

Methodology Guide

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Introduction

In December 2015 NISRA developed for the first time a balanced estimate of Northern Ireland Gross Domestic Product¹ (GDP) and its component parts using an international standard approach. In May 2016, NISRA published revisions to the previously published GDP estimates for 2012 and the Supply and Use Tables (SUTs) on which they are based. In addition NISRA developed a set of Input-Output Tables (IOTs) and multipliers which are used for a wide range of macroeconomic modelling and economic impact purposes. **This document describes the methodology used by NISRA to develop the SUTs, IOTs and multipliers.** The statistics are designated as “experimental” to reflect the fact that they are under development. Users should also adapt a cautious approach to the use of the multipliers which are prototype in nature.

A modern open economy like that of Northern Ireland engages in four basic economic activities:

- **Production** involves industries producing goods and services;
- **Consumption** represents purchases of goods and services by both industries and domestic final users comprising mainly households, and Central and Local Government;
- **Investment** includes the accumulation all capital transactions such as fixed investment expenditure and changes in the level of stocks; and
- **Trade** is the total value of external sales minus imports.

Measurement of these four activities is captured in the framework of the SUTs. In addition to the calculation of a balanced GDP the SUTs provide detailed data on the supply and use of commodities, inter-industry flows and the structure of the economy. The Input-Output Tables (IOTs) are derived from the SUTs. These tables provide a framework for modelling the impacts of changes to the domestic economy and are the pre-requisite for calculating a range of derived data such as multipliers used for economic planning, analysis and forecasting.

A [glossary](#) of National Accounting terms used throughout this paper is presented at the end of this document.

Experimental Statistics

This publication provides the first official statistics from the SUTs, many of which have never been available at the Northern Ireland level before. They are experimental statistics (see section 7) which are still undergoing evaluation and are subject to revision. Given that these are the first such official economic statistics produced for NI, users should adopt a cautious approach on their use. NISRA is therefore seeking feedback from users to inform the development of the statistics. Users should also consider the issues raised in the [Bean](#) independent review of UK economic statistics and any implications there may be for the NISRA economic accounts project.

¹ Please see the “[Structure of the NI Economy 2012](#)” publication for background information and initial results

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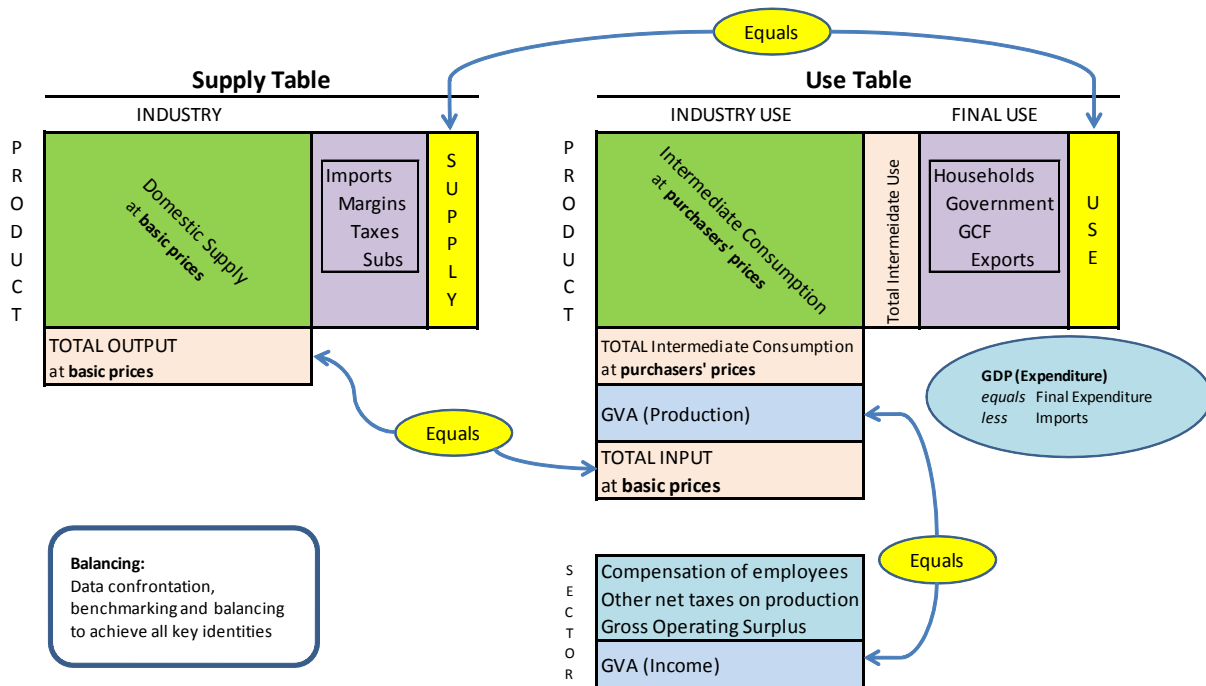
Overview of the Supply and Use framework

The Supply and Use framework

The Supply and Use tables (SUTs) provide a picture of the flows of products and services in the economy for a single year and are used to set the level of annual current price Gross Domestic Product (GDP). They show the composition of uses and resources across institutional sectors and the inter-dependence of industries in order to reconcile the production, income and expenditure approaches to the measurement of GDP.

The diagram below provides an overview of the SUTs showing how the framework provides a coherent picture of the economy.

Figure 1. Framework for a coherent picture of the economy



The 2012 SUTs were initially compiled by 114 industry and 114 product groupings. However, for the purposes of this report results are presented at 20 industry by 20 product groupings. Details of the industry and product groupings can be accessed [here](#). The 2012 SUTs are also published on a 32 industry by 32 product basis and can be accessed [here](#).

Tables 1 and 2 show the SUTs for NI for the reference year 2012.

The Supply table

The main body of the [Supply Table](#) (section 1) shows the monetary value of the goods and services produced by each industry in Northern Ireland. The value of industry output is based on NI official statistics surveys. Individual businesses are classified according to the products they make or the services they provide. If they produce more than one product they are classified according to their main or principal product. This means that most domestic production lies on the diagonal line on the supply table (ie the Construction industry mainly produces construction products). However, there are some off-diagonal elements in the table. These represent secondary production and by-products other than the principal product of the industry. The profile of products within a category is currently based on the UK supply patterns. The Supply table is relatively sparse because most producers make a limited range of products. Some values are not published due to the data being disclosive. The main body of the Supply table shows domestic supply at basic prices – ie the value received by the producers.

The columns on the right of the main body (section 2) show the change from the domestic supply at basic prices to the supply at purchaser's prices through the addition of imports of products, distributors' trade margins on products and taxes on products (e.g. VAT) less subsidies on products. Summing across these columns and those in the main body of the table gives the total supply of products at purchasers' prices i.e. the value paid by purchasers excluding any refundable VAT.

The Use table

The main body of the [Use table](#) (section 1) shows, for each industry classification, the intermediate consumption of products (IC). IC is the value of products used-up or altered by the production process. These estimates are currently based on UK purchasing patterns pending the completion of a NI Purchases survey. Again industries are shown in columns and products in rows.

The columns to the right of the main table (section 2) give the components of final use for products (eg purchases by the household sector, the government and exports). Both final use and intermediate use are valued at purchasers' prices and cover domestically produced and imported products.

The rows underneath the main body of the Use table (section 3) give the income components of Gross Value Added (GVA) for each industry grouping. These components are labour costs (wages and salaries plus associated employers' contributions e.g. national insurance and pension contributions), taxes on production (e.g. business rates) less subsidies on production, profits, etc² and gross operating surplus.

It can be seen that the Supply and Use Tables are balanced so that total supply equals total use for each product and industry. Balanced SUTs are the prerequisite for calculating GDP using the three different methods as discussed in subsequent sections.

² [United Kingdom Input-Output Analytical Tables, 2010](#)
Input-Output - Methodology Guide

Interpretation of the [Supply Table](#)

The supply table is presented by Regional Accounts Industry Group (32 industry group by 32 product group).

Reading down the columns of the first section of the supply table we can see the range of products produced by each industry. For example, the value of the total output of the chemicals and chemical products industry was £300m in 2012. The majority of this output was in the production of chemicals and chemical products (£243m). The remaining cells within this column are suppressed to avoid presenting disclosive figures.

For the substantial majority of industries, production of the industry's principal product and services accounted for over 80 per cent of their total output.

Reading across the rows in the table we can see that the total domestic value of chemicals and chemical products produced was £334m (see column headed domestic supply). A total of £243m of these goods were produced by the chemical and chemical products industry. In addition chemicals and chemical products to the value of £1,282m were imported in 2012.

Interpretation of the [Use Table](#)

The summary use table is presented by Regional Accounts Industry Group (32 industry group by 32 product group).

Reading down the columns of the first section of the Use table we can see the range of products used by each industry to produce goods and services.

For example, the chemicals and chemical products industry purchased a total of £155m goods and services to produce its own product. The main products purchased were chemicals and chemical products (£95m).

Reading across the rows we can see the destination of products and services. The table shows that £1,267m of chemicals and chemical products were used up by industries in the production of their products. The main industry using these products was the rubber and rubber plastics industry (£243m). In addition, £657m of chemicals and chemical products were used by the household sector and £335m of goods were exported.

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Supply and Use tables for NI 2012

The SUTs for NI for 2012 are presented below in summary format. More detailed tables are available [here](#).

Table 1: Summary Supply Table for NI, 2012

NI Supply Table 2012 £'m															
Industry Supply (at basic prices)															
Product	Agriculture	Production	Construction	Distribution, transport, hotels & restaurants	Information & communication	Financial and insurance	Real estate	Professional & support activities	Government, health and education	Other services	Total Domestic Supply	Imports of goods & services	Distributors' Trading Margins	Taxes (less subs) on products	Total Supply at purchasers' prices
Agriculture [1-3]	1,673	*	*	*	*	*	*	*	*	*	1,673	267	321	19	2,280
Production [5-39]	*	15,925	*	67	*	*	*	*	*	*	15,998	19,808	8,401	3,636	47,843
Construction [41-43]	*	58	4,910	107	*	*	*	51	*	*	5,182	7	-	166	5,354
Distribution, transport, hotels & restaurants [45-56]	*	754	*	12,927	*	*	*	*	*	70	13,851	2,683	(8,835)	519	8,218
Information & communication [58-63]	*	75	*	78	1,260	68	*	65	*	119	1,696	803	113	98	2,711
Financial & insurance [64-66]	*	*	*	*	*	2,842	*	*	*	*	2,850	54	-	202	3,106
Real estate [68.1-2-68.3]	*	*	*	*	*	142	3,662	*	*	*	3,914	48	-	23	3,985
Professional & support activities [69.1-82]	*	408	*	186	148	*	*	3,443	259	58	4,607	1,226	-	165	5,998
Government, health & education [84-88]	*	*	*	*	*	*	*	*	11,977	*	11,993	28	-	23	12,044
Other services [90-97]	*	*	*	54	*	*	*	*	*	4,211	4,303	179	-	143	4,625
Total Supply at basic prices	1,772	17,237	4,955	13,449	1,487	3,109	3,696	3,610	12,262	4,490	66,067	25,103	0	4,994	96,164

Table 2: Summary Use Table for NI, 2012

NI Use Table 2012
£'m

Product	Industry Use (at purchasers' prices)											Final Use (at purchasers' prices)						
	Agriculture	Production	Construction	Distribution, transport, hotels & restaurants	Information & communication	Financial and insurance	Real estate	Professional & support activities	Government, health and education	Other services	Total Intermediate Use	HH FCE	NPISH FCE	CG FCE	LG FCE	GCF	Exports	Total Use
Agriculture [1-3]	375	1,011	8	81	1	-	-	1	3	2	1,481	500	-	-	-	95	204	2,280
Production [5-39]	715	8,792	1,710	4,654	375	100	257	693	1,745	479	19,520	13,449	-	421	189	918	13,347	47,843
Construction [41-43]	61	144	886	167	5	53	99	10	114	43	1,583	24	-	450	-	2,140	1,157	5,354
Distribution, transport, hotels & restaurants [45-56]	31	390	85	1,216	63	216	37	81	284	71	2,474	4,470	-	-	-	(29)	1,303	8,218
Information & communication [58-63]	7	207	37	153	46	208	12	53	184	123	1,029	861	-	-	-	290	531	2,711
Financial & insurance [64-66]	27	447	60	130	23	385	105	40	116	73	1,405	1,322	-	-	-	1	378	3,106
Real estate [68.1-2-68.3]	2	41	32	112	2	53	5	7	101	13	369	3,253	5	-	-	50	309	3,985
Professional & support activities [69.1-82]	172	587	352	531	49	432	38	398	680	372	3,611	574	61	-	-	321	1,431	5,998
Government, health & education [84-88]	1	41	16	65	3	29	26	33	650	13	875	806	227	9,837	199	1	98	12,044
Other services [90-97]	1	15	1	19	23	19	0	11	323	620	1,034	1,660	649	827	222	(8)	242	4,625
Total Intermediate Consumption at purchasers' prices	1,392	11,674	3,187	7,127	589	1,495	579	1,327	4,200	1,810	33,380	26,919	942	11,536	610	3,778	18,999³	96,164
Taxes less subsidies on production	3	(148)	34	349	15	13	19	50	10	(337)	9							
Compensation of employees	128	3,238	1,017	3,384	746	743	127	1,173	7,251	578	18,386							
Gross operating surplus and mixed income	250	2,473	717	2,589	396	600	2,971	1,059	2,323	916	14,293							
GVA (at basic prices)	380	5,563	1,768	6,322	1,156	1,356	3,117	2,283	9,584	1,158	32,687							
TOTAL OUTPUT (INPUTS) at basic prices	1,772	17,237	4,955	13,449	1,745	2,851	3,696	3,610	13,784	2,968	66,067							

³ Exports in this framework exclude any taxes or duties due from GB residents.

3

Gross Domestic Product and the Supply and Use Tables

The Supply and Use framework allows GDP to be measured using three distinct approaches:

- the sum of all income generated by production within the economy (the **income** approach);
- the sum of all final expenditures within the economy (the **expenditure** approach); and
- the sum of all output within the economy (the **production** approach);

The SUTs are balanced so that supply equals use. Once this process is completed, each of the three methods of calculating GDP produces the same figure. An overview of how the three GDP approaches are calculated is presented below with further detail in the following sections.

Gross Value Added

Gross Value Added (GVA) is already produced by the Office for National Statistics for all the regions of the UK including Northern Ireland and in the past this represented the only available whole economy output statistic available for Northern Ireland consistent with international standards. It is measured at current basic prices, which includes the effect of inflation and excludes taxes (less subsidies) on products (for example, Value Added Tax). Regional estimates produced by ONS use the income approach, which involves adding up the income generated by resident individuals or corporations in the production of goods and services.

In order to maintain consistency with other official statistics, the NISRA SUT estimates of Gross Value Added (GVA) are constrained to the latest GVA estimates for NI published by the Office for National Statistics.

Gross Domestic Product

Gross Domestic Product (GDP) is one of the main indicators of economic activity/output used when comparing regions and countries. It is essentially comprised of:

GVA plus taxes (less subsidies) on products = GDP

The following tables illustrate the calculation of GDP measured using the three different approaches.

Table 3: Calculation of GDP(I) for NI, 2012

GDP Income approach 2012	£bn
Compensation of Employees (a)	18.4
Taxes, less subsidies, on production (b)	0.0
Gross Operating Surplus (c)	14.3
Gross Value Added at current basic prices (a+b+c)	32.7
Taxes less subsidies on products (d)	5.0
Gross Domestic Product at current market prices (a+b+c+d)	37.7

Table 4: Calculation of GDP(E) for NI, 2012

GDP Expenditure approach 2012	£bn
Household Final Consumption Expenditure	27.9
Government final consumption (GGFCE)	12.1
Gross Capital Formation (GCF)	3.8
External sales (including sales to GB)	19.0
Total final Use (a)	62.8
Total Imports (B) (including purchases from GB)	25.1
Gross Domestic Product at current market prices (a-b)	37.7

Table 5: Calculation of GDP(O) for NI, 2012

GDP Output approach 2012	£bn
Total output at basic prices (a)	66.1
Total intermediate inputs at purchasers' prices (b)	33.4
Gross Value Added at current basic prices (a-b)	32.7
Taxes less subsidies on products (c)	5.0
Gross Domestic Product at current market prices (a-b+c)	37.7

4

Compilation of the Supply and Use Tables

Each of the components of the SUTs are based on detailed analysis of a wide range of data sources covering the whole of the Northern Ireland economy. For many items direct estimates for Northern Ireland are not available and UK datasets are used to estimate values for Northern Ireland. The range of data sources used in the compilation of the SUTs for NI can be accessed [here](#).

Behind each element there are a series of matrices which collate the analysis of the available data into the National Accounts framework which then feeds into the respective section of the tables above.

As previously mentioned In order to maintain consistency with other official statistics, the NISRA SUT estimates of Gross Value Added (GVA) are constrained to the latest GVA estimates for NI published by the Office for National Statistics.

When initial estimates of the SUTs are produced the industry output for both the Supply and Use tables are equal. However, since we have used a range of different data sources the supply and use for each individual product are not equal and must be balanced. The balancing process is iterative with each evolving imbalance being reviewed after each stage. Throughout the process the quality of the data is considered when making adjustments.

The first step in balancing is to scrutinize the data and explore the large differences in supply and use for each product. The data is thoroughly checked back to ensure that any errors are corrected. This process includes credibility checks comparing the current year figures to the previous year's figures, and checks to investigate the effect of containing to Regional GVA.

The next step is to investigate the remaining large imbalances and make adjustments where it is reasonable to do so. Once all large imbalances are confronted implied imports and exports are calculated. Implied imports arise where demand is more than supply. Implied exports arise where there is an excess of supply over demand. As there is no data available on imports from GB these imbalances were checked to see if it was reasonable to assume that the imbalances were created by trade with GB.

When the manual adjustment has brought the tables into an almost balanced state the final adjustments can be made automatically. Once this is completed, each of the three methods of calculating GDP produces the same figure.

For further information on National Accounts and Supply and Use Tables the interested reader is referred to:

- [Eurostat Manual of Supply, Use and Input-Output Tables](#)
- [A Short Guide to the UK National Accounts](#)
- [Commentary on Supply and Use balanced estimates of annual GDP, 1997-2013](#)

Input-Output Tables

The SUTs serve not only statistical but analytical purposes, especially when they are transformed into symmetric Input-Output Tables (IOTs). The intermediate consumption table shows for each industry the use of goods and services which were necessary to produce the primary and the secondary outputs of an industry. For analytical purposes, assumptions about the relationship between inputs and outputs are required irrespective of whether the products have been produced by the primary industry or by other industries as their secondary output.

Compiling IOTs is an analytical step. For the transformation of SUTs into symmetric IOTs, various assumptions have to be made and sometimes adjustments are required. The format of symmetric IOTs can either be made on the basis of an industry by industry or product by product classification. The IOTs show separately the consumption of domestically produced and imported goods and services, providing a theoretical framework for further analysis of the structure of the economy, its composition and the effect of changes in final demand on the economy. These tables form an essential tool for economic modelling⁴.

For this publication NISRA have produced the IOTs on a product by product basis as this in keeping with ONS practice for the UK and is based on guidance within the Eurostat Manual which states⁵:

“Product-by-product input-output tables are *theoretically* more homogeneous in their description of the transactions than industry-by-industry tables, since a single element of the latter can refer to products that are characteristic in other industries. This supports the assumption that *in practice* product-by-product tables generally are better suited for many types of input-output analysis.”

Overview of transforming SUTs to Basic Prices

The SUTs consist of two matrices, which bring together the production, income and expenditure approaches to measuring GDP. These are the pre-requisite for the production of IOTs; the first step in transforming the SUTs to IOTs is to transform them from **purchasers’** prices to **basic** prices. It is noted that total Supply and total Use (the last columns in each table) present values in purchasers’ prices which represent the prices paid by purchasers. They include transport costs, trade margins and taxes (unless the taxes are deductible by the purchaser from their own tax liabilities). Please refer to the glossary at the back of the report for further information.

At a high level the process is as follows:

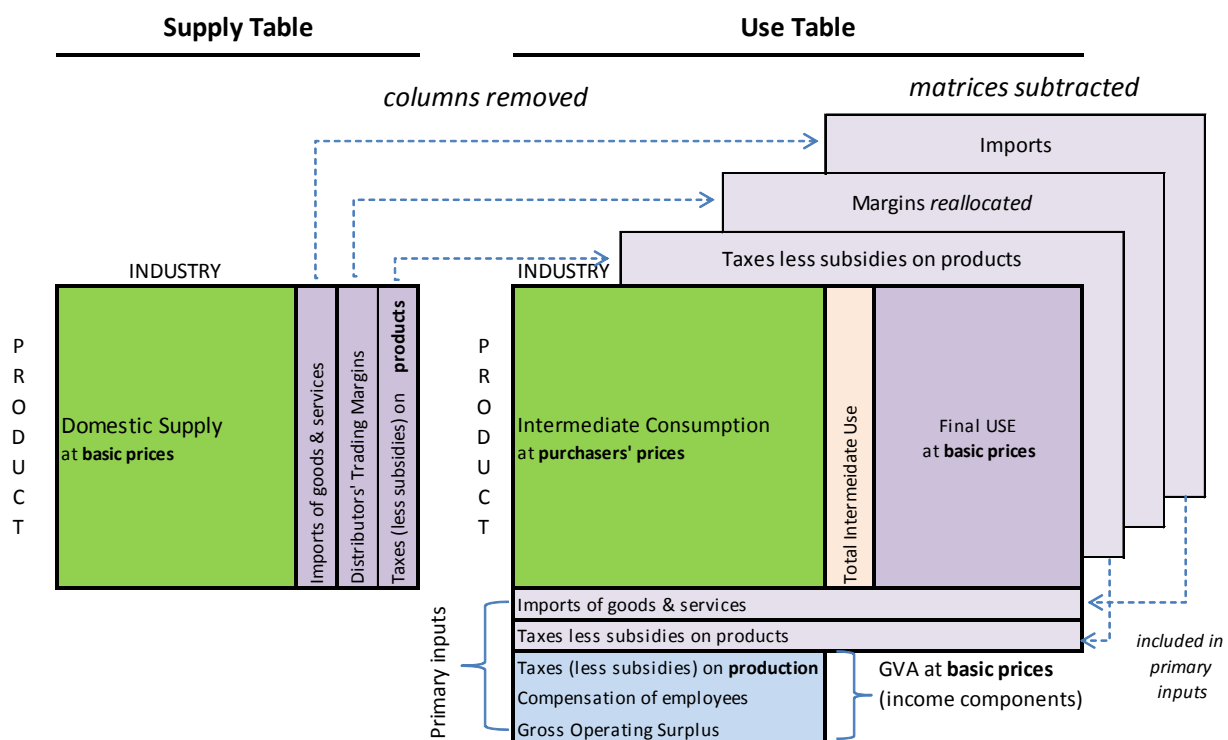
⁴ [United Kingdom Input-Output Analytical Tables 2010](#); pg 3

⁵ [Eurostat Manual of Supply, Use and input-Output Tables](#); pg 301

1. The first step in generating the symmetric tables is to adjust for imports, margins and taxes less subsidies on products to transform purchasers' prices to basic prices.
2. For the Supply table this is a relatively simple task, because the components to be removed are contained in the columns to the right of the main body of the table.
3. However for the Use table the task is more complicated as it requires the construction of a use table for each of the components to be adjusted.
4. The sum of these use matrices is called the transition matrix; it is subtracted from the Use table at purchasers' prices to give the Use table at basic prices. With the exception of distributors' trade and transport margins, these components are shown as separate rows in the primary inputs, leaving the industry totals unchanged. This is not needed for margins as they are reallocated across the goods consumed.

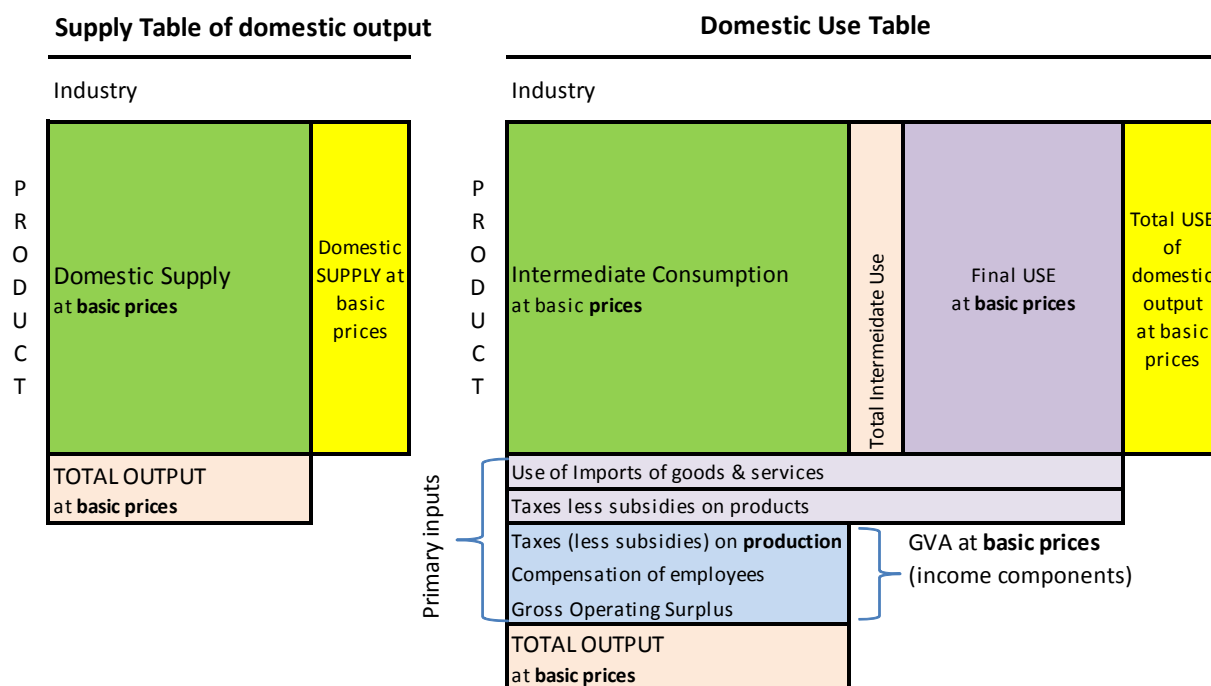
The transition from purchasers' prices to basic prices is depicted by figure 2

Figure 2. Transition from SUTs at purchasers' prices to basic prices



5. After removing imports, taxes and subsidies, and reallocating margins we are left with Domestic Supply and Use Tables at basic prices as demonstrated in figure 3. From here the tables can be transformed to industry-by-industry or product-by-product analytical tables.

Figure 3. The outcome of the SUT transition to basic prices⁶



Production of the product-by-product IOT

The IOT is based on the SUTs converted to basic prices (as above) and describes how products (and primary inputs) are used to produce further products and to satisfy final use. The IOT is constructed by transforming the industry groupings to product groupings so tables become:

- The transformed (product by product) Domestic Supply table at basic prices shows the outputs of the production process of each product; and
- The transformed (product by product) Domestic Use table at basic prices shows the inputs of the production process of each product and each component of final demand.

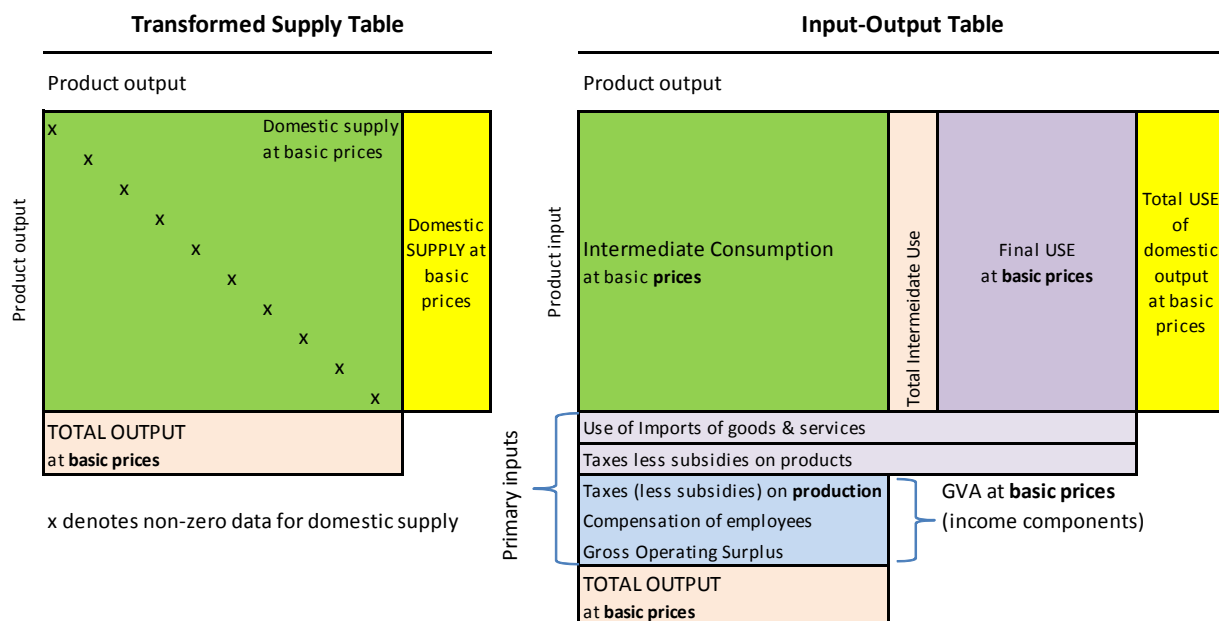
As the output of the production process of a product is simply that product, **the transformed Domestic Supply table is a diagonal matrix**. The non-zero elements of this matrix are simply the total domestic supply of each product (at basic prices).

The **transformed Domestic Use table at basic prices is the Input-Output Table**. Due to the fact that the production of a product may require many inputs (such as raw materials, energy, office costs, accountancy, legal fees, etc) **the IOT is not diagonal**.

These transformed tables are depicted in figure 4 below.

⁶ Source: Based on notes within the United Kingdom Input-Output Analytical Tables 2010 publication and notes provided by Sanjiv Mahajan

Figure 4. Transformed product by product tables



Please note that in producing the PxP input-output table assumptions must be made regarding how products are produced for each industry in terms of the inputs for the various industry groups. The Eurostat manual⁷ identifies four basic transformation models which are based on the following assumptions:

- 1. Product technology assumption**
Each product is produced in its own specific way, irrespective of the industry where it is produced.
- 2. Industry technology assumption**
Each industry has its own specific way of production, irrespective of its product mix.
- 3. Fixed industry sales structure assumption**
Each industry has its own specific sales structure, irrespective of its product mix.
- 4. Fixed product sales structure assumption**
Each product has its own specific sales structure, irrespective of the industry where it is produced.

NISRA has produced the NI IOTs using a hybrid technology assumption that combines the product technology assumption and the industry technology assumption to avoid negatives in product-by-product input-output tables. This is in keeping with how the ONS and the Scottish Government produce their IOTs.

This approach combines models based on two possible assumptions relating to secondary production by industries, i.e. the off-diagonal elements of the supply table. In producing secondary products, we either assume that there will be no difference in the structure of inputs required from that shown by the industry (an Industry Technology Assumption), or we can assume that in producing secondary outputs an industry would need to use the inputs typically shown by the main industry producing the product in question (a Product Technology Assumption).

⁷ [Eurostat Manual of Supply, Use and input-Output Tables](#); Chapter 11, pg 297
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Multipliers derived from Input-Output tables

A key output from the Input-Output analysis is the production of multipliers which help to analyse direct relationships within the economy.

The Leontief Inverse provides the central tool for multiplier analysis, which studies the effect of changes in final demand on output and related aspects of the economy. These effects have three different economic drivers:

- **Direct:** This is the immediate effect caused directly by the change in final demand e.g. if there is an increase in **final demand** for a particular product, we can assume that there will be an increase in the output of that product, as producers react to meet the increased demand;
- **Indirect:** This is the subsequent effect caused by the consequent changes in intermediate demand i.e. as producers increase their output, there will also be an increase in demand on their suppliers and so on down the supply chain;
- **Induced:** This is the effect attributable to the ensuing change in compensation of employees and other incomes, which may cause further spending and hence further changes in final demand e.g. as a result of the direct and indirect effects the level of household income throughout the economy will increase as a result of increased employment. A proportion of this increased income will be re-spent on final goods and services: this is the **induced effect**.

There are two main types of multiplier effects.

Supplier linkage effects or Type I multipliers cover direct and indirect effects only. They estimate the impact on the supply chain resulting from a producer of a certain product increasing their output to meet additional demand. In order to meet the additional demand the producer must in turn increase the goods and/or services they purchase from their suppliers to produce the product in question. These suppliers in turn increase their demands for goods and services and so on down the supply chain. These Type 1 multipliers are also referred to as direct and indirect effects. GVA and Output multipliers are **Type 1 multipliers**. These multipliers *underestimate the effect on the economy as they do not estimate induced effects*.

Type II multipliers cover induced effects as well, under the implicit assumption that final consumers do not change their final consumption patterns in response to changes in income. There is also a lack of consistent employment numbers so it has not been possible to produce robust Type II multipliers at this stage.

Different multipliers measure the effect on different policy targets:

Product based Output Multipliers

Output multipliers measure the effect of one unit change in the final demand of a specific product. The output multiplier for a product is expressed as the ratio of direct and indirect output changes to the direct output change due to a unit increase in final demand.

Multiplying a change in final demand (direct impact) for an individual product's output by

that product's Type I output multiplier will generate an estimate of direct + indirect impacts upon output throughout the NI economy.

Product based GVA Multipliers

Output multipliers measure the effect on total GVA of one unit change in the GVA of a specific product. If you have the change in GVA for the product the GVA multiplier can be used to calculate the change in GVA for the economy as a whole.

For Northern Ireland employment multipliers have not been produced due to the lack of the data for employment numbers coherent with the balanced compensation of employees data for 2012 (similar to what is produced for the UK).

Product based Output multipliers and Product based GVA multipliers have been calculated and can be accessed [here](#). Note that the multipliers produced to date relate to products. The multipliers *also underestimate the effect on the economy as they do not estimate induced effects*. Given that these are the first such official economic statistics produced for NI, users should adopt a cautious approach on their use. For further information users should also check the use of equivalent multipliers from other sources.

An example of how the multipliers can be used to estimate the effect of an increase in demand for a given product is presented below.

Example of how to apply output and GVA multipliers

The direct impacts upon an industry are often presented in monetary terms, i.e. increased exports or a change in Government spending. The following example uses the hypothetical scenario of an increase in demand of £5 million for "Basic metals and metal products" .

The effect on output (using product by product based output multiplier)

The direct impact of an increase in demand of "Basic metals and metal products" will be a requirement to increase the total output of this product by £5 million to meet this additional final demand.

To estimate the indirect effect on the industries that produce these products, we multiply the direct impact (£5m) by the Type I product output multiplier for this product grouping (**1.45**) giving a **total of direct plus indirect impacts of £7.25 million**.

The effect on GVA (using GVA product based multipliers)

The direct impact on total GVA caused by an increase of £5m in the GVA of products in the "Basic metals and metal products" group is an increase of £5m

To estimate the indirect effect on the industries that produce these products, we multiply the direct impact (£5m) by the GVA multiplier for this product grouping (**1.50**) giving a **total of direct plus indirect impacts of £7.50 million**

Please note that Type 1 multipliers underestimate the effect on the economy.

Experimental statistics

The statistics will remain classified as experimental statistics until user feedback indicates that they are useful and credible. The quality of the current statistics is restricted because of the lack of up to date information on purchases made by businesses for use as part of their production process. It is hoped that new purchases data will be available in 2017.

Given that these are the first such official economic statistics produced for NI, users should adopt a cautious approach on their use.

Next steps

NISRA is making these experimental statistics available so that users and stakeholders can be involved in their development. NISRA has engaged extensively throughout the project with expert users of NI economic statistics whose views have helped shape the development of the SUTs. Users include DETI, DFP and DARD economists, the Ulster University Economic Policy Centre and a number of NI economic commentators and consultants.

NISRA hope to receive informed feedback which will improve the quality and value of the statistics. In addition, this release is to help users become aware of the work undertaken by NISRA in the development of the Supply and Use framework for Northern Ireland.

NISRA plan to publish the SUTS for the 2013 reference year in September 2016 and the corresponding IOTS by the end of 2016. This release of IOTs focuses on Product by Product IOTs, however further work will be undertaken to investigate the production of IOTs on an Industry by Industry basis to allow multipliers to also be produced on this basis. In addition, there will be further investigation of the potential to develop consistent employment numbers to enable the development of employment multipliers.

NISRA plans to have these statistics assessed against the Code of Practice for Official Statistics which is required to gain National Statistics status. It is likely that the statistics will not be put forward for assessment until the new purchasing data is incorporated.

A glossary of key elements discussed in this paper is presented below. Further information on National Accounts concepts can be found in "[A Short Guide to the UK National Accounts](#)" paper published by the ONS.

- **Basic prices** are the preferred method of valuing gross value added and output. They reflect the amount received by the producer for a unit of goods or services minus any taxes payable plus any subsidy receivable on that unit as a consequence of production or sale (that is the cost of production including subsidies). As a result the only taxes included in the basic price are taxes on the production process – such as business rates and any vehicle excise duty paid by businesses – which are not specifically levied on the production of a unit of output. Basic prices exclude any transport charges invoiced separately by the producer.
- **Compensation of employees (COE)** is the sum of all employment income, including wages and salaries, employers' pension and National Insurance contributions, bonuses and benefits in kind.
- **Exports** are goods and services produced in NI purchased by units in the rest of the world (including external sales to GB); conversely **imports** are goods and services produced in the rest of the world and purchased by NI residents. These do not include financial flows which form part of the balance of payments, which is discussed in a later chapter. The total of **exports minus imports** is known as the **balance of trade**.
- **Government final consumption expenditure** Includes local authorities and central government. This covers pay of employees, procurement of goods and services and capital consumption.
- **Gross capital formation** (which can be thought of as investment) is made up of three parts.
 - i. The first (and largest) is **gross fixed capital formation (GFCF)**, which relates to the purchase (and disposal) of fixed assets. Fixed assets are items which contribute to a productive process for more than a year and are not used up in the process of production. Examples of such assets are buildings (including dwellings), vehicles, plant and machinery, computer systems and aircraft.
 - ii. The second component is **changes in inventories**, which is made up of materials and fuel, work in progress and unsold finished goods.
 - iii. The third component is **acquisitions less disposals of valuables**. Valuables are defined as goods which do not contribute to a process of production but are a store of value for the owners. These include jewellery, precious metals, works of art and antiques.
- **Gross operating surplus** is officially defined as the balance between GVA and labour costs paid by producers. In effect, it is equal to the sum of gross trading profits and income earned through the ownership of buildings (rental income).
- **Household final consumption expenditure** comprises all the goods and services purchased and consumed by households. This will include food, alcohol, clothing, cars, rental on houses and holidays, to name but a few items. It does not include the

purchase of houses or payment of interest on loans, which are expenditure on assets and property income respectively, and not consumption expenditure).

- **Intermediate consumption** is defined as all goods and services used up or transformed in a process of production. This includes raw materials, power and fuel, rental on buildings and business services such as advertising, recruitment consultancy and cleaning. It specifically excludes staff costs and capital investment which are handled elsewhere in the accounts.
- **Mixed income** is the income from self-employment. It recognises that the income of the self-employed is a combination of wages (COE) and profits (GOS), but it is not realistic or appropriate to split it into these two components
- **NPISH Final Consumption Expenditure** is all consumption by institutions which provide goods and services; either free or below the market price.
- **Purchasers' prices** are the prices paid by purchasers. They include transport costs, trade margins and taxes (unless the taxes are deductible by the purchaser from their own tax liabilities).

Additional Reading

Further information on the background to the NISRA project to develop the Supply and Use Tables can be found on our [website](#).

Other useful sources of information relating to National Accounts and the Supply-Use framework include:

- [European System of National and Economic Accounts \(ESA 2010\)](#)
- [ONS Series of National Accounts articles](#)
- [Scottish Government Input-Output Methodology Guide](#)