Northern Ireland Quarterly Retail Sales Index Methodology Paper

Theme: Economy
Geographical Area: Northern Ireland

Background
The quarterly Index of Services (IOS) was first published for Northern Ireland (NI) on 18 May 2005 as an experimental index. It provides a measure of growth in the output of the private sector service industries in NI (this is defined as SIC07 sections G to S). Following an assessment by the UK Statistics Authority, the NI IOS was designated as a National Statistic on 5 August 2011.

On 14 February 2022, in response to stakeholder demand and after consultation with key users, NISRA's Economic and Labour Market Statistics (ELMS) made the decision to publish the Northern Ireland Quarterly Retail Sales Index (RSI). The retail sales sector is a subset of the Index of Services and refers to SIC 47 (Retail trade, except of motor vehicles and motorcycles).

The publication date was pre-announced on 15 January 2022 and a blog explaining the strengths and limitations of RSI was published on the NISRA website on 25 February 2022.

The experimental Northern Ireland Quarterly Retail Sales Index for Northern Ireland was first published on Wednesday 16 March 2022 and is scheduled to be routinely published at the same time and date as the Index of Services and the Index of Production (IOP).

Experimental Statistic
In line with the Guide to Experimental Statistics produced by ONS, the Northern Ireland RSI has been produced as an Experimental Statistic, as it is still in the testing phase and continues to be reviewed and developed.

As the RSI is an Experimental Statistic, ELMS are keen to hear feedback from users. Any comments should be sent to qbshelp@finance-ni.gov.uk

Status of figures in IOS and RSI bulletins
The base year of the NI IOS and RSI is updated in line with ONS. All figures are published to one decimal place. Results are based on unrounded figures and may not agree with the published constituent parts.

Methodology

The RSI currently mirrors the [IOS methodology](#) as it is a subset of IOS and refers to SIC 47 (Retail trade, except of motor vehicles and motorcycles).

Sample
The RSI sample is a subset of the overall IOS sample. The IOS sample size is approximately 3,600 businesses within the private sector services industries, drawn on a SIC07 basis; comprising both census and sample businesses. The stratified sample of service industries is selected directly from the Inter-Departmental Business Register (IDBR), stratifying businesses by industry and business size. The sample consists of a census of dominant businesses and a Neyman stratified random sample of the remaining businesses. The census element consists of all businesses employing 100 or more employees and those employing 0 to 99 employees and having an annual turnover of £10 million or more. It is desirable to include these high turnover low employment businesses in the sample in order to provide a more comprehensive picture of the overall economy. This sample has been designed to give sufficiently accurate results whilst keeping the costs to businesses to a minimum.

The IOS sample was refreshed for Quarter 1 2014 and was drawn on a SIC07 basis. The sample was boosted from around 1,600 businesses and it is now approximately 3,600 companies.

The Retail Sales Index series starts from Quarter 1 2014, following this sample boost which ensured a more robust and high quality sample at SIC 47 level. The current RSI sample size is approximately 360 businesses, which accounts for 66% of known retail turnover.

Data collection and validation
Survey forms are issued quarterly, immediately after the period to which they relate. For example, forms are issued in October asking for information relating to July to September.

Data validation is carried out ensuring that data falls within the expected limits, contacting the company where appropriate for clarification.

Imputation
Imputation is used to improve the accuracy of estimates by reducing non-response bias. Imputed values for the RSI are calculated based on the business's previous returns and consideration of trend within the strata that the business is in. All missing or unusable census businesses are imputed.

Weighting
IOS and RSI are calculated by weighting together industry level indices that describe the activity of an industry sector using the SIC. This is done using relative shares of regional GVA on an annual basis and is in line with recommendations from ONS. In 2019 the SIC 47 GVA was estimated to be 18.3% of the total IOS GVA.

Chain-linking

The NI IOS and RSI are annually chain-linked (chain-linking involves the linking of growth estimates between different time periods in order to produce a continuous time series) using private sector GVA estimates derived from regional accounts using the fourth quarter of the preceding year as the link period. Inaccuracies caused by the assumption of a stable relationship between GVA and turnover are reduced using this methodology. When annual weights are used the assumption only has to be maintained from one year to the next year. A paper detailing the chain-linking process has been published by ONS.

Index numbers

An index number is a convenient form of expressing a series in a way that makes it easier to see changes in that series. The numbers in the series are expressed relatively, with one number in that series chosen to be the 'base' (usually expressed as 100) and other numbers being measured relative to that base. Index numbers have the advantage that they allow different types of data to be combined on a consistent basis, e.g. deflated current price data with volume data. The aim of RSI is to provide a reliable indicator of short-term changes in the output of the retail sales sector. Index numbers are a very good way of communicating this message. For example, an RSI quarterly value of 104.4 means that the level of output for that quarter is 4.4% higher than the base year value of 100. The NI RSI is a Laspeyres volume index. For further information on this please see the Northern Ireland Index of Services Methodology paper.

Seasonal adjustment

The index numbers in this statistical bulletin are all seasonally adjusted. This aids interpretation by removing annually recurring fluctuations, for example due to holidays or other regular seasonal patterns. All IOS and RSI time series are checked on an annual basis using X-13 ARIMA SEATS for evidence of seasonality, and those series where seasonality is detected are adjusted using X-13 ARIMA SEATS in order to obtain a clear picture of the general trend. The most recent review of the RSI seasonal model was implemented in June 2021 with the assistance of ONS. The seasonal adjustment model will continue to be reviewed.

The figures presented in this publication are calculated using the X-13 ARIMA SEATS method of seasonal adjustment. ONS have provided a guide to seasonal adjustment.

Revisions

Initial RSI estimates are provisional and subject to change. The RSI has a revisable period of the 4 previous quarters from the current estimate. These revisions occur primary in light of late responses to surveys and administrative sources. From Quarter 1 2022 the RSI will produce a "Revisions Triangle" – this is a summary table which indicates the size and direction of revisions. The table presents a summary of the differences between the first estimates published and eventually those published 3 years later for the same reference period.

Publication of results on a SIC07 basis

A SIC was first introduced into the UK in 1948 for use in classifying business establishments by the type of economic activity in which they are engaged. More information on SIC07 can be found in the UK Standard Industrial Classification of Economic Activities 2007 guidance and the Blue Book 2011.

Table 1.1 below shows where SIC 47 falls within the SIC07 section covered by the NI IOS. Table 1.2 overleaf looks at the NI retail sector in terms of SIC3, which is the next level of detail, and the representativeness of the NI retail sample in terms of frozen turnover (an annual figure for each business and is an indicative value for expected/ anticipated turnover for the year).

Table 1.1   RSI SIC 47 and Broad Industry Sector

Broad Industry Group / Sector	Section		SIC	Description
G&I - Wholesale, retail, repair, Accommodation & food services	G	Wholesale and retail trade; repair of motor vehicles and motorcycles	45	Wholesale and retail trade and repair of motor vehicles and motorcycles
			46	Wholesale trade, except of motor vehicles and motorcycles
			47	**Retail trade, except of motor vehicles and motorcycles**
	I	Accommodation and food service activities	55	Accommodation
			56	Food and beverage service activities

Table 1.2   NI Percentage of Businesses in Retail Sector and Percentage of Frozen Turnover in Retail Sample, by SIC3

SIC3	SIC3 Description	Percentage of Businesses in Retail Sector	Percentage of Frozen Turnover in Retail Sample
471	Retail sale in non-specialised stores	16.4%	47.5%
472	Retail sale of food, beverages and tobacco in specialised stores	12.9%	5.1%
473	Retail sale of automotive fuel in specialised stores	4.5%	7.5%
474	Retail sale of information and communication equipment in specialised stores	2.4%	4.7%
475	Retail sale of other household equipment in specialised stores	16.9%	10.5%
476	Retail sale of cultural and recreation goods in specialised stores	6.0%	2.5%
477	Retail sale of other goods in specialised stores	32.5%	20.2%
478	Retail sale via stalls and markets	0.2%	0.0%
479	Retail trade not in stores, stalls or markets	8.0%	2.0%