMS

ANDI	Colombia National Industrial Association
BANCOLDEX	Foreign Trade Bank of Colombia
BLS	Bureau of Labor Statistics
BoP	Balance of Payments
CEED	Building Census
CI	Change in Inventories
COTELCO	Colombian Hotel Association
CPC	Central Product Classification
CPI	Consumer Price index
CVAN	Survey of new motor vehicles sales
DANE	National Administrative Department of Statistics
DIAN	National Tax and Customs Directorate
DNP	National Planning Department
DSCN	Synthesis and National Accounts Division
EAC	Trade Annual Survey
EAM	Manufacturing Annual Survey
EAS	Service Enterprises Annual Survey
ECH	Continuous Household Survey
ECOPETROL	Colombian Petroleum Company
ECV	Living Conditions Survey
ENA	National Agriculture Survey
ENIG	National Household Income and Expenditure Survey
EPS	Private Companies in charge of the Administration of Social Security in Health
ER	Exchange rate
ESAG	National Slaughter Survey
ESE	State Social Enterprises
ETESA	Territorial Corporation for Health
EUROSTAT	Statistical Office of the European Communities
FASECOLDA	Colombian Federation of Insurance Companies
FEDEGAN	National Federation of Cattle Breeders
FINDETER	Financing Corporation for Regional Development
FISIM	Financial Intermediation Services Indirectly Measured
FNG	National Cattle Fund
FOSYGA	Solidarity and Guarantee Fund of the Social Security System in Health Care
GAHM	Department Stores and Hypermarkets Survey
GDP	Gross Domestic Product
GEIH	Integrated Household Survey

GFCE	Government Final Consumption Expenditure
GFCF	Gross Fixed Capital Formation
GMF	Tax on Financial Movements
HFCE	Household Final Consumption Expenditure
IC	Intermediate Consumption
ICCP	Heavy Construction Cost Index
ICCV	Dwelling Construction Cost Index
ICONTEC	Colombian Institute of Technical Standards
IIOC	Investment in Civil Works Indicator
IIP	International Investment Position
IMF	International Monetary Fund
INCO	National Concessions Institute
INCODER	Colombian Institute of Rural Development
INGEOMINAS	Colombian Institute of Geology and Mining
INVIAS	National Roads Institute
IPS	Health Care Providers
ISA	Interconexión Eléctrica S.A.
ISIC A.C.	Colombian adaptation of the International Standard Industrial Classification of economic activities (ISIC)
MADR	Ministry of Agriculture and Rural Development
MBTU	Thousand British Thermic Unit
MECI	Standard Model of Internal Control
MMCM	Monthly Survey of Retail Stores
MMM	Monthly Manufacturing Survey
MPR	Midpoint Rate
MTS	Quarterly Services Survey
NCT	National Customs Territory
NFCG	National Federation of Coffee Growers
n.p.c.	Not previously classified
NPISH	Non-profit Institutions Serving Households
OECD	Organization for Economic Co-operation and Development
PPI	Producers Price Index
PUC	Accounting Standards Framework
QNA	Quarterly National Accounts
SDDS	Special Data Dissemination Standards
SDI	Internal Documentation System
SFC	Superintendency of Finance
SGC	System of Quality Management
SGP	General Participation System
SIG	Integral System of Management
SIGI	Integral System of Institutional Management

SISBEN	System of Identification of Beneficiaries of the Subsidized System of Social Security in Health
SISOC	Superintendency of Companies
SISOL	Superintendency of Solidarity Economy
SIVAL	Superintendency of Securities
SMMLV	Legal Minimum Monthly Wage
SNA	System of National Accounts
SOAT	Traffic Accidents Compulsory Insurance
SSP	Superintendency of Public Utilities
SSPD	Superintendency of Domiciliary Public Utilities
SUI	Information System for the Public Utility Sector
SUIP	Unique Information System on Government Employment
TCF	Thousand Cubic Feet
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	World Tourism Organization
UPC	per capita payment unit
UPME	Unit of Mining-Energy Planning
VA	Value Added
VAT	Value Added Tax
WB	World Bank