

Costa Rica's System of National Accounts within the Framework of the 2012 Rebase of the National Accounts Project

Methodological Details

Economic Division

Introduction

Recognizing that the country's economic reality has changed during the last few decades, and in keeping with its responsibility for calculating and disseminating economic statistics, the Banco Central de Costa Rica (BCCR) carried out the Rebase of the National Accounts Project (RNA) project between January 2010 and December 2015, updating the National Accounts using improved methodologies for the compilation of data, as well as better basic statistics and reconciliations of the country's macroeconomic accounts. The new accounts include 183 products and 136 activities, and update the rebase year for consideration of the country's productive structure from 1991 to 2012.

The methodological framework for this change is the 2008 System of National Accounts (2008 SNA), which facilitates preparation and presentation of data in a format oriented towards economic analysis, decision making, and formulation of economic policy. The 2008 SNA is consistent with the most recent international standards.

This document provides users with a summary of the methodological, theoretical and statistical elements that support the different products of Costa Rica's System of National Accounts (SNA-CR).

The Banco Central would like to thank all of the businesses, public and private institutions, independent producers, researchers and specialists that have contributed data or expertise to this effort, making it possible to successfully complete this publication.

Acknowledgements

The present methodological document is the result of the hard work of a team composed of staff members from the Central Bank of Costa Rica, to whom a deep appreciation is extended for their perseverance, effort and dedication during the project's phases. Moreover, is worth noting their high level of professionalism, knowledge and qualifications demonstrated throughout the whole process. Without this human factor the final result would not had been achieved.

The assessment received from the International Monetary Fund (IMF) and the Regional Center of Technical Assistance of Central America, Panama and Dominican Republic (CAPTAC-DR by its acronym in Spanish), was of great value for the generation of statistics according to the international standards. The comments and remarks received from the external consultants are deeply appreciated, particularly the contributions from Carmen Reyes and Eneira Osorio.

Special acknowledgment is due to for Magda Ascues Deacosta, international consultant, whom through her experience and knowledge became an important member that provided excellent assessment and guidance for the development of the project since the beginning.

Last but not least, the Central Bank would like to thank: all the companies, public and private institutions, independent producers, researchers and specialists, for their support in the data collection process and the sharing of their expert criteria, which contributed to the success of this publication.

Table of Contents

I.	The System of National Accounts: Conceptual Aspects	9
1.1	Institutional Units and Sectors	9
1.2	Transactions and Other Flows	10
1.3	Production.....	13
1.3.1	Valuation Methods	13
1.4	Accounts of Institutional Sectors.....	14
1.4.1	Current Accounts.....	14
1.4.2	Accumulation Accounts.....	16
1.4.3	The Rest of the World Account.....	17
II.	Rebase of the National Accounts Project	18
2.1	Project Description	18
2.2	Project Scope.....	18
2.2.1	Phase I: Classifiers, Preliminary Studies and Data Collection.....	18
2.2.2	Phase II: Compilation of the SNA Rebase Year Central Framework	19
2.2.3	Phase III: Sequence of 2013 Accounts.....	19
III.	Methodological Innovations.....	20
IV.	Main Recommendations Adopted from the 2008 SNA	21
4.1	Recording of Manufacturing Services	21
4.2	Output of the Banco Central	21
4.3	Non-Life Insurance Output.....	21
4.4	Research and Development	22
4.5	Production in Process	22
V.	Supply and Use Table (SUT).....	23
5.1	Supply Table	23
5.1.1	Output	23
5.1.2	Imports by product	23
5.1.3	cif/fob Adjustment	26
5.1.4	Product Taxes and subsidies.....	26
5.1.4.1	Value added tax (VAT)	26
5.1.4.2	Taxes on Imports and Exports:.....	28

5.1.4.3	Selective Taxes on Consumption and Other Taxes on Products	28
5.1.4.4	Subsidies	28
5.1.5	Distribution Margins.....	28
5.2	Use table	29
5.2.1	Intermediate Consumption	29
5.2.2	<i>fob</i> Exports.....	29
5.2.3	Final Consumption Expenditure	29
5.2.3.1	Final Household Consumption	29
5.2.3.2	Government Final Consumption.....	30
5.2.3.3	Final Consumption of Non-Profit Institutions Serving Households	31
5.2.4	Gross Capital Formation	32
5.2.4.1	Gross Fixed Capital Formation	32
5.2.4.2	Changes in Inventories	32
5.2.4.3	Acquisitions Minus Dispositions of Valuables	32
5.2.5	Added Value.....	32
5.3	Staff Employed	33
VI.	Input-Output (I-O) Matrix	34
6.1	Calculation Process.....	34
6.1.1	Output-Output Matrix	34
6.1.2	Economic Activity-Economic Activity Matrix.....	35
6.1.3	Output Vector of the Total Economy at Basic Prices.....	36
6.1.4	Matrix of Technical Coefficients and the Matrix of Direct and Indirect Requirements	36
VII.	Sources and Methods: Production Account by Economic Activity.....	38
7.1	Farming, Forestry and Fishing	38
7.2	Mining and Manufacturing.....	42
7.3	Trade	45
7.4	Construction.....	46
7.5	Non-Financial Services.....	47
7.6	Financial Services.....	48
7.7	General Government Services.....	51
VIII.	Annexes.....	54
8.1	Annex 1 Classification of Products, Economic Activities and Institutional Sectors.	54

8.1.1	Classification of Products and Economic Activities	54
8.1.2	Institutional Sectors	62
8.2	Annex 2: Corporate Economic Study	63
8.2.1	Overview	63
8.2.2	Sample Design	63
8.2.3	Information Collection	66
8.2.4	Accessibility	66
8.3	Annex 3: Processing Services for Third-Party Inputs	66
8.3.1	Background	66
8.3.2	Methodological Changes	66
8.3.3	Implementation of a Change in Measurement in Costa Rica	67
8.4	Annex 4: Basic SUT Outline	68
8.5	Annex 5. Quarterly Survey on Progress of Construction Projects for Private Use	69
8.5.1	Overview	69
8.5.2	Sample Design	69
8.6	Annex 6. Estimation of Financial Intermediation Services Indirectly Measured (FISIM)	71
8.6.1	Background	71
8.6.2	Information Sources	72
8.6.3	Methodology for Estimations	73

Abbreviations and acronyms

ARESEP	Public Services Regulatory Authority
ASADAS	Community Water and Sewage Administration Associations
BCCR	Banco Central de Costa Rica
CCSS	Costa Rican Public Health Administration System
CES	Continuous Employment Survey - CES
CESt	Corporate Economic Study
CFIA	Federated Association of Engineers and Architects
cif	Cost, insurance and freight
CAPTAC-DR	Regional Center of Technical Assistance of Central America, Panama and Dominican Republic (CAPTAC-DR by its acronym in Spanish)
COICOP	Classification of individual consumption by purpose
CPC2	Central Product Classification version 2
EA-CR	Economic Activity-Costa Rica
fob	free on board
GCF	Gross Capital Formation
GDP	Gross Domestic Product
HS	Harmonized Commodity Description and Coding System
IISEM	Comprehensive Implementation of the Macroeconomic Statistics System (IISEM by its acronym in Spanish)
IMF	International Monetary Fund
INEC	National Institute of Statistics and Censuses
I-O	Input-Output Matrix
ISIC 4	International Standard Industrial Classification of Economic Activities revision 4
ITR	Import Tariff Rights
MINAE	Ministry of the Environment and Energy
NHS	National Household Survey
NPISH	Non-profit institutions serving households
NSHIE	National Survey on Household Income and Expenditures
PROCOMER	Foreign Trade Corporation of Costa Rica
REVEC	Registry of Economic Variables
RNA	Rebase of the National Accounts
SCSE	Yearly statement of customers, suppliers and specific expenditures
SCT	Selective Consumption Tax
SNA	System of National Accounts
2008 SNA	2008 System of National Accounts
SPC-CR	Costa Rica's Standard Product Classification
SUGEF	General Superintendency of Financial Entities
SUPEN	General Superintendency of Pensions
SUT	Supply and Use Table
VAT	Value Added Tax

Executive Summary

As part of the program for a Comprehensive Implementation of the Macroeconomic Statistics System (IISEM by its acronym in Spanish) by the Economic Division of the Banco Central de Costa Rica, the Rebase of the National Accounts Project (RNA) was carried out between January 2010 and December 2015. The purpose of this activity was to update the rebase year of the macroeconomic accounts and their respective series, reconciling those related to monetary statistics and balance of payments with each other from the reference year 1991 to the year 2012.

The project was implemented within the conceptual framework of the 2008 System of National Accounts (2008 SNA), the sixth edition of the Manual of Balance of Payments and International Investment Position (MBP6), and the IMF Monetary and Financial Statistics Manual. International consultants with expertise in national accounts provided technical assistance, as did the IMF's Regional Technical Assistance Center for Central America, Panama and the Dominican Republic (CAPTAC-DR by its acronym in Spanish).

The rebase year update included the creation of national classifiers, the development of special studies, and the collection of information on economic activities and institutional sectors. Additionally, in 2012 an interinstitutional agreement was signed between the Banco Central de Costa Rica (BCCR), the Ministry of Finance (MdH) and the National Institute of Statistics and Censuses (INEC) to carry out a Corporate Economic Study (CESt) to obtain the accounting information necessary to estimate the income and expenditure structures of the country's economic activities.

Among the methodological recommendations, it is worth noting the recording of manufacturing and repair services for machinery and equipment, the calculation of the output of the Banco Central and of non-life insurance policies, the classification of research and development activities, and the estimation of production in process.

During this process, adaptations to the central framework of national accounts were also made to reflect the realities of the country's situation, such as the inclusion of additional columns in the Supply and Use Tables (SUTs), Integrated Economic Accounts (IEAs), and the Input-Output (I-O) matrix by production regime.

I. The System of National Accounts: Conceptual Aspects

The System of National Accounts (SNA) is a statistical framework based on a series of international standards and recommendations for the measurement of economic activity, expressed through a complete, consistent, integrated and flexible set of macroeconomic accounts, balance sheets and tables which are based on a series of internationally accepted concepts, definitions, classifications and accounting rules. The statistical framework of the SNA facilitates preparation and presentation of data in a format oriented toward economic analysis, decision making and the formulation of economic policy.

The SNA is structured in a series of conceptual elements that determine its accounting framework, making it possible to describe the essential phenomena that constitute economic behavior: production, consumption, accumulation and related concepts of income and wealth.

1.1 Institutional Units and Sectors

The basic unit of production is the establishment, which is dedicated to an economic activity and may, in addition to its primary production, have secondary products. The establishment has a production process and a cost structure, and produces homogeneous principal products; the preparation of production accounts of economic activities is therefore based on the establishment.

The economy of a country is the result of a range of transactions and interactions carried out by economic units to produce, finance, consume, and possess assets and incur liabilities in their own name. These units are called *institutional units* and are grouped by the SNA into five mutually exclusive sectors, with particular characteristics depending on their main function, the nature of their resources, their behavior and their objectives. These institutional sectors are:

1. **Non-financial corporations:** principally dedicated to the production of goods and non-financial market services.
2. **Financial corporations:** principally dedicated to the provision of financial services, including financial intermediation.
3. **General government:** institutional units that, in addition to meeting their political responsibilities and role in economic regulation, produce non-market services (and

possibly goods) for individual or collective consumption, and redistribute income and wealth.

4. **Households:** institutional units consisting of an individual or group of individuals. All natural persons in the economy must belong to a single household. The main functions of households are to provide labor, to carry out final consumption and, as entrepreneurs, to produce non-financial (and possibly financial) market goods and services.
5. **Non-profit institutions serving households (NPISHs):** legal entities primarily dedicated to the output of non-market services for households or for the community, and whose primary resources are voluntary contributions.

1.2 Transactions and Other Flows

Actions carried out by mutual agreement between institutional units in the SNA are called transactions. Certain economic actions in which only one institutional unit is involved are also treated as transactions, as in the case of own-account gross fixed capital formation. All transactions are recorded in full and classified in monetary terms; this means that all non-monetary transactions must be estimated.

Given the large number of transactions and other flows in the economy, the SNA uses a main classification that has four first-level types of transactions:

1. Transactions of goods and services

Information on these transactions describes the origin (domestic production or imports) and use of goods and services. Uses can include producing other goods and services (intermediate consumption), meeting final consumption needs of households, government and non-profit institutions serving households, capital formation, or consumption by non-residents (exports).

Production: this is described as the activity in which a productive unit uses inputs to obtain products. The SNA distinguishes between market output, output for own-use, and other non-market output. The market output is that which is sold at prices that are economically significant, either in the local market or to nonresidents (exports). Output for own final use consists of goods or services that are kept by companies or households for their own final use (either final consumption or capital formation). Non-market output consists of individual or collective goods

or services produced by non-profit institutions serving households, or by the government, which will be provided free of charge or at prices that are not economically significant to other institutional units or to the community.

Imports: all transfers of ownership of goods from nonresidents to residents, and of services provided by nonresident producers to residents of the country.

Intermediate consumption: includes goods and services used as inputs by productive units in their production process; they may be purchased, withdrawn from stock or produced on own account, or imported or produced in the country.

Final consumption: goods and services intended to directly meet individual private or collective public needs.

Gross fixed capital formation: this is the gross increase in capital goods that takes place over a period of time. It represents tangible and intangible assets that can be used repeatedly in other production processes for more than one year, and are valued at purchaser prices. The depletion of these assets is called consumption of fixed capital.

Exports of goods and services: all transfers of ownership of goods from residents to non-residents and services provided from resident producers to non-residents of the country. These include domestic purchases made by offshore organizations and non-resident households.

Change in inventories: records the changes between periods in the value of inventories both in the market, as well as in the possession of producers and users.

2. Distributive transactions

These transactions distribute the added value generated in the productive process between labor, capital and government, and in transactions involving income and wealth redistribution. Among these transactions are:

Remunerations of salaried employees: includes all salary and wage payments made by resident producers to their workers in cash and in kind, as well as disbursements for social security, private pension funds, family allowances, life insurance and similar schemes that benefit workers

Taxes on production and imports: these are mandatory payments that productive units make to government units. They are disaggregated into taxes on products payable on goods and services when they are produced, supplied, sold, transferred or disposed of; and other taxes on production, which include all taxes, except for those levied on the products, which are borne by the companies because they are engaged in productive activities. They do not include taxes on profits or other income received by companies.

Subsidies on production and imports: these are transfers made by the government to public and private enterprises.

Property income: these are real and imputed transfers of income stemming from the ownership of financial assets and natural resources. They include interests, distributed income of corporations (dividends and withdrawals from quasi-corporate income, reinvested earnings from foreign direct investment), other income from investments (income from property attributed to holders of insurance policies), and income from natural resources.

Current taxes on income, wealth and others: these are mostly taxes on household income, or on the profits of companies or wealth.

Social contributions: these are real or imputed payments to social security systems to comply with the corresponding provisions for paying social security benefits.

Social benefits: these are current transfers received by households so that they can meet their needs stemming from certain events or circumstances, including illness, unemployment, retirement, housing, and education.

3. Financial Transactions

These are transactions that record net acquisition of financial assets or net issuance of liabilities for each type of financial instrument. These variations are often the counterpart of non-financial transactions, but may also be the result of exclusively financial transactions.

4. Other accumulation entries

These include transactions and other economic flows not previously considered, which modify the amount or value of assets and liabilities. They are changes in the value of assets and liabilities that do not originate from transactions.

1.3 Production

Following the quadruple-entry accounting principle, a transaction must be recorded for the same value in all accounts of the sectors involved. The same principle applies to assets and liabilities. This means that a financial asset and its counterparty liability must be recorded for the same amount in both the creditor's and debtor's accounts.

Transactions are valued at the actual price agreed upon by the agents participating in the transaction. In the SNA, market prices are therefore the basic reference for valuation. In the absence of market transactions, valuation is carried out according to costs incurred (e.g., non-market services provided by the government), or with reference to market prices of similar goods or services (for instance, in cases of owner-occupied housing services). Internal transactions are valued at current prices at the time of such transactions, not at their original prices. These internal transactions include inflows and outflows of inventories, intermediate consumption and consumption of fixed capital.

Assets and liabilities are valued at current prices at the moment the balance sheet refers to, not at their original prices. The appropriate basis for valuation of assets and liabilities is the value at which they could be bought in the markets at the time when the valuation is required. Values observed in the markets should preferably be used.

1.3.1 Valuation Methods

There are several methods for dealing with the effects of taxes on products, of subsidies and of trade and transport margins on the valuation of product transactions (goods and services). The preferred method for valuing output is basic prices, although producer prices can be used when valuation at basic prices is not possible.

The basic price is the amount to be charged by the producer to the buyer for a unit of a good or service produced, minus any tax payable and plus any other subsidy receivable by the producer as a result of its production or sale; it is the most relevant price for a producer to consider when making its decisions. Any transportation charges billed separately by producers are excluded.

Producer prices include, in addition to the basic prices, taxes minus subsidies on products¹, other than value-added taxes. Accordingly, there are three ways of valuing production: at basic prices, at producer prices in the absence of value-added taxes, and at producer prices when there are value-added taxes.

In the same set of accounts and tables, all transactions on the uses of goods and services (such as final consumption, intermediate consumption and capital formation) are valued at purchaser prices. These prices are the amounts paid by buyers (including transportation costs that are billed separately, and wholesale and retail margins), excluding the deductible portion of value-added taxes. Buyer prices are the actual costs to users.

1.4 Accounts of Institutional Sectors

An account is an instrument that records transactions carried out in economic activities, i.e., jobs (expenses) and resources (income), or changes (flows) in assets and liabilities, and/or stocks of assets and liabilities at any given time.

Agents grouped in sectors, and their transactions recorded in accounts, give rise to accounts or sequences of accounts of institutional sectors, created to organize their participation in the economy and to allow analysis of transactions in the different sectors. Accounts are grouped in three categories: current accounts, accumulation accounts and balance sheet accounts.

1.4.1 Current Accounts

Current accounts are related to the production, generation, distribution and use of income. Each successive account begins with the accounting balance of the previous account, recorded as resources. The last accounting balance is the savings, which in the context of the SNA consists of the part of income generated through production, either internal or external, which is not intended for final consumption.

Production account: This account is intended to emphasize value added as one of the main accounting balances of the SNA. It consists of two basic elements: production and intermediate consumption. The accounting balance of this account is the added value that can be measured

¹ The difference between taxes on products and taxes on production should be clarified. Taxes on production are taxes that tax the producer, but do not apply to producers' product or profits. These include taxes on land or premises used in the production or labor employed.

in gross terms (before deducting consumption of fixed capital) or in net terms (after deducting consumption of fixed capital), and represents payment to the productive factors that play a role in the country's economic activity.

Income generation account: it records the primary income accrued by government units and by units that have a direct participation in production. It represents value added as resources, while the distribution of the value added between the factors of labor (remunerations to wage earners), capital (consumption of fixed capital), and government (taxes minus subsidies on production and imports), is represented as jobs.

The accounting balance is known as the operating surplus or mixed income, according to the nature of the company. An operating surplus is defined as the earnings or profits of companies due to their participation in the productive activity. On the other hand, mixed income implicitly contains an element of remuneration for work performed by the owner or other household members, which can not be identified separately from his or her income as a businessperson.

Primary income allocation account: This is not directly related to production, but instead focuses on sectors that act as as primary income earners, rather than as producers of activities that generate primary income. The balance of the primary income allocation account is called the primary income balance, defined as the total value of primary income to be received by a unit or Institutional Sector minus the total of payable primary income. For the economy as a whole, it is called national income.

Secondary income distribution: This account shows how the balance of a primary unit or Institutional Sector is transformed into disposable income by receiving or paying current transfers, excluding social transfers in kind. The balance of this account is disposable income, which measures the income available to a sector and to the economy as a whole to be used for final consumption and savings.

Income redistribution account: This account records two other elements in the representation of the redistribution process. The first is output of individual non-market services by the government and non-profit institutions serving households (NPISHs), and the second is government and NPISH procurement of goods and services for free transfer to households, or at prices that are not economically important. This account records in-kind social transactions as resources for households and as jobs for the government and NPISHs. The balance is the adjusted disposable income.

Income utilization account: This account has two versions – the disposable income utilization account and the adjusted disposable income utilization account. The first is based on the accounting balance of the secondary income distribution account, i.e., disposable income. The adjusted disposable income utilization account is used as the accounting balance of the account for redistribution of in-kind income.

Both accounts reflect the way in which disposable income or adjusted disposable income is distributed between final consumption and savings for those sectors that carry out final consumption (i.e., government, NPISHs and households). In addition, both versions of the income utilization account include, for households and pension funds, an adjustment entry that relates to the way transactions in households and pension funds are recorded in the SNA. The account balance is the savings, and represents the portion of disposable income that was not used in final consumption.

1.4.2 Accumulation Accounts

Savings are the accounting balance of the last current account, as well as the initial element of accumulation accounts, in which transactions corresponding to all changes in assets, liabilities and net worth are recorded. The accounts that make up this group include:

Capital account: Records the transactions related to the acquisition of non-financial assets and capital transfers that constitute wealth redistribution. When the balance of the capital account is positive, it is referred to as the net loan, which measures the net amount that a unit or a sector ultimately has at its disposal to directly or indirectly finance other units or sectors. When the balance is negative it is referred to as the net debt, which corresponds to the net amount that a unit or a sector must borrow from other units or sectors.

Financial account: Includes transactions between institutional units or between institutional units and the rest of the world involving financial assets and liabilities in the form of financial instruments. The accounting balance is the net loan or net debt, on the right side of the account.

Account for other changes in the volume of assets: Records exceptional events that cause variations not only in the value, but also the volume of assets and liabilities. In addition, this account includes some elements for adjustments, such as changes in classification and structure, which may or may not influence net worth. The accounting balance consists of the changes in net value due to other changes in the volume of assets.

Revaluation account: Includes profits and losses derived from the ownership of assets. This entry reflects the total change in value due to changes in prices of the various assets or liabilities that are produced from the beginning of the accounting period or from the time they are entered into stocks, until the time they are withdrawn from the stocks or the end of the accounting period. The accounting balance of the revaluation account is referred to as changes in net value due to profits or losses from nominal ownership.

1.4.3 The Rest of the World Account

The rest of the world account includes transactions between resident and non-resident institutional units and corresponding stocks of assets and liabilities.

In the accounting structure, the rest of the world plays a role similar to that of an institutional sector, and therefore the corresponding account is prepared from the perspective of the rest of the world itself. A resource for the rest of the world is a job for the total economy and vice versa. A positive accounting balance means that the rest of the world has a surplus and the total economy has a deficit; the opposite happens when the balance is negative.

II. Rebase of the National Accounts Project

2.1 Project Description

The Rebase of the National Accounts Project (RNA) was conducted by the BCCR Economic Division during the period from January 2010 to December 2015 as part of the Integral Implementation Program of the Macroeconomic Statistics System (IISEM).

This project included the development of new series of national accounts constructed with more and better basic statistics, improved compilation methodologies and reconciliations of macroeconomic accounts that guarantee users statistics that better approximate Costa Rica's economic reality and are more in line with the requirements of the country's new monetary and exchange policy schemes.

The new national accounts series were developed in accordance with the methodological recommendations of the 2008 SNA, the sixth edition of the Balance of Payments and International Investment Position Manual (MBP6), and the IMF Monetary and Financial Statistics Manual. In addition, international statistical classifications were implemented, such as the fourth revision of the International Standard Industrial Classification of all economic activities (ISIC4), the second version of the Central Product Classification (CPC2), and the Classification of Individual Consumption by Purpose (COICOP).

2.2 Project Scope

Implementation of the BYC project was developed in three general phases:

2.2.1 Phase I: Classifiers, Preliminary Studies and Data Collection

The first phase of the project consisted of the creation of national classifiers, carrying out statistical research and special studies² and compiling information related to the country's productive activities and institutional sectors.

Updating the rebase year required the preparation of the Costa Rican standard product classification (SPC-CR), as well as classifications of economic activities (EA-CR), institutional

² Special studies include case studies for agricultural activities, study of private construction and the study of research and development activities.

sectors, and economic transactions, and correspondences with internationally used classifiers. The product and economic product classifications included 183 and 136 categories, respectively³.

In the special studies, instruments were developed for consulting information to be able to identify the particular characteristics of economic activities, making it possible to carry out preparatory exercises that were used as references for the calculation of the rebase year.

In addition, an interinstitutional agreement was signed in 2012 between the Banco Central de Costa Rica (BCCR), the Ministry of Finance and the National Institute of Statistics and Censuses (INEC) to conduct a Corporate Economic Study⁴ (CESt), whose main objective was to obtain the accounting information necessary to update income and expenditure structures of companies operating in the country. Information of 97 economic activities carried out by private sector firms was collected through the CESt, while information about the remaining activities was obtained from other special studies and administrative records.

2.2.2 Phase II: Compilation of the SNA Rebase Year Central Framework

The information collected to generate the rebase year was processed during the second phase, following the structure of the tables of the SNA central framework, which consist of the Supply and Use Table (SUT), the Integrated Economic Accounts table (IEA), and the Cross-Classification by Industries and Institutional Sectors (CCIIS) table.

The Input-Output (I-O) matrix was also constructed, as well as the Employment Matrix, which was the first version of this product created for the Costa Rican national accounts.

2.2.3 Phase III: Sequence of 2013 Accounts

The complete set of accounts of the 2013 SNA central framework was compiled during the third phase.

³ Annex 1 presents details of product classifiers, economic activities and institutional sectors.

⁴ See methodological detail in Annex 2.

III. Methodological Innovations

The following adaptations were made during the process to complement the results obtained in an optimal and innovative way:

The SUT, CCIIS and I-O matrix by production regime were included. Taking into consideration the Costa Rican legal framework, available information was used to classify institutional units according to the production regime under which they operate, either **regular** or **special**⁵, including in the first category those institutional units that are not operating under a Free Trade Zone Regime or an Inward Processing Regime.

Imports matrix. An imports matrix was constructed to support supply and use analysis by product. It shows intermediate demand per imported product by different economic activities, and provides an estimate of final consumption and gross capital formation by product.

Input-Output matrix. Two complementary exercises were carried out with the information available to develop this matrix: the matrix was constructed product by product (products in both rows and columns), and activity by activity (economic activities in both rows and columns).

Employment matrix. This is a statistical instrument that helps to determine the economic consistency between the levels of production of economic activities and the amount of labor necessary to perform them. It was constructed based on information from household surveys and administrative records.

Calculation of construction for private use. Construction prototypes were prepared through an agreement with the Federated College of Engineers and Architects (CFIA) to obtain a detailed cost structure of countrywide construction, and to carry out a quarterly survey aimed at measuring progress of construction projects for private use. In addition, everything related to statistics of construction for private use was automated.

⁵ Includes the institutional units assigned to the Free Zone regime (according to Law 7210) or to the Inward Processing regime (according to Law 7557).

IV. Main Recommendations Adopted from the 2008 SNA

4.1 Recording of Manufacturing Services

The 2008 SNA recommends that imports and exports should be recorded only when a strict ownership change occurs. In other words, the flow of goods between the country that owns the goods and the country that provides the manufacturing services should not be recorded as imports and exports of goods. Instead, payment to the processing unit must be recorded as imports of manufacturing services by the country that owns the merchandise, and as exports of manufacturing services by the country that provided them⁶.

4.2 Output of the Banco Central

Central banks perform many functions, including the provision of monetary policy services and financial intermediation services by operating as a banker for the government and other supervising units and services. Therefore, a methodological differentiation is made between non-market and market services.

Non-market services are valued by adding their costs, while market services are valued based on the income they generate. Financial intermediation services are market output, monetary policy services are non-market output, and supervision services can be treated as market or non-market services depending on whether the explicit fees paid for them are sufficient to cover the costs of providing such services or not. In the case of Costa Rica, they were treated as non-market services.

4.3 Non-Life Insurance Output

The output of a direct non-life insurance company is based on the principle of adding premiums and supplementary premiums, and deducting the adjusted compensations paid to policy holders.

It is recognized that in the event of losses for major catastrophes, the output of insurance activities can be extremely volatile (even negative) depending on the balance between premiums and compensations paid (on an accrual basis). As a result, the 2008 SNA recommends that the output of a non-life insurance company be calculated through adjusted compensation payments

⁶ See Annex 3 for more details.

(which may be equivalent to those expected or anticipated) and adjusted supplementary premiums.

4.4 Research and Development

The 2008 SNA recognizes that R & D are not ancillary activities, and, wherever possible, they should be differentiated by creating separate facilities for them. It also recommends that research and development should be treated as capital formation, except in cases where the activity does not generate an economic benefit to the owner, in which case it is treated as intermediate consumption.

4.5 Production in Process

Whenever a production process extends over two or more accounting periods, it is necessary to record the work in progress in each of the periods, to measure how much production is generated in each period.

V. Supply and Use Table (SUT)

This table is prepared based on the flow of products method, which tracks a product or aggregation of products from the economic activity in which it is generated, in an internal or external market, to its users in the form of intermediate demand, final demand or gross capital formation. To construct the SUT it was necessary to centralize, analyze and process basic information from multiple sources, including economic surveys, agricultural surveys, population and housing censuses, household expenditure and income surveys, and administrative records.

The methodological details of each of the components of the SUT developed for the rebase year are described below. The diagram of the basic SUT scheme is presented in Annex 4.

5.1 Supply Table

5.1.1 Output

Based on the CEST, and using the value of sales as a reference, the output value can be approximated for 97 economic activities included in the CEST. The output generated by other economic activities is calculated based on administrative records and special studies (surveys and case studies).

Information is organized by classifying each industry according to its International Standard Industrial Classification (ISIC) revision 4, and its economic activity (EA-CR); each EA-CR represents a production account. In turn, each good and service of the economy is assigned a Costa Rican Standard Product Classification (SPC-CR) code following the classification proposed in the Central Product Classification (CPC), version 2.

The 136 production accounts are organized in an output matrix, in which the total of each column of the matrix represents the output value for each economic activity, while the sum of each row indicates the total production of each product (SPC-CR), either primary or secondary. This matrix represents a joint output scheme in which the primary and secondary products of each economic activity are presented.

5.1.2 Imports by product

An Imports Matrix (IM) was constructed to support the supply and use analysis by product. It shows intermediate demand by products imported by the different economic activities at *cif*

(cost, insurance and freight) prices, and provides an estimate of final consumption and imported gross capital formation by product.

The IM is a tool used to support the analysis of balances that make up imported components of the Supply and Use Table, using more consistent data. Columns of the IM describe economic use (intermediate consumption, capital formation or final consumption) of each of the imported goods, and the rows provide details about the products.

Calculation of the Imports Matrix

1. The imported product is identified; then each imported item is associated with one of the 183 established products through the correspondences between CPC version 2, the tariff heading, and the SPC-CR.

2. The importing company is categorized; with the help of an internal BCCR database (REVEC), an ISIC code revision 4 and EA-CR code is assigned to each importing company. This assignment is made using the company's corporate identification card number and permits to identify more than 99% of the total amount of imports (in 2012).

These two first steps are required in the preparation of the Imports Matrix of intermediate consumption goods directly imported by companies. They also make it possible to identify the goods that make up gross capital formation.

3. The analysis and distribution of commercial imports is carried out. This task is divided into two parts, according to the type of trade:

- a. Wholesalers: imports by wholesalers are distributed using the SCSE analysis (identifying the main wholesalers of each product).
- B. Retailers: depending on the type of product, most of these imports are classified as final consumption.

4. Direct final consumption figures are revised: there are direct imports made by individuals (physical certificates with low import amounts), or by courier companies, which usually must be classified as final consumption.

Capital formation import vector

The classification of tariff entries by type of good (SPC-CR) is used to construct this vector. Subsequent analysis is also necessary, since some goods are inherently gross capital formation, but the classification of others depends on who uses the good (a company or a household). This is a challenge when a merchant makes the import. The most representative examples are computers and automobiles.

In these cases, it is important to identify the main importing traders, after which a structure of their sales is created using the SCSE (by EA-CR), making it possible to identify what percentage of their imports is for final consumption and how much is capital formation.

Vector of total imports of goods

With the data included in the foreign trade database for imports, organized by tariff entries, total imports are grouped in one of the 183 products established for the Costa Rican economy.

Information sources used to develop the IM are the foreign trade database at the tariff entry level of the Harmonized Commodity Description and Coding System (HS), the Registry of Economic Variables (REVEC) prepared by the BCCR, and the yearly statement of customers, suppliers and specific expenditures (SCSE)⁷ of the Ministry of Finance. With regard to services imports, data from the Balance of Payments are used, which are based on surveys of the private sector, special studies, and administrative (Government) records.

This way of systematizing imports information is crucial for the analysis and structuring of the System of National Accounts; in particular, to determine gross capital formation (which for the case of Costa Rica is primarily an imported component).

⁷Form with information on sales and purchases (when the annual amount is higher than 2.5 million colones); and on rents, professional services, commissions and interests (if the amount exceeds 50 thousand colones), which must be declared to the Ministry of Finance by all public entities (whether subject to income tax or not), international organizations and those obliged to make declarations for income tax purposes.

5.1.3 cif/fob Adjustment

Imports of goods are calculated at *cif* prices – that is, they include transport and insurance services from the border of the exporting country. This requires an adjustment to subtract transportation and insurance services from total imports and thus express them at *fob* prices.

5.1.4 Product Taxes and subsidies

5.1.4.1 Value added tax (VAT)

The calculation of VAT was divided into:

VAT on final household consumption: Goods and services subject to taxes were assigned a 13% tax, according to the General Sales Tax Law and its regulations. Using further data provided by the 2013 National Survey on Household Income and Expenditure (NSHIE)⁸, the amount corresponding to the VAT paid by households detailed by product was then estimated.

VAT on intermediate consumption: The sales tax in Costa Rica is a value-added tax, i.e., the amount of sales tax paid by taxpayers is equal to the sales tax generated by the sale of their products (tax debt) minus the sales tax paid on purchases, imports and insurance premiums (tax credit).

Therefore, those economic activities that can not deduct sales taxes paid for inputs purchased in previous stages are those that will have to absorb the tax as part of their intermediate consumption, while those that can deduct the tax pass it to final consumers.

Law 6826 on General Sales Tax and its amendments determine which of the 136 activities may or may not deduct sales taxes paid on purchases of goods and services.

Once intermediate consumption by economic activity has been determined, the proportion of economic activity that can not deduct taxes, as well as the proportion of the product that is taxed, are determined.

With respect to the proportion of the economic activity that can not deduct taxes, three cases were identified:

⁸ See details of the survey in the Final Household Consumption section.

- Economic activities that can completely deduct taxes: all those activities that produce goods, whether exempt or taxed, and those that produce taxed services. In this case it was decided that companies with less than 5 employees cannot deduct sales taxes⁹.
- Economic activities that can make partial tax deductions: these are mostly services activities in which one part of the activity is taxed and another is not. The percentage of non-deductible tax for these activities was calculated through the Ministry of Finance's sales database: it is then determined which of the total sales of the activities are taxed and which are not. Therefore, the percentage of non-deductible tax of a certain activity corresponds to the quotient of untaxed sales and total sales.
- Economic activities that cannot deduct taxes: those that produce non-taxed services.

It is worth noting that the economic activities of the general government, Free Trade Zones and Inward Processing regimes are exempt from tax payments, and no VAT is estimated for their intermediate consumption.

VAT on gross capital formation: Most capital goods considered to be capital formation are imported, therefore import taxes are applied in a chain, the last of which is the sales tax; therefore it would not be appropriate to apply a 13% tax to their *cif* value. The sales tax ratio of imports of gross capital formation (GCF) on the *cif* value of imports by product is therefore obtained through imports records. Only imports by companies operating under the regular regime are taken into account. Free Trade Zone or Inward Processing regimes are exempt from taxes.

An advantage of this procedure is that the ratio already takes into account products that are exempt from sales taxes according to the regulation set forth in Decree 14082-H of the General Sales Tax Law – for example, agricultural machinery and equipment.

A 13% sales tax was applied to national gross capital formation.¹⁰

⁹ Companies with fewer than 5 employees were not taken into account, since it is difficult for these companies to deduct the tax. The non-deductible percentage is given by sales of establishments with less than 5 employees divided by the total sales of the activity.

¹⁰ In this case exceptions from the law tax do not apply.

5.1.4.2 Taxes on Imports and Exports:

These taxes are calculated based on information from customs records.

Taxes and duties on imports excluding VAT: Taxes paid are recorded when goods cross the national border, that is, these taxes are obligatory for nationalizing the products. Among those with the highest collections are: Import Tariff Rights (ITR), Selective Consumption Tax (SCT) on imported goods, and the Flat Tax on Imported Fuels.

Taxes on exports: These are required taxes when goods are exported; export taxes on coffee and bananas are in this classification.

5.1.4.3 Selective Taxes on Consumption and Other Taxes on Products

Taxes that do not fall into any of the above categories are recorded in this category. They are calculated based on fiscal revenue data of the Central Government; those with the highest amounts collected are: alcoholic beverages, tobacco products, airplane tickets, and insurance premiums.

5.1.4.4 Subsidies

Product subsidies are payments without matching funds made by the government to companies to influence their levels of production or sales prices (SNA 2008). Two subsidies are recorded in Costa Rica: for rail transport services and for potable water and sewerage. The first is generated by the Costa Rican Railways Institute (whose acronym in Spanish is INCOFER) and the second by the National Groundwater, Irrigation and Drainage Service (whose acronym in Spanish is SENARA), which carry out market activities in which their revenues do not exceed their costs and therefore require the government subsidy to maintain their operations.

5.1.5 Distribution Margins

Trade margins are estimated taking into account a sample of more than 500 companies, using information from the CEST. In addition, complementary work was carried out based on administrative records of the Ministry of Finance. For each of the products, the coefficients of trade margins and transport margins were calculated according to different uses: intermediate consumption, final consumption, gross capital formation and exports.

The information relating to transport margins came particularly from the CEST.

5.2 Use table

5.2.1 Intermediate Consumption

The value of intermediate consumption for the 97 economic activities included in the CEST was estimated. Intermediate consumption generated by other economic activities is calculated based on administrative records and special studies (surveys and case studies).

5.2.2 *fob* Exports

These figures are estimated based on foreign trade data at the tariff entry level of the Harmonized Commodity Description and Coding System (HS), and balance of payments information.

Each tariff entry is associated with a product (SPC-CR) to obtain the vector of exports of goods valued in *fob* amounts per product.

5.2.3 Final Consumption Expenditure

5.2.3.1 Final Household Consumption

The final consumption expenditure of households with entries for 183 products (based on the CPC version 2) is calculated and the consumption is separated according to the Classification of Individual Consumption by Purposes (COICOP).

The basic information to estimate final consumption of the household sector is the 2013 NSHIE. In this, recorded expenditures are those made by households for their own consumption, plus that which a household receives from other households (donated), but not purchases made by the household to give away (this is excluded from the definition of consumption expenditure). The survey is considered to capture donated goods (received by households) better than those purchased to donate, since in some cases they lack relative importance within the expenditure structure of the donor household.

The 2013 NSHIE is a survey applied to households from a sample consisting of 7020 homes, selected through a probabilistic, stratified, two-stage area design replicated for the national territory, whose information reflects the reality of all houses and households in the country. The interviews were conducted between October 2012 and October 2013, and collected data on

total household expenditure, which is defined as the value of goods and services purchased in the market, those received free of charge or produced by households to fulfill the needs and desires of its members. The above definition covers both current household expenditure, which involves consumption expenditure and current transfers paid, and expenditure on capital transactions for the acquisition of household assets and liabilities.

The information collected in each month of 2013 was corrected by price level to convert it to equivalent figures for the same month of 2012, so as to not lose the seasonality recorded by the NSHIE. Once processed, to adjust for the population factor, the information derived from the NSHIE midpoint is used, the point in time at which both the estimated population data and the expansion factors used are available.

Based on population projections made by the INEC from the 2011 Population and Housing Census and information derived from the NSHIE, a calculation was made of adjusted expansion factors for both the total number of people and the total number of households, using the population of June 2012 relative to the population estimated for April 2012 (the midpoint of the survey).

To complement the consumption vector, administrative records (information from financial and government institutions) are used and validated by determining the total expenditure per quintile.

These validations become relevant in completing groups or products that are under-reported in the survey, or products that by their characteristics are not included in the survey. Other products such as fuels, agricultural products, vehicles, taxi services, financial products, postal and courier services, and food and beverage delivery services are adjusted for over- or under-estimation. These adjustments are based on production calculations and analysis of harmonized levels of per capita consumption in supply and use balances (which in turn include other sources of information for their calculation).

5.2.3.2 Government Final Consumption

The General Government's final consumption expenditure corresponds to non-market output for own use plus expenditure on goods and services purchased from market producers to be supplied to households in the form of social transfers in kind. This information is obtained from

details of the income statement and from the budgetary execution of institutions that are part of this institutional sector.

This is classified as collective and individual consumption: collective consumption is done on behalf of the community as a whole, while individual consumption directly benefits individual households.

Collective consumption corresponds to non-market output for own use of activities related to state administration, provision of services to the community and social security plans, including non-market output of the Banco Central de Costa Rica and technical assistance received from the external sector.

Individual consumption corresponds to non-market output for own use in teaching- and health care-related activities, in addition to social transfers in kind (purchased market output), in which medicines provided by the Costa Rican Public Health Administration System (CCSS) to patients, and food provided by the Bureau of International Health Cooperation (BIHC) to low-income households stand out.

It is important to mention that even though Education and Administration Boards carry out teaching-related activities, they also make an important contribution to students' diets through cafeterias, which are also included in this consumption vector.

5.2.3.3 Final Consumption of Non-Profit Institutions Serving Households

Final consumption expenditure of non-profit institutions serving households (NPISH) corresponds to non-market output plus expenditures on goods and services purchased from market producers to be supplied to households in the form of social transfers in kind. These figures are estimated based on information reported by non-profit organizations according to the CEST, and information on transfers paid to NPISH by the Central Government.

Just as in the case of Government final consumption, this is classified as collective and individual consumption.

5.2.4 Gross Capital Formation

5.2.4.1 Gross Fixed Capital Formation

Gross fixed capital formation (GFCF) consists mainly of:

- Tangible fixed assets: buildings, houses, structures, machinery and equipment (including those acquired through leasing).
- Intangible fixed assets: mining, computer programs, original art works, and entertainment.
- Significant improvements in non-produced assets including land.
- Expenses incurred for the transformation of existing capital goods into different kinds of capital goods, such as major renovations and extensions.
- Research and development.

Assets considered to be capital formation are: Machinery and Equipment, Cultivated Assets, Intellectual Property, Housing and other New Constructions.

The main source of information for estimating machinery and equipment are foreign trade records, since they are mainly imported.

5.2.4.2 Changes in Inventories

Changes in inventories over time depend on the behavior of the agents (desired stocks) and on the economic situation, especially on imbalances between supply and demand (unwanted stocks). Income tax returns from the Ministry of Finance were used to estimate this variable.

5.2.4.3 Acquisitions Minus Dispositions of Valuables

The value of acquisitions and dispositions of valuables was estimated based on the CEST and administrative records.

5.2.5 Added Value

The subtraction of the gross production value minus intermediate consumption yields the value added (which is divided into remunerations, social benefits, taxes, and gross operating surplus or mixed income).

The distribution of value-added components is obtained from information of the CEST, administrative records and special studies.

5.3 Staff Employed

Employment statistics available in Costa Rica from the perspective of supply and demand come from the following sources:

Supply: Surveys carried out by the INEC.

- Continuous employment survey
- National Household Survey
- 2011 Population and Housing Census
- National Survey on Household Income and Expenditures

Demand:

- CCSS Administrative Registry
- Corporate Economic Studies
- Annual Reports of Procomer Operations

The employment matrix of the Supply and Use Table (SUT) was constructed based on this information. The SUT determines the source of employment to use for each economic activity, taking into account production, salaries, value added and seasonality.

VI. Input-Output (I-O) Matrix

To convert the the SUT into an input-output matrix, either output-output or economic activity-economic activity, the supply and use table must be made internally consistent.

To convert the SUT at buyer prices into an Input-Output matrix, the following changes are made:

1. Separation of national and imported components

The separation of the imported component in the I-O matrix starts with the separation of intermediate consumption carried out in the SUT. This process begins by identifying and separating each product of intermediate consumption of the different economic activities, into their national and imported components. The SUT is then separated using the coefficients resulting from the separation of intermediate consumption for each product into its national and imported components.

2. Calculation of SUT at basic prices

Once the SUT is separated by components, a breakdown of intermediate consumption by product is carried out by basic price, taxes on the products, subsidies and distribution margins (trade/transport). The balances between supply and use by product are used to estimate these components, thus obtaining the coefficients that they represent in intermediate consumption for each product.

These coefficients are applied to intermediate consumption at purchaser prices by product to obtain intermediate consumption at basic prices for the different economic activities.

Taxes on products, subsidies on products, and trade and transport margins are also obtained by product; these inputs are required to complete the I-O matrix structure.

6.1 Calculation Process

6.1.1 Output-Output Matrix

The output-output matrix is obtained by using the same analytical categories in the rows and in the columns; to do this, the branches of economic activities of the SUT are converted into products. This assumes the existence of homogeneous production units.

The methodology used mainly uses the product technology assumption, according to which each product is manufactured in a specific way, regardless of the industry that generates it.

To convert the SUT at basic prices into an output-output matrix the following changes are made:

1. **Transfer of secondary products and intermediate consumption of secondary products to their main activity:**

Secondary products are transferred to the economic activity that generates them as its main production along with their corresponding inputs. To this effect, the structure of intermediate consumption of the economic activity that yields the output of this product as its main output must be obtained, to apply it to the secondary output and transfer it to its main economic activity.

The intermediate consumption obtained for the secondary output is subtracted from the total intermediate consumption of the economic activity from which it is being withdrawn, and is added to the economic activity where this output is recorded as the main production.

2. **Distribution of intermediate consumption by product:**

Although information is available by product for output, this is not the case for intermediate consumption, since data are only available for the total of Economic Activity. In those cases in which the economic activity has more than one main product, the distribution of intermediate consumption is made proportionally to the output level of each product.

6.1.2 Economic Activity-Economic Activity Matrix

The economic activity-economic activity matrix is obtained by expressing the same categories of analysis in the rows and columns; to do this, the outputs that are expressed in the rows of the SUT are converted into economic activities.

The methodology used mainly applies the fixed product sales structure assumption, which is supposed to represent the distribution of demand among users, where it depends on the product and not on the supplying industry.

To convert the SUT at basic prices into an economic activity-economic activity matrix, the following changes are made:

1. Analysis and transfer of secondary products and the uses of secondary products to their main activity.

Secondary products are transferred to the economic activity that generates them as their main production along with their corresponding use. To this effect, the structure of the uses of the economic activity that yields the output of this product as its main production must be obtained, to apply it to the secondary output and transfer it to its main economic activity.

Intermediate consumption and final demand for this secondary output is subtracted from the total intermediate consumption and final demand of the economic activity from which it is withdrawn, and is added to the economic activity where this output is recorded as the main production.

2. Obtaining symmetric intermediate consumption matrices

To obtain the symmetric economic activity-economic activity matrix, the rows resulting from the previous step must be added, which are expressed in outputs in their respective economic activities, thereby obtaining a symmetric 136x136 economic activity-economic activity SUT matrix for the case of Costa Rica.

6.1.3 Output Vector of the Total Economy at Basic Prices

The output vector of the total economy at basic prices is the result of expressing the diagonal of the output matrix of the SUT, which is obtained after the transfer of secondary products to the economic activities that produce them as their main activity. This vector must be aggregated in the product categories. It should also be equal, by product, to the total use vector.

6.1.4 Matrix of Technical Coefficients and the Matrix of Direct and Indirect Requirements

Technical coefficients are calculated as the ratio between intermediate inputs and total input corresponding to each sector, and therefore represent each input relative to the total output at basic prices. For the Matrix of Imports by Product, each input is divided by the total imports.

The matrix of direct and indirect requirements per unit of final demand is calculated based on the previous matrix. This matrix permits establishing the total national production requirements that are necessary in the face of changes in the components of final demand.

Integrated Economic Accounts and Cross-Classification Industry - Institutional Sector (CCIIS)

The Integrated Economic Accounts (IEAs) are an instrument that synthesizes the accounts of Institutional Sectors and transactions of goods and services described in the SUT, thus offering a global view of the economy as a whole.

On the other hand, the Cross-Classification Industry Classification - Institutional Sector permit the evaluation of consistency between the Supply and Use Table (SUT) and the Integrated Economic Accounts (IEAs), since it presents the accounts related to the current goods and services accounts (production, intermediate consumption, value added and its components), as well as gross capital formation and net changes in the level of their inventories, by economic activity and institutional sector.

VII. Sources and Methods: Production Account by Economic Activity

This section presents the processes carried out to prepare production accounts at the level of economic activities grouped according to the following structure:

1. Agriculture, forestry and fishing
2. Mining and manufacturing
3. Trade
4. Construction
5. Non-financial services
6. Financial services
7. Government Services

The description of the activity, sources of information, and the estimation method used are detailed for each category.

7.1 Farming, Forestry and Fishing

Activity description

Agricultural accounts are concentrated in two institutional sectors: non-financial corporations, and households. According to the classification of activities and products, agricultural accounts cover activities EA001 to EA029, including 38 products.

Information sources

To estimate the agricultural sector accounts, a statistical database was created to facilitate calculation of the national accounts for the agricultural industry. The Quarterly Survey on Agriculture and Area Production (ETAPA), the National Survey on Household Income and Expenditures (NSHIE), the National Producer Household Survey (ENHOPRO), the National Agricultural and Livestock Census (CENAGRO), and the National Forest Inventory (NFI) were included in this database.

In addition, negotiations were conducted with the Costa Rican Fishing and Aquaculture Institute (INCOPECA) to update extraction statistics which were not available for the last five years. On the other side, alliances were created with chambers of producers and public institutions linked

to this productive activity, such as the Ministry of Agriculture And Livestock (MAG) and the National Animal Health Service (SENASA), to receive support of informants who were in some ways representative of the average producer, also to obtain structures of production costs by product through case studies.

An annual cost structure and the monthly schedule of work during the productive cycle or agricultural year were obtained from case studies, making it possible to measure work in progress or production in process in some crops or products of interest, such as pineapple, coffee, sugarcane, aquaculture, forestry, cattle, pigs and chickens. The Directory of Farms and Establishments of the INEC was used to select these case studies.

Public institutions created to organize and regulate actions of producers of some agricultural products collaborated in some cases. They centralize information on costs and production, from which the Banco Central received details of input and labor costs for the activity at a national level.

The following table presents details about the information sources consulted, by agricultural product.

Table 1.

Information source by agricultural product

Product	Information source
Agricultural	
Rice	Rice Corporation of Costa Rica (CONARROZ)
Coffee	Coffee Institute of Costa Rica (ICAFE)
Sugar cane	Sugarcane Industry Association (LAICA)
Bananas	National Bananas Corporation (CORBANA)
Beans, corn, watermelons, melons, onions, chayote, potatoes, roots and tubers (cassava, tiquisque, yams, ñampi), legumes (tomatoes, carrots, cabbage), flowers, foliage, plantain, pineapples, oil palm, mangoes, oranges, heart of palm, other products of perennial and non-perennial plants (peppers, cocoa, pepper), other	Case studies

fruits, nuts and other oily fruits (strawberries, papaya, avocado), live plants and roots (nurseries, cuttings).	
Livestock	
Beef cattle (beef, milk, and double purpose)	Case studies and consultation with the CORFOGA, (the Livestock Development Corporations), Chambers and Federations of Livestock Chambers, the Chamber of Milk Producers and the company Dos Pinos
Pigs	Case studies
Chickens	
Eggs	
Other live animals (rabbits, goats, sheep and buffalos)	
Other animal products (bee honey)	
Fishing and aquaculture	
Tilapia	Case studies and consultation to/with INCOPECA, chambers of fishermen
Trout	
Shrimp	
Forestry	
Timber nurseries	Case studies and consultation with the National System of Conservation Areas (SINAC) and National Forest Financing Fund (FONAFIFO)
Teak forestry plantations	
Melina	
Laurel	
Wood extraction from pastures	

Estimation method

Several mechanisms were used to access cost structures, depending on the nature of the product, data availability, and informants' willingness to collaborate in the project.

Initially, a detailed collection of data related to production costs was carried out to estimate quantities and prices by type of inputs, wages, taxes on production, materials and equipment required during the productive cycle or agricultural year. This information was collected on a

monthly or quarterly basis for one hectare of cultivation in the case of agricultural and forestry products. The resulting data were expanded according to the total number of hectares cultivated by the producer, thus obtaining total cost and production.

For livestock products, the costs and production volume were recorded by quantity of animals throughout the calendar year. In the case of fishing, production costs and volume were measured per trip to the open sea, and expanded based on the annual amount of trips. Costs in aquaculture were recorded by production volume in the production cycle.

The total income received by the producer was obtained based on the production volume measured in kilograms or metric tons and the sale price at the farm. The surplus or mixed income was obtained by calculating the difference between income and expenses. The results of the cases studied by product were used to access the representative cost structure at the national level.

Case studies made it possible to obtain coefficients to estimate production in process or work in progress, gross fixed capital formation, and the change in inventories for the following years.

Production: The production value at basic prices was obtained using the production volume and price at the farm of each product at the level of the entire economy. This value was disaggregated by companies and producing households using data on the structure of participation obtained from case studies and administrative records. An entry was made for the account of producing companies for those products that are generated under the Special Regime, to identify products generated under both regimes (regular and special).

Production in process was estimated for some products – sugar cane, coffee fruit, pineapple, bovines, pigs, chickens, forestry and aquaculture – by obtaining coefficients of production in process to finished production based on studies of these products.

For each product, the coefficient estimates the effect of the different harvests of each producer and of all the producers that collaborated with the study, in such a way that when it is multiplied by the value of finished domestic production at the end of the calendar year, the resulting figure for production in process is considered to be representative of the situation at the national level for the product of interest.

Those activities for which production in process was estimated, identify in the gross value of total production, the portions that account for sales, production in process of inventories, and production in process of gross fixed capital formation. In addition, changes in inventories are estimated – these figures are necessary to calculate the supply and use balances.

All activities identify production for own final use, either for self-consumption or for self-use as input, which are classified as non-market output.

Intermediate consumption: This was determined by applying cost structures to the gross production value.

Value added: Figures for value added were obtained through calculating the difference between the production value and intermediate consumption. Its components were determined based on structures obtained from the sources consulted.

7.2 Mining and Manufacturing

Activity description

The economic activities of manufacturing and mining and quarrying are classified in the institutional sectors of non-financial corporations and households.

The manufacturing industry is composed of the institutional units that produce goods, regardless of whether or not they produce services as a secondary activity; it also includes institutional units that are dedicated to the creation or processing of goods but without right of ownership over the goods they process; i.e., institutional units that provide goods processing services. In the product classification for Costa Rica (SPC-CR) these are called manufacturing services¹¹.

In Costa Rica the mining industry is regulated by Law 6797, whose first article declares that "the State has the absolute, inalienable and imprescriptible control of all mineral resources that exist in the national territory and in its patrimonial sea." The State, however, may grant concessions for the examination, exploration, exploitation of mineral resources, and making profits from them, or grant permits for their exploration and exploitation; both concessions and permits have expiration dates and rights granted return to the State.

¹¹ Annex 3 discusses this type of services in more detail.

Currently, concessions and permits are granted for the extraction of stone, sand, clay and other materials. It is worth noting that in the national accounts, concessions and permits are recorded as intangible assets used only by the institutional unit to which the right is granted; they must be recorded as gross capital formation and at the time of expiration of the concession they must be withdrawn. The mineral resource itself is not included in the capital account of the mining activity because the owner of the resource is the State.

Table 2 presents summarized details of economic activities by sector.

Table 2.

Economic activities related to manufacturing, mines and quarries, by institutional sector.

Institutional sector	Economic activity
Public non-financial corporations	EA049
Private non-financial corporations	EA030 to EA082
Households	EA030 to EA082

Information sources

Calculations of economic activities of manufacturing and mines and quarries, are made using the following information sources:

- Corporate Economic Studies
- Annual Operations Report (PROCOMER)
- Foreign trade database at tariff entry level of the Harmonized Commodity Description and Coding System
- BCCR Registry of Economic Variables (REVEC)
- Sworn Income Tax Statements (Ministry of Finance)
- Yearly Statement of Customers, Suppliers and Expenditures (Ministry of Finance)
- National Survey of Producer Households (INEC)
- Studies of the Mining and Geology Agency of the Ministry of the Environment and Energy (MINAE)

Estimation method

The institutional units that are dedicated to the manufacturing industry are characterized by having accounting systems by which the costs of a product can be measured, and performance can be controlled. As a result, cost accounting systems in the national accounts provide greater details of the accounts, since they include a separation by direct and indirect materials, direct and indirect labor, and indirect manufacturing costs. When they are not available, it is necessary to conduct additional consultations with the institutional unit, or use administrative sources.

On the other hand, most of the goods generated through manufacturing activities are not perishable and companies stock them depending on movements in demand. For purposes of the national accounts, the inventories are classified into four types: final goods, goods in process, raw materials and other types of inventory.

In the case of the mining industry, both gold and salt mining are carried out artisanally by households, and in the case of gold, illegally, given that there are no concessions for gold exploitation and extraction in the country; this activity is carried out by the so-called "coligalleros" or gold-diggers. A production estimation is made of this activity, in collaboration with the Mining and Geology Department.

Production: Manufacturing production is calculated as the value of its sales minus initial stock or products in process and finished, plus the final stock of these two types of inventories; this is calculated at the product level for each institutional unit.

Intermediate consumption: The structure of intermediate consumption is determined based on information from various sources; its most important component is consumption of raw materials, which can be estimated with two different methods, which should produce the same results in both cases:

1) Consumption method: This is calculated as the quantity of goods used as inputs (includes those delivered to third parties for manufacturing services), plus normal losses for the purchase price (Q (quantity) * P (price)).

Note that the quantities must refer to completely homogeneous products, not to product lines.

2) Purchases method: This is calculated as adjusted purchases (local purchases plus purchases abroad) minus extraordinary losses, minus benefits in kind, minus transfers without

compensation to third parties, minus transfers to other establishments of the company, plus transfers received from other establishments of the company (in the country and abroad), minus changes in inventories.

Value added: This is calculated as the difference between production and intermediate consumption.

7.3 Trade

Activity description

Trade includes wholesale and retail sales of all kinds of products. The production of this activity corresponds to trade margins, which are obtained as the difference between sales revenues and the cost of the goods purchased for resale.

Information sources

The basic information sources used to measure this activity were the CEST and the SCSE.

The trade margin is defined as the difference between the effective or imputed price obtained by a good bought for resale, and the price that the distributor would have to pay to replace that good when he sells it or otherwise disposes of it. The SCSE, the income statement of the Ministry of Finance and the CEST were used to obtain trade margins by product.

Estimation method

Output: Output is calculated as the difference between sales revenues and the cost of the goods purchased for resale.

It is important to emphasize that margins per product become part of the valuation at purchaser prices, and are therefore included in the different components of use.

Intermediate consumption: The intermediate consumption structure was determined based on CEST information.

Value added: This was calculated as the difference between output and intermediate consumption.

7.4 Construction

Activity description

This activity includes the construction of residential and non-residential buildings, civil engineering works (roads, railways and public service works), as well as specialized construction activities. New constructions and the repair, addition or alteration of existing works are included in accounts as part of this activity.

Information sources

Calculation of these activities is based on construction prototypes that make it possible to obtain detailed structures of the costs of construction at a national level. The Quarterly Survey on Progress of Construction Projects for Private Use¹² (ETAPCP) allows monitoring construction works from their beginning to their completion. The Federated Association of Engineers and Architects participates in the preparation of prototypes and in the ETAPCP.

In addition, information is available from administrative records related to the construction of public works, construction permits granted by municipalities (INEC), and from the CEST.

Estimation method

Output: For the construction of residential and non-residential buildings, prototypes are assigned to constructions according to the type of permit requested, Each prototype represents the inputs required to generate the specific product, and is complemented through ETAPCP, which estimates the progress of work and, therefore, its associated production.

Production calculations for roads, railways and public service works are based on cost structures for each type of project.

Output of specialized construction activities is estimated based on the CEST.

Intermediate consumption: Details of costs and expenses included in both prototype and CEST structures were used to obtain intermediate consumption for all activities.

¹² See methodological details in Annex 5.

Value added: Value added is calculated as the difference between output and intermediate consumption, except for that of activities related to the construction of roads, railways and public service works, which is obtained by the sum of expenses in remunerations, taxes on production and fixed capital consumption.

7.5 Non-Financial Services

Activity description

Institutional sectors include non-financial corporations, non-profit institutions serving corporations, non-profit institutions serving households, and households. They include activities from EA083 to EA136, whose composition is the most heterogeneous of the categories, and that which has had the greatest growth in recent years.

Information sources

The basic information sources used for measuring these activities were: the CEST, the Annual Operations Report (PROCOMER), the BCCR Registry of Economic Variables (REVEC), Sworn Income Tax Statements (Ministry of Finance), the Yearly Statement of Customers, Suppliers and Expenditures (Ministry of Finance), the National Survey of Producer Households (INEC), financial statements of the Community Water and Sewage Administration Associations (ASADAS),¹³ other administrative sources from governing entities such as the Costa Rican Water and Sewage Institute (AyA), the Public Services Regulatory Authority (ARESEP), the Costa Rican Tourism Institute (ICT), the National Public Transport Council (CTP), Civil Aviation, the General Migration and Immigration Office, the CCSS, the Superintendency of Telecommunications (SUTEL), and financial statements of companies that provide information directly.

In particular, for estimations related to the Households institutional sector, the National Survey of Producer Households was used, which was complemented with case studies when necessary.

¹³ For this specific case we had information from income statements of the AyA for a large number of companies.

Estimation method

Production: This is estimated based on information from various sources, including income directly related to the nature of the activity, classifying both the main production and secondary products.

For non-profit institutions serving households, cost was estimated based on non-market output.

Intermediate consumption: The costs and expenses structure used to generate the service were obtained based on information from various sources. For those companies for which enough information was not available, an input structure similar to that of companies of the same stratum and activity was applied.

Value added: This was calculated as the difference between gross output value and intermediate consumption. The value added components were determined based on information from various sources consulted.

In the case of non-profit institutions serving households with non-market production, the cost estimate was made based on costs.

7.6 Financial Services

Activity description

This category includes the activities of financial intermediation, portfolio companies, investment funds and companies, insurance and reinsurance companies, and pension funds, as well as auxiliary financial intermediation and insurance services, along with the activities performed by the Banco Central.

Information sources

The main information sources are Audited Financial Statements of financial institutions, the General Superintendency of Financial Entities (SUGEF), the General Superintendency of Securities (SUGIVAL), the General Superintendency of Pensions (SUPEN), the General Superintendency of Insurance (SUGESE), and accounting information from the BCCR.

Estimation method

Output: For the Banco Central, non-market output used for the design of and compliance with monetary policy is estimated through costs, taking into account income generated by the supervision carried out by the BCCR through the SUGEF, SUGEVAL and SUPEN of the different financial entities and Auxiliary Cash Custodians (ACC). In addition, the BCCR generates a secondary output associated with the development of computer systems, whose output is measured through costs and is for its own final use; it is also part of the BCCR's non-market output.

Services related to the operation of the Foreign Currency Market (MONEX), the National Electronic Payment System (SINPE), and the electronic Account Entry System (AES) generate a commission income for the Banco Central; these are identified in the Bank's accounting, and are considered as market output.

On the other hand, the output of the rest of financial intermediaries measured through the charges of explicit commissions is obtained from complete information of the Income Statement of financial institutions. The output of Financial Intermediation Services Indirectly Measured¹⁴ (FISIM) is also calculated. The FISIM is in turn recorded as intermediate consumption, final consumption, or exports, as the case may be, by institutional sector and user economic activity.

Output of insurance services is estimated as the sum of the gross premiums received plus income received from the sale of non-equity reserves (supplementary premiums), minus the sum of compensations paid, adjusted for volatility in the compensation as recommended in the framework of the 2008 SNA.

¹⁴ Details of the estimation are explained in Annex 2.

Calculation of non-life insurance

- Information provided by the General Superintendency of Insurance (SUGESE) and insurance providers is used to calculate output of the insurance industry. The output of insurance services is estimated as the sum of gross premiums received plus income received from the sale of non-equity reserves (supplementary premiums), minus the sum of compensations paid, adjusted for volatility in the compensation, as recommended in the framework of the 2008 SNA.
- The total of premiums received is equal to payments received in the period, plus premiums receivable, minus changes in reserves due to advance payments of premiums. Supplementary premiums consist exclusively of property income generated from the investment of technical reserves, not including income from investment of own resources. The compensations paid are equal to paid compensations adjusted for volatility, plus payable compensations, plus the change in reserves against pending compensations, minus the compensations paid and minus compensations received from reinsurance.
- To estimate the components of the insurance output account, the accounting records involved in the production process of the insurance service are classified, depending on whether they are intermediate consumption or gross output value. First, the gross output value of the local market is calculated, and then insurance services output of policies sold abroad is calculated. Finally, imports of insurance services corresponding to reinsurance ceded (contracted in full with foreign reinsurers) are calculated separately.

Intermediate consumption: The value of intermediate consumption is calculated based on information from the Income Statement of financial and insurance institutions.

Value added: Value added is calculated as the difference between output and intermediate consumption, except in the case of the Banco Central, whose non-market output is estimated through costs.

7.7 General Government Services

Activity description

The General Government is composed of institutions that, in addition to fulfilling their political responsibilities and their role in economic regulation, produce non-market goods and services for individual or collective consumption, and redistribute income and wealth. The General Government also produces market services, such as water supply and waste collection.

The activities carried out by the General Government are distributed in five institutional subsectors, 307 public institutions¹⁵, and 4,400 Education and Administrative Boards, as detailed in the following table:

Table 3.

General Government output, by institutional subsector and economic activity

Type of output	Sector EA	S13111 Central Government	S13112 NPISCG	S13131 Municipalities	S13132 NPISM	S1314 Social Security funds
Market output	EA084		✓	✓		
	EA085			✓		
	EA089			✓		
	EA092		✓			
Output for final own use	EA086			✓		
	EA087	✓		✓		
	EA088			✓		
	EA114		✓			
Non- market output for own use	EA124	✓	✓	✓	✓	
	EA125	✓	✓	✓		
	EA126					✓
	EA127	✓	✓			
	EA128		✓			✓

¹⁵ Number of institutions operating in 2012. The number may change according to the period.

Information sources

The information sources are detailed by institutional subsector:

Central Government: Financial statements provided by the Ministry of Finance, and expenses at the ministerial level are used to separate their economic activities. In the cases of Education and Administration Boards, financial information was gathered for a sample of boards of Regional Education Offices.

Non-profit institutions serving the Central Government: Both financial statements provided by the institutions and budget execution figures are used, which are provided by the Office of the Comptroller General of the Republic (CGR).

Municipalities and non-profit institutions serving Local Governments: Budget execution figures from the CGR database with details of expenditures by programs are used to separate the different economic activities that are carried out.

Compulsory Social Security Funds: Data comes from financial statements provided by the CCSS and funds supervised by the General Superintendency of Pensions (SUPEN).

Employment statistics: This information is provided by the Technical Secretariat of the Budgetary Authority of the Ministry of Finance.

Estimation method

1. Calculation of market output

Output: This mainly consists of income from sales of various services. Financial statements and budget execution figures are detailed enough to distinguish these revenues.

Intermediate consumption: This figure is obtained based on expenses recorded in the income statement and budgetary execution data, which include the necessary details to identify expenses related to intermediate consumption. In those cases when details of expenditure of the institutions whose source of information are financial statements are not available, the budget execution of the institution is used, and a structure is obtained for making an entry for those expenses. In those institutions whose information sources are their financial statements,

for which no details on expenses are available, their budgetary execution figures are used, and a structure is constructed to include an entry for those expenses.

Value added: Obtained from the difference between output and intermediate consumption.

2. Output for own final use and non-market output for own use

Output: This is estimated from details of entries in the income statement and from budgetary execution data.

Output for own final use is calculated using the sum of costs method; i.e., by the sum of intermediate consumption and value added (wages, taxes on production and fixed capital consumption).

To obtain non-market output for own use, market and non-market output paid by households are subtracted from total output.

Intermediate consumption: This is estimated using expenditure statistics in the income statement and budgetary execution data. In those cases when details are not available on expenditures of the institutions whose source of information are their financial statements, Budgetary Execution data of the institution is used and a structure is obtained for including an entry for these expenses.

Value added: This is calculated by the sum of expenses in remunerations, taxes on production, and fixed capital consumption.

VIII. Annexes

8.1 Annex 1 Classification of Products, Economic Activities and Institutional Sectors.

8.1.1 Classification of Products and Economic Activities

SPC-CR	Product	Main economic activity	EA Code
SPC001	Beans	Bean cultivation	EA001
SPC002	Corn	Corn cultivation	EA002
SPC003	Wheat	Cultivation of other cereals, legumes and oilseeds n.p.c. (not previously classified)	EA003
SPC004	Other cereals	Cultivation of other cereals, legumes and oilseeds n.p.c.	EA003
SPC005	Legumes and other oilseeds	Cultivation of other cereals, legumes and oilseeds n.p.c.	EA003
SPC006	Rice	Rice cultivation	EA004
SPC007	Watermelon	Watermelon cultivation	EA005
SPC008	Melon	Melon cultivation	EA006
SPC009	Onion	Onion cultivation	EA007
SPC010	Chayote	Chayote cultivation	EA008
SPC011	Potatoes	Potato cultivation	EA009
SPC012	Roots and tubers n.p.c.	Cultivation of other vegetables, roots and tubers n.p.c.	EA010
SPC013	Vegetables n.p.c.	Cultivation of other vegetables, roots and tubers n.p.c.	EA010
SPC014	Sugar cane	Sugar cane cultivation	EA011
SPC015	Flowers	Flower cultivation	EA012
SPC016	Foliage	Foliage cultivation	EA013
SPC017	Bananas	Banana cultivation	EA014
SPC018	Plantain	Plantain cultivation	EA015
SPC019	Pineapple	Pineapple cultivation	EA016
SPC020	Oil palm	African palm cultivation (oil palm)	EA017
SPC021	Coffee fruit	Coffee cultivation	EA018
SPC022	Mangoes	Cultivation of other fruits, nuts and other oleaginous fruits	EA019
SPC023	Oranges	Cultivation of other fruits, nuts and other oleaginous fruits	EA019
SPC024	Heart of palm	Cultivation of other fruits, nuts and other oleaginous fruits	EA019
SPC025	Other products from non-perennial and perennial plants n.p.c.	Cultivation of other non perennial and perennial plants	EA020

SPC-CR	Product	Main economic activity	EA Code
SPC026	Other fruits, nuts and other oilseeds	Cultivation of other fruits, nuts and other oleaginous fruits	EA019
SPC027	Live plants and roots	Plant propagation	EA021
SPC028	Beef cattle	Cattle raising	EA022
SPC029	Swine	Pig raising	EA023
SPC030	Live chickens	Chicken raising	EA024
SPC031	Other live animals	Raising of other animals	EA025
SPC032	Eggs	Chicken raising	EA024
SPC033	Raw milk	Cattle raising	EA022
SPC034	Other animal products n.p.c.	Raising of other animals	EA025
SPC035	Support services for agriculture, husbandry and post-crop activities	Activities to support agriculture, livestock farming and post-harvest activities	EA026
SPC036	Forestry, timber extraction and hunting products	Silviculture, timber extraction, and hunting	EA027
SPC037	Fishing products	Marine and freshwater fishing	EA028
SPC038	Aquiculture products	Marine and freshwater aquaculture	EA029
SPC039	Stone, sand and clay	Extraction of stone, sand and clay	EA030
SPC040	Salt	Salt extraction	EA031
SPC041	Petroleum and natural gas	Exploitation of other mines and quarries n.p.c.	EA032
SPC042	Other metallic and non metallic minerals, and support services	Exploitation of other mines and quarries n.p.c.	EA032
SPC043	Poultry and edible poultry offals	Preparation and preservation of poultry and poultry sausages	EA033
SPC044	Meat and edible offals from beef cattle	Preparation and preservation of meat and cattle and pig sausages, and other types of meats	EA034
SPC045	Pigs and edible porcine offal	Preparation and preservation of meat and cattle and pigs sausages, and other types of meats	EA034
SPC046	Sausages and other meat-based products	Preparation and preservation of meat and cattle and pigs sausages, and other types of meats	EA034
SPC047	Preserved fish, crustaceans and shellfish	Processing and preservation of fish, crustaceans and shellfish	EA035
SPC048	Preserved fruits, legumes and vegetables	Processing and preservation of fruits and vegetables	EA036
SPC049	Raw and refined vegetable oils	Production of oils and fats of vegetable and animal origin	EA037
SPC050	Other vegetal and animal oils and fats n.p.c.	Production of oils and fats of vegetable and animal origin	EA037
SPC051	Dairy products	Production of dairy products	EA038
SPC052	Husked, prepared, and semi-cooked rice	Rice processing	EA039
SPC053	Wheat flour	Production of milling products, except rice, and starches and starch products	EA040

SPC-CR	Product	Main economic activity	EA Code
SPC054	Other mill products n.e.s., starches and starch derivatives	Production of milling products, except rice, and starches and starch products	EA040
SPC055	Pastry products	Production of bakery products and tortillas	EA041
SPC056	Cane sugar, molasses, syrups and other sugars	Sugar processing	EA042
SPC057	Cocoa, chocolates and confectionery products	Production of cocoa, chocolate and confectionery products	EA043
SPC058	Macaroon, pasta and similar starchy products	Production of macaroni, noodles, and similar starchy products	EA044
SPC059	Green coffee	Green coffee processing	EA045
SPC060	Ground, instant coffee, extracts and concentrates	Production of coffee products	EA046
SPC061	Food, prepared dishes and other food products	Production of foods, prepared meals, and other food products	EA047
SPC062	Prepared food for animals	Production of animal feed	EA048
SPC063	Alcoholic distilled beverages and wines	Distillation, rectification, mixing of alcoholic beverages and wines	EA049
SPC064	Beer, malt, non-alcoholic beverages and bottled water	Production of malt beverages, malt, non-alcoholic beverages, mineral waters, and other bottled waters	EA050
SPC065	Tobacco products	Production of tobacco products	EA051
SPC066	Textile articles, except clothing	Manufacture of textile products	EA052
SPC067	Clothing	Manufacture of clothing items	EA053
SPC068	Leather and related products, except footwear	Manufacture of leather and related products, except footwear	EA054
SPC069	Footwear	Manufacture of footwear	EA055
SPC070	Wood and cork, wood and cork products, except furniture; straw items and materials used for plaiting	Timber production and manufacture of timber and cork products, except furniture; manufacture of straw articles and of plaiting materials	EA056
SPC071	Paper and paper products	Production of paper and paper products	EA057
SPC072	Products from editing, printing and recording, except computing programs	Activities of printing, editing and reproduction of video recordings, except computing programs	EA058
SPC073	Gasoline	Manufacture of refined petroleum products and coke	EA059
SPC074	Diesel	Manufacture of refined petroleum products and coke	EA059
SPC075	Bunker	Manufacture of refined petroleum products and coke	EA059
SPC076	Lubricating oils and greases	Manufacture of refined petroleum products and coke	EA059
SPC077	Other oil- and coke- derivative products	Manufacture of refined petroleum products and coke	EA059

SPC-CR	Product	Main economic activity	EA Code
SPC078	Basic chemical substances and fertilizers, and nitrogen compounds	Manufacture of basic chemical substances, fertilizers and nitrogen compounds	EA060
SPC079	Plastics and synthetic rubber in primary forms	Manufacture of basic chemical substances, fertilizers and nitrogen compounds	EA061
SPC080	Pesticides and other chemical products for use in agriculture	Manufacture of pesticides and other chemical products for agricultural use	EA062
SPC081	Paints, varnishes, coatings, printing inks and mastics	Manufacture of paints, varnishes and similar coating products, printing inks and resins	EA063
SPC082	Soaps, detergents, perfumes and toiletries	Manufacture of soaps and detergents, preparations for cleansing and polishing, perfumes and toiletries	EA064
SPC083	Artificial fibers and chemical products n.e.s.	Manufacture of other chemical products n.p.c. and manufactured fibers	EA065
SPC084	Pharmaceutical products and medicines	Manufacture of pharmaceutical products, medicinal chemical substances and of botanical products	EA066
SPC085	Rubber products	Manufacture of rubber products	EA067
SPC086	Grooves, tubing and joinings of hard plastic without support	Manufacture of plastic products	EA068
SPC087	Other plastic products	Manufacture of plastic products	EA068
SPC088	Glass and glass products	Fabrication of glass and glass products	EA069
SPC089	Refractory products, construction materials made of clay and other porcelain and ceramic products	Manufacture of refractory products, clay construction materials, and other porcelain and ceramic products	EA070
SPC090	Cement, lime and plaster	Manufacture of cement, lime, plaster, and articles of concrete, cement and plaster, and other non metallic minerals, n.p.c.	EA071
SPC091	Articles of cast concrete and plaster, and other mineral non-metallic products n.e.s.	Manufacture of cement, lime, plaster, and articles of concrete, cement and plaster, and other non metallic minerals, n.p.c.	EA071
SPC092	Basic iron and steel products	Manufacture of common metals	EA072
SPC093	Primary products of aluminium, zinc, gold, silver and others semi-finished through smelting	Manufacture of common metals	EA072
SPC094	Metallic products for structural use metal tanks, reservoirs and containers, and steam generators	Manufacture of metal products, except machinery and equipment	EA073
SPC095	Other metallic products	Manufacture of metal products, except machinery and equipment	EA073
SPC096	Electronic components and switchboards, computers and peripheral equipment	Manufacture of electronic components and circuit boards, computers and peripheral equipment	EA074
SPC097	Consumption communications equipments and electronic devices	Manufacture of electronic products and optical products	EA075

SPC-CR	Product	Main economic activity	EA Code
SPC098	Equipment for measuring, testing, navigation and control of watches	Manufacture of electronic products and optical products	EA075
SPC099	Irradiation, electronic, medical and therapeutic equipment	Manufacture of electronic products and optical products	EA075
SPC100	Optical and photographic instruments, magnetic and optical supports	Manufacture of electronic products and optical products	EA075
SPC101	Motors, generators, power transformers; electric energy distribution and control apparatus	Manufacture of electric equipment and machinery n.c.p.	EA076
SPC102	Cells, batteries, storage batteries, cables and cabling devices	Manufacture of electric equipment and machinery n.c.p.	EA076
SPC103	Electrical lighting equipment	Manufacture of electric equipment and machinery n.c.p.	EA076
SPC104	Refrigerators, stoves and other appliances	Manufacture of electric equipment and machinery n.c.p.	EA076
SPC105	Other types of electric equipment	Manufacture of electric equipment and machinery n.c.p.	EA076
SPC106	Machinery for general and special use, parts and pieces	Manufacture of electric equipment and machinery n.c.p.	EA076
SPC107	Automobiles, car bodies, trailers and semi trailers	Manufacture of motor vehicles, trailers and semitrailers	EA077
SPC108	Parts and pieces for automobiles	Manufacture of motor vehicles, trailers and semitrailers	EA077
SPC109	Other types of transportation equipment	Manufacture of other types of transportation equipment	EA078
SPC110	Wooden furniture	Manufacture of furniture	EA079
SPC111	Furniture of other type of material, except stone, cast concrete and ceramics	Manufacture of furniture	EA079
SPC112	Medical and dental instruments and supplies	Manufacture of medical and dental instruments and supplies	EA080
SPC113	Other manufactured products	Other manufacturing industries	EA081
SPC114	Waste and scrap		0
SPC115	Services for repairing and installing machinery and equipment	Repair and installation of machinery and equipment	EA082
SPC116	Manufacturing services		0
SPC117	Electric energy, gas, steam and air conditioning	Supply of electricity, gas, steam and air conditioning	EA083
SPC118	Potable water and sewage	Supply of potable water and removal of residual waters	EA084
SPC119	Waste collection, treatment and disposal	Waste management and decontamination	EA085
SPC120	Environment protection services	Waste management and decontamination	EA085

SPC- CR	Product	Main economic activity	EA Code
SPC121	Residential constructions	Construction of buildings	EA086
SPC122	Non-residential construction	Construction of buildings	EA086
SPC123	Roads and railroads	Construction of roads and railroads	EA087
SPC124	Construction of public services projects and other civil engineering works	Construction of public service works and other civil engineering works	EA088
SPC125	Specialized construction services	Construction - specialized activities	EA089
SPC126	Trade-related services	Trade	EA090
SPC127	Maintenance and repair of motor vehicles	Maintenance and repair of motor vehicles	EA091
SPC128	Train transportation services	Railway transport	EA092
SPC129	Road transportation of passengers, except taxis	Land passenger transport, except taxis	EA093
SPC130	Taxi services	Passenger taxi transport	EA094
SPC131	Freight transportation	Sea, air, and road freight transport	EA095
SPC132	Maritime and air passenger transportation	Sea, air, and road freight transport	EA095
SPC133	Storage and warehousing services	Storage and warehousing	EA096
SPC134	Parking services	Services activities associated with transport	EA097
SPC135	Other transport-related services	Services activities associated with transport	EA097
SPC136	Loading and unloading	Freight handling and other activities to support transport	EA098
SPC137	Other services supporting transportation	Freight handling and other activities to support transport	EA098
SPC138	Post office and courier services	Postal and express courier activities	EA099
SPC139	Lodging services	Lodging activities	EA100
SPC140	Food and beverages catering services	Catering food and beverage services activities	EA101
SPC141	Radio, television, films, videos and other related services	Activities related to movies, videos and television program production, sound recording; music editing, programming and transmission	EA102
SPC142	Telephony services	Telecommunications activities	EA103
SPC143	Internet services	Telecommunications activities	EA103
SPC144	Other telecommunications services	Telecommunications activities	EA103
SPC145	Information, programming and computing consulting services, edition of computer and related programs	Information, programming and computing consulting services, editing of computer programs and related	EA104
SPC146	Central banking services	Monetary intermediation activities	EA105
SPC147	Other explicit monetary intermediation services	Monetary intermediation activities	EA105
SPC148	Financial Intermediation Services Measured Indirectly (FISMI)	Monetary intermediation activities	EA105

SPC-CR	Product	Main economic activity	EA Code
SPC149	Other financial services and of investment banking	Activities of holding companies, investment funds and corporations, and other financial services activities	EA106
SPC150	Insurance and re-insurance services, and pension fund services	Insurance, reinsurance activities, and activities related to pension funds, except social security plans of compulsory affiliation	EA107
SPC151	Support services for monetary and financial intermediation	Auxiliary activities of financial, insurance and pension funds services	EA108
SPC152	Support services for insurance and pension funds	Auxiliary activities of financial, insurance and pension funds services	EA108
SPC153	Housing rental services	Real estate activities	EA109
SPC154	Rental services of residential and non-residential properties and other real-estate-related services	Real estate activities	EA109
SPC155	Legal services	Legal activities	EA110
SPC156	Accounting, fiscal consulting and other services	Accounting, bookkeeping, fiscal advisory, and other accounting-related activities	EA111
SPC157	Consulting services in financial, human resources, marketing, headquarters management, and management of related issues	Activities related to consulting in financial management, human resources, marketing, main offices and related	EA112
SPC158	Architecture, engineering and related services	Architecture and engineering-related activities; essays and technical analyses	EA113
SPC159	Scientific research and development services	Scientific research and development activities	EA114
SPC160	Publicity services, provision of spaces for publicity, and market studies	Publicity and market studies	EA115
SPC161	Other professional, scientific and technical services	Other professional, scientific and technical activities	EA116
SPC162	Veterinary services	Veterinary activities	EA117
SPC163	Rental services of motor vehicles, machinery and equipment	Rental and leasing activities of tangible assets and intangible non-financial assets	EA118
SPC164	Rental and leasing of licenses, author's rights, patents and franchises	Rental and leasing activities of tangible assets and intangible non-financial assets	EA118
SPC165	Other rental services	Rental and leasing activities of tangible assets and intangible non-financial assets	EA118
SPC166	Employment agencies services	Employment-related activities	EA119
SPC167	Services of travel agencies, tourist operators, reservation services and services of related activities	Activities of travel agencies, tourism operators, and reservation services, and other related activities	EA120
SPC168	Security and investigation services	Security and investigation-related activities	EA121
SPC169	Cleaning of buildings, landscaping and maintenance	General cleaning of buildings and landscaping-related activities	EA122

SPC- CR	Product	Main economic activity	EA Code
SPC170	Administrative and office support services, and other activities to support businesses	Office administrative and support activities, and other business support activities	EA123
SPC171	General Government public services	State administration and enforcement of community economic and social policies	EA124
SPC172	Services to the community in general	Provision of services to the community in general	EA125
SPC173	Administrative services of compulsory social security schemes	Activities related to social security plans of compulsory affiliation	EA126
SPC174	Educational services	Teaching	EA127
SPC175	Human health care and social work services	Human health care and social assistance-related activities	EA128
SPC176	Artistic, entertainment and recreational services	Artistic, entertaining and recreational activities	EA129
SPC177	Business, professional, trade union, political, and related services	Activities of associations	EA130
SPC178	Repair services of computers, personal and household goods	Computer, personal belongings and household goods repair	EA131
SPC179	Services of washing, drying and cleaning of garments	Activities related to washing and drying of fabric and leather garments	EA132
SPC180	Hairdressing and other beauty treatment services	Hairdressing and other beauty treatment activities	EA133
SPC181	Funeral and related services	Funerals and other related activities	EA134
SPC182	Other services n.c.p.	Other services activities n.p.c.	EA135
SPC183	Domestic services	Household activities as employers of domestic workers	EA136
SPC184	Foreign direct purchases by residents (embassies)		
SPC185	Foreign direct purchases by residents (travel)		
SPC186	Direct purchases in the national territory by non-residents (embassies)		
SPC187	Direct purchases in the national territory by non-residents (travel)		

8.1.2 Institutional Sectors

S1 Total economy

S11 Non-financial corporations

- **S11001 Public non-financial corporations**
- **S11002 Private non-financial corporations**
 - S110021 Large private non-financial corporations
 - S110022 Rest of private non-financial corporations
- **S11003 Non-profit institutions serving non-financial corporations**

S12 Financial corporations

- **S121 Banco Central de Costa Rica**
- **S122 Depository corporations, other than the Banco Central de Costa Rica**
 - S12211 Public depository monetary corporations
 - S12212 Private depository monetary corporations
 - **S1222 Other depository corporations**
 - S12221 Other public depository corporations
 - S12222 Other private depository corporations
- **S123 Money market investment funds (MIF)**
- **S124 Investment funds, other than MIFs**
- **S125 Other financial intermediaries, except for insurance companies and pension funds**
 - S1251 Other public financial intermediaries, except for insurance companies and pension funds
 - S1252 Other private financial intermediaries, except for insurance companies and pension funds
- **S126 Financial auxiliaries**
 - S1261 Financial auxiliaries, other than insurance and pension funds auxiliaries
 - S1262 Insurance and pension funds auxiliaries
 - S1263 Non-profit institutions serving financial corporations
- **S127 Captive financial institutions and money lenders**
- **S128 Insurance companies**
- **S129 Pension funds**
 - S1291 Collective schemes
 - S1292 Individual schemes

S13 General Government

- **S1311 Central Government, except for social security**
 - S13111 Central Government, except for social security and NPICG (Non-profit institutions serving the Central Government)
 - S13112 Non-profit institutions serving the Central Government
- **S1313 Local governments**
 - S13131 Municipalities
 - S13132 Non-profit institutions serving local governments
- **S1314 Social security funds**

S14 Households

- Households

S15 Non-profit institutions serving households

- NPISH

S2 Rest of the world

8.2 Annex 2: Corporate Economic Study

8.2.1 Overview

General objective of the study

To obtain statistical information of non-financial corporations to construct the input-output matrix, the supply and use table, the sequence of institutional accounts, and the integrated economic accounts included in the new rebase year (2012) of the macroeconomic accounts.

Specific objectives

- Develop the macroeconomic aggregates and economic indicators of the sector of non-financial corporations, to contribute to decision making.
- Collect information on production volumes and value, intermediate consumption and expenses of non-financial corporations.
- Collect information on the main inputs and materials used by non-financial corporations.
- Generate economic statistics that will permit international comparability through the use of international classifiers.
- Contribute to the National Statistics System (NSS) by the provision of sectorial information (sales, expenditures, cost and production structure, among others) necessary for economic analysis.

Coverage

The Corporate Economic Study covers each economic activity of interest for the study throughout the country (by type of industry: manufacturing, trade and services).

8.2.2 Sample Design

Target population

The study population consists of all active non-financial private corporations operating in the national territory, except for companies whose main economic activity is in the group of the following economic activities:

- Agriculture and livestock
- Construction
- Public administration
- Supervised financial corporations
- Production of oil refining
- Water, gas or electricity supply
- Units identified as household activities
- Companies operating under the Free Zone and Inward Processing regimes

These exceptions are due to the fact that information of these companies is obtained from administrative records or other special surveys.

In addition, the study population was delimited based on employment and income levels. Companies with more than five employees and a value greater than 15% for the income variable within their economic activity were included¹⁶.

Unit of study

The unit of study is the company.

Sampling framework

The sampling framework used in the CEST is based on data from administrative records of various institutions, as well as from the Directory of Establishments developed by the INEC.

Sampling design

The design variable for the CEST was the income reported by companies to the Ministry of Finance in income tax statements. Using this variable, the importance of each company within its economic activity was determined.

The minimum variance method was used in the sampling design, with two strata, one self-represented and the other random. Based on income and variability, the self-represented stratum is defined to include the most important companies in each activity, and the random stratum includes the rest of the companies. Since the self-represented stratum contains the

¹⁶ For some activities, companies with less than 5 employees were included in the population, but they had a significant weight within their economic activity, based on their income.

most important companies, a census was carried out to guarantee a high coverage of the weight of each economic activity.

In the random stratum, a certain number of companies were selected at random to represent those that were not selected. This representation is made using the expansion factors, which are used to make inferences about the variables of the study, and to provide estimates for the population as a whole, with a certain level of sample error.

The selection method used in the random stratum is called probabilities proportional to size (PPS). With this method, each company has a different probability of being selected, according to its relevance in the variable of interest (in this case, income).

This design was used in all the economic activities, except in trade, where the selection was made using 4-digit ISIC4 codes, because it was necessary to have companies that together commercialize all the products of interest to estimate trade margins.

Another exception was the group of Non-Profit Institutions (NPIs), in which strata were defined according to the topic or area in which they operate. Systematic sampling was used in each of these strata.

Sample size

The sample size was calculated separately for each one of the economic activities included in the CEST. The sample size for the 2012 survey was 1,803 companies, distributed in 97 economic activities, while for the 2013 survey it included 696 companies, representing 36 economic activities.

Sample selection

Once the required sample combination was determined, all of the self-represented companies were selected, while in the case of the random stratum, they were selected according to the probabilities proportional to size method.

Expansion factors

Companies in the self-represented stratum have a factor of 1, while firms in the random stratum have a different factor depending on their probability of being selected, which is proportional to

their size. The expansion factor is inversely related to the probability of being selected; therefore the more likely a company to be selected the smaller its expansion will be. These factors were multiplied by the observed values of each company, to obtain an estimate of the total.

Sampling errors

Estimates obtained from a random sample have an implicit sampling error. These errors were calculated for the random stratum.

8.2.3 Information Collection

Information was collected by officials of the Ministry of Finance, using a system developed for the study. Once the data was entered in the system, it was validated by BCCR officials.

8.2.4 Accessibility

Data are accessible only within the BCCR. An agreement was reached stating that the BCCR commits itself to protect the confidentiality of the individual information collected by the Ministry of Finance, as mentioned in Article 40 of the Banco Central de Costa Rica's Organic Law.

8.3 Annex 3: Processing Services for Third-Party Inputs

8.3.1 Background

In recent years, globalized production processes have become increasingly important. Within this new context, it is usual for some companies to transfer goods to companies located in other economies for processing purposes, without transferring economic ownership. Therefore, Manufacturing services on physical inputs that belong to third parties include processing and assembly that companies perform without assuming ownership of the goods. The processing company does not acquire economic ownership of the goods and, hence the transaction or transactions to be recorded in the production and international accounts are those derived from the service provided to the owner of the goods.

8.3.2 Methodological Changes

The Fifth Edition of the IMF's Balance of Payments and International Investment Position Manual (BPM5) recognized as an exception to the transfer of ownership, the gross value record of the

goods sent by the owner to a non-resident for processing purposes. In practice, this recording method leads to problems when there are transfer prices between related companies and temporary differences between the time of receipt and return of the processed goods, leading to an accumulation of inventories and, as a result, the recognition of a liability in the economy in which the processing company operates with the economic owner of the goods (non-resident).

According to the Sixth Edition of the IMF's Balance of Payments and International Investment Position Manual (BPM 6), processing services include the transaction between owner and processor; specifically, the fees charged by the processing company, which may include the cost of materials purchased by the processor. The value of the goods handled under this scheme must be deducted from the amount of imports and exports of goods, and the fees charged by the processor must be recorded as exports of services.

The BPM6 indicates that in practice, the value of processing services is not equal to the difference between the amount of goods sent for processing and the value of the goods already processed. Causes of this situation include: gains and losses associated with holding the foods, addition of overheads, and measurement errors associated with the valuation of the transfer of goods.

8.3.3 Implementation of a Change in Measurement in Costa Rica

With the change of rebase year in its macroeconomic accounts, the BCCR considered it convenient to implement this recommendation.

In Costa Rica, just as in other countries, the main source of foreign trade statistics is the import and export insurance coverages issued by the corresponding customs offices. However, customs declarations, when recording gross values of trade in goods, are not useful for determining the real cost of manufacturing services. For this reason, in most cases, the measurement process involves visiting the population of participating companies to determine the cases in which the activity qualifies as processing services for third parties.

The adoption of this measure makes it possible to avoid distortions in export and import figures as a result of the valuation method for trade in goods in response to policies for transfer pricing between organizations. As part of costs, prices of imported raw materials lower than those used to quantify imports of raw materials are considered in exports. In some companies the values of

imports were therefore higher than those of exports, which did not make sense within a framework of financial rationality of business operations.

Administrative records available in the country facilitate implementation of the measure because companies directly report the fees charged for processing.

8.4 Annex 4: Basic SUT Outline

SUPPLY TABLE	INDUSTRIES	OUTPUT BY INDUSTRIES						IMPORTS			CIF/FOB ADJUSTMENTS ON IMPORTS	TAXES ON PRODUCTS	SUBSIDIES ON PRODUCTS	TRADE AND TRANSPORT MARGINS	
		Industry 1		Industry 2		Total		TOTAL ECONOMY	GOODS	SERVICES					TOTAL
		Free Trade Zone	Definitive regime	Free Trade Zone	Definitive regime	Free Trade Zone	Definitive regime								
		PRODUCTS													
Product 1															
Product 2															
Product 3															
Total															

USE TABLES	INDUSTRIES	INTERMEDIATE CONSUMPTION OF INDUSTRIES						EXPORT FOB			FINAL CONSUMPTION EXPENDITURE				GROSS CAPITAL FORMATION				
		Industry 1		Industry 2		Total		TOTAL ECONOMY	GOODS	SERVICES	TOTAL	HOUSEHOLDS	NPISHS	GENERAL GOVERNMENT	TOTAL	GROSS FIXED CAPITAL FORMATION	CHANGES IN INVENTORIES	ACQUISITION LESS DISPOSALS OF VALUABLES	TOTAL
		Free Trade Zone	Definitive regime	Free Trade Zone	Definitive regime	Free Trade Zone	Definitive regime												
		PRODUCTS																	
Product 1																			
Product 2																			
Product 3																			
Total																			

VALUE ADDED	TOTAL GROSS VALUE ADDED/GDP						
	Compensation of employees						
	Taxes less subsidies on production and imports						
	Mixed income, gross						
	Operating surplus, gross						
	Consumption of fixed capital -mixed income						
	Consumption of fixed capital - other						
	LABOUR INPUTS						

8.5 Annex 5. Quarterly Survey on Progress of Construction Projects for Private Use

8.5.1 Overview

The main objective of the Quarterly Survey on Progress of Construction Projects for Private Use (ETAPCP) is to estimate the total of square meters actually constructed (meters requested or processed) during one trimester for all the national territory. This survey started in the fourth quarter of 2010 and is periodically conducted by the Federated Association of Engineers and Architects (CFIA).

Each quarter 1,000 private construction projects are surveyed, which are monitored once every quarter until they are finalized or suspended for some particular reason. This allows the inclusion of or substitution for new projects in the corresponding quarter. Therefore, the sample of each quarter will consist: of the new projects that are included in the sample, and the projects in process of construction that began in quarters prior to that of the study.

8.5.2 Sample Design

The CFIA provides the rebase information for constructing the sampling framework. This information is refined considering the following factors:

- **Unit of measure:** All works whose unit of measure is not the square meter (m²) are discarded.
- **License:** All works for which the professional in charge is not an architect (A), civil engineer (CI), or, construction engineer (COI) are eliminated.
- **Cadastral:** All works for which the cadastral number is blank, or corresponds to border areas, indigenous areas, or public roads are eliminated. Likewise, all works in which the cadastral number does not meet the established standard are eliminated.
- **Types of sub-work:** All works for which the type of sub-work corresponds to any of the following types are eliminated: changes to condominiums, walls, traffic circles, canopies and earth movements.
- **Public works:** All works of which the owner is a public or state institution are eliminated.
- **Type of permit:** All works for which the type of permission does not correspond to any of the following values are eliminated: normal, counter-stamped, extension, remodeling.

Considering that a project may involve the construction of one or more sub-works, for the purposes of the survey the base is expanded to the sub-work level, as the sample is calculated for each construction prototype.

Selection method and sample size

The sample is calculated for each of the prototypes (some of them grouped) in order to have representative samples of each of them. The size is defined by a degree of precision or an error level for the design variable, which in this case is the number of square meters processed. In each prototype group, square meters are ordered from highest to lowest, then minimum sampling of two strata is applied, with a self-represented stratum (larger projects) and a random stratum with the rest of the projects. The cut-off point defined for these strata involves an iterative process, making use of the following formula:

$$n_2 = \frac{(N - n_1)^2 S_2^2}{(e)^2 + ((N - n_1) S_2^2)}$$

Where:

N = number of elements in the population

N_1 = number of elements included in the self-represented stratum

S_2 = standard deviation in square meters

e = maximum permissible error

Calculations are made for each sub-work, obtaining different combinations of sample sizes. Given that the variance in square meters is used to create the design, it is possible to choose the combination that determines the smallest sample size, since it has the minimum variance and yields results with the same precision.

A census is carried out for the self-represented stratum, while in the random stratum a selection is made using the probabilities proportional to size (PPS) design, which allows for a greater coverage of the square meters with a “permit”. This is equivalent to choosing a greater number of large projects, since they are more likely to be selected. Another important reason is that each

one of the selected projects has an expansion factor proportional to its size, which reflects the weight they have in the population.

For self-represented sub-works, the expansion factor is 1. For random sub-works, an expansion factor must be calculated according to the design used. The PPS expansion factor is expressed as follows:

$$F_i = \frac{M_h}{(m_i * n_h)}$$

Where:

M_h: total of square meters of the framework processed, by stratum and corresponding prototype group.

M_i: square meters processed from the i-th work selected.

N_h: selected sample size.

8.6 Annex 6. Estimation of Financial Intermediation Services Indirectly Measured (FISIM)

8.6.1 Background

Financial intermediation services play a fundamental role in stimulating productive activity through credit; they receive savings of sectors with surpluses through different deposit mechanisms and transfer them to economic agents with deficits. In this context, financial services are associated with the activity of an intermediary or financial auxiliary, whose function is to channel resources from savers to borrowers. In this activity two financial instruments stand out: loans and deposits.

Financial intermediaries make explicit (commissions) and implicit charges in the loan and deposit operations with their clients; the latter are called FISIM. The financial entities considered to produce FISIM are: commercial banks, financial banks, cooperatives, savings banks, mutual savings and credit institutions, card companies, lessors, factoring companies, money lenders, savings funds and solidarity associations.

When carrying out a loan or deposit operation, intermediaries receive or pay an amount of interest, respectively, which implicitly includes payment for financial services. Thus, to obtain the value of the FISIM, it is necessary to set a market reference interest rate, and the difference between this and the interest rate actually paid or charged is the FISIM. In turn, the use of the FISIM is recorded as intermediate consumption, final consumption, or exports, by institutional sector and user economic activity, which has a direct impact on the GDP of the economy: when production is allocated to users, the Gross Domestic Product (GDP) will grow in the amount of services that are allocated to final use and exports.

The methodology used to calculate the FISIM is based on the recommendations of the 2008 System of National Accounts (2008 SNA) and the Sixth Edition of the Balance of Payments and International Investment Position Manual (BPM6), and replaces the method of estimation of these financial services through "banking imputation" where the value of financial services was calculated as the difference between incomes received and paid; in addition, since it was not possible to determine allocation according to the sector using these services, they were treated as intermediate consumption of a fictitious industry.

Given the above, production was zero and generated a negative value added of equal magnitude to that of intermediate consumption, resulting in a compensation between output of financial intermediation and intermediate consumption of the fictitious industry; this meant that the GDP did not experience changes with respect to estimations of financial intermediation services. In addition, exports and imports were not considered as indirectly measured financial services, since the compilation of external sector statistics was governed by the Fifth Edition of the Balance of Payments and International Investment Position Manual (BPM5), which did not recognize the existence of the FISIM.

8.6.2 Information Sources

Monthly Financial Statements of FISIM producers are used to calculate the FISIM. For commercial banks, financial corporations, cooperatives, savings funds, and mutual savings and credit institutions, these are obtained from the General Superintendency of Financial Entities (SUGEF). The SUGEF also provides information about deposit and credit operations for these same institutions by institutional sector, and of the latter by economic activity.

In the case of card, factoring and leasing companies, money lenders, savings funds and solidarity associations, annual financial statements are used.

8.6.3 Methodology for Estimations

For the calculation of the FISIM, a reference interest rate (RR) is applied to monthly credit and deposit balances, and the results are compared to interests earned and actually paid by financial institutions. The following formula is used for these calculations:

$$\text{FISIM} = (\text{Bank interest received} - R_R * \text{Loan balance}) + (R_R * \text{Deposit balance} - \text{bank interest paid})$$

Where R_R = Reference Rate. In addition, average balances are used.

The reference interest rate (RR) is calculated as a weighted average of implicit loan and deposit rates of financial institutions; the weight used is the average balance of the same operations. This RR is calculated by currency type: colones and dollars.

$$R_R = (\text{Income from Loans} + \text{Expenses from Deposits}) / (\text{Loan Balance} + \text{Deposit Balance})$$

For assets of financial institutions, the operations that generate FISIM are related to commercial, consumer and housing loans, and the operations that generate FISIM liabilities are current account deposits and on-demand savings. Interests actually paid or received by customers for these transactions are known as "bank interests," while those calculated with the RR are known as "SNA interests".

FISIM imports and exports are calculated with information on lending and deposit transactions between residents and non-residents, separated by consumer institutional sector. The RR for transactions between the resident financial sector and the rest of the world is calculated in the same way, with the exception that only transactions between residents and non-residents are used to calculate the transaction. In the case of transactions of the Non-Financial Public Sector and the Non-Financial Private Sector with the Rest of the World, the RR for loans is the Prime Rate, while the 6-month Libor Rate is used for deposits.

Table 4 describes the consumer and producer sectors of the FISIM:

Table 4.

Producers and Consumers of FISIM

Producer	Consumer
S1221 Monetary deposit corporations, other than the Banco Central	S11001 Non-financial public corporations
S1222 Other depository corporations	S11002 Non-financial private corporations
S125 Other financial intermediation corporations, other than insurance companies and pension funds	S122 Depository corporations, other than the Banco Central de Costa Rica
S127 Financial institutions that loan and borrow money	S123 Money market investment funds (MMIF)
S2 Rest of the world	S124 Investment funds, other than MMIF
	S125 Other financial intermediaries, except for insurance companies and pension funds
	S126 Financial auxiliaries
	S127 Financial institutions that loan and borrow money
	S128 Insurance companies
	S129 Pension funds
	S13 General Government
	S14 Households
	S15 Non-profit institutions serving households
	S2 Rest of the world

FISIM produced by resident financial intermediaries, plus imports of FISIM produced by non-resident financial institutions, should be distributed among economic activities and sectors that use them as intermediate consumption, final consumption or export of services.

Loans to households are generally considered as final consumption, except for loans for housing purchases, which represent intermediate consumption because they are necessary expenses for the production of rental services that are imputed to homeowners. Another exception is loans

requested by households to carry out productive activities; these are also considered intermediate household consumption.

Non-Financial Public Sector and Non-financial Private Sector entities, Financial Corporations, General Government, and Non-profit Institutions Serving Households (NPISHs) use the FISIM as intermediate consumption to produce other goods and services. However, intermediate consumption of FISIM by the General Government and NPISHs is in turn final consumption, because the non-market output that they produce is calculated by the sum of costs. Therefore, intermediate consumption of FISIM in these two sectors increases the value of their output, thus increasing their final consumption expenditure.

The FISIM value considered as final consumption and exports increases the economy's GDP by an equal amount. This is one of the main changes in adopting the FISIM calculation methodology according to the 2008 SNA.

Nominal FISIM output at prices of the previous year (moving base) is calculated as follows:

$$\mathbf{FISIMLoans\ at\ prices\ of\ the\ previous\ year} = \frac{\mathbf{FISIM}_{Loans}}{\mathbf{CPI}} * \frac{\mathbf{ER}_{t-1} - \mathbf{RR}_{t-1}}{\mathbf{ER}_t - \mathbf{RR}_t}$$

$$\mathbf{FISIMDeposits\ at\ prices\ of\ the\ previous\ year} = \frac{\mathbf{FISIM}_{Deposits}}{\mathbf{CPI}} * \frac{\mathbf{RR}_{t-1} - \mathbf{ER}_{t-1}}{\mathbf{RR}_t - \mathbf{ER}_t}$$

Where:

CPI = Consumer price index (at previous year's prices)

ER = Effective interest rate

RR = Reference interest rate

To be able to compare FISIM series between any given years rather than only between pairs of consecutive years, chained volume indices are constructed; when they are multiplied by the FISIM nominal value in the reference year (2012), the result is a volume series at the previous year's chained prices.