



## Experimental Statistics Development Paper

# ECONOMY AND LABOUR MARKET

## Development of a Primary Income Account and Gross National Income (GNI) for Scotland

Release Date: 19 December 2018

### Overview

This paper provides an update to the first set of annual GNI estimates for Scotland which were published on 2 May 2018. The work incorporates the latest updates to the various data sources used to estimate GNI for Scotland.

No changes have been made to the methodology and, as in the previous release, the main purpose of the paper is to set out this methodology and to seek the views of users. The main reasons for producing an update at this time are to incorporate the latest available data and to demonstrate that the methodology can be used to provide regular annual estimates for Scotland.

The results themselves, which include revised figures for 1998-2016, a new GNI estimate for 2017 and new financial year estimates for 1998/99 to 2017/18 (available in the associated online tables), are primarily for the purpose of illustrating the outcome of the methodology. They are provisional and experimental and will be revised and updated when further developments are made.

The estimates are consistent with Scotland's Quarterly National Accounts for 2018 Q2 (published on 31 October 2018), the UK Pink Book 2018 (published 31 July 2018) and the UK Economic Accounts for 2018 Q2 (published on 28 September 2018).

The next phase of this project will be to consult users and to refine the data sources and methods underpinning the model. As such, future updates will be timed to incorporate methodological improvements and/or to take account of annual updates to the Pink Book data which underlies the estimates. More information on the proposed approach can be found in the [Next Steps](#) section of this paper.

This work complements the Experimental Statistics Development Paper "Development of Supply & Use Satellite Accounts for Extra-Regio Economic Activities"<sup>1</sup> published on 22 February 2018. All the GNI estimates in this paper relate to the same geographical definition of Scotland i.e. including Scottish adjacent waters and the underlying continental shelf, plus an illustrative population share of UK overseas enclaves.

Further information about the continuing development of Scottish economic statistics can be found in the Scottish Economic Statistics Plan for 2018-19<sup>2</sup>.

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<sup>1</sup> <http://www.gov.scot/Topics/Statistics/Browse/Economy/SNAP/satelliteaccounts>

<sup>2</sup> <https://www.gov.scot/Topics/Statistics/Browse/Economy/ScotStat/Planning/SESP2018-19>

## Introduction

Gross National Income (GNI) is an adjustment to the conventional GDP measure of economic activity to take account of financial flows into and out of the country due to ownership. For example, where profits made by Scottish companies outside Scotland are repatriated, this would be included in an estimate of Scottish GNI but is not included in Scottish GDP. Likewise, when non-Scottish companies repatriate profits made in Scotland, this is included in Scottish GDP but would be omitted from estimates of Scottish GNI.

Many users of Scottish economic statistics have suggested that estimates of Scottish Gross Domestic Product (GDP) should be complemented by estimates of GNI.

The Scottish Government first published a one-off estimate of Scottish GNI in 2013<sup>3</sup>. This work, which provided an estimate of GNI for 2010, was published as experimental statistics.

The current project re-establishes this work as an experimental series which can be updated regularly. It employs similar methods and assumptions but uses an updated model which allows for more timely results and more regular updates. The model is based on quarterly data, with the majority of the UK data taken from the quarterly UK Economic Accounts and much of the Scottish data used for apportionments consistent with the Quarterly National Accounts for Scotland (QNAS) publication.

The first output of the project was the Experimental Statistics Development Paper 'Development of a Primary Income Account and Gross National Income (GNI) for Scotland'<sup>4</sup> published on 2 May 2018. The main purpose of this paper was to seek user views and to set out provisional, experimental results.

This release provides an update to that paper. It makes use of updated and revised data sources meaning that it includes revisions to the previously published figures for 1998-2016 along with a new 2017 estimate. New financial year estimates have also been published in the associated online tables.

The methodology has not changed and the primary purpose of the paper remains to seek user feedback on the approach being taken whilst also setting out provisional, experimental results.

All results in this paper are designated as **experimental statistics**. These are defined as new official statistics undergoing development and testing. The methods, data sources and results in this paper are open for ongoing consultation with users, and we welcome feedback on all aspects of the release. All users should be aware that **the results in this paper are provisional and will be revised and updated** when further developments are made. They should therefore be used with appropriate caution at this time.

Note that much of the attention in this project to date has been for the years from 2010 onwards. The results prior to 2010 have been derived using similar apportionment techniques, however these estimates have not had the same levels of scrutiny. Care should therefore be taken when analysing longer term trends.

We welcome any thoughts or views on this analysis.

Please contact us at [economic.statistics@gov.scot](mailto:economic.statistics@gov.scot)

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<sup>3</sup> Further details about these estimates and underpinning methods may be found here - <http://www.gov.scot/Topics/Statistics/Browse/Economy/SNAP>

<sup>4</sup> <https://www.gov.scot/Resource/0053/00535006.pdf>

or write to:

The Scottish Government  
National Accounts Unit  
Office of the Chief Economic Adviser – Economic Analysis  
St Andrew's House  
Regent Road  
Edinburgh  
EH1 3DG

You can also follow up on Twitter to keep up to date with the economic statistics and wider economic analysis published by the Scottish Government - <https://twitter.com/scotgovocea>

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## Background

### Building on Previous Work

An exercise was carried out in 2013 to estimate a Primary Income Account and Gross National Income for Scotland for 2010. This was an ad-hoc experimental publication.

Three documents were published as part of the 2013 project – initial results, a methodology guide and a peer review document. All of these can be found on the Scottish Government website <http://www.gov.scot/Topics/Statistics/Browse/Economy/SNAP>.

The work had an extensive peer review carried out by Martin Kellaway, a former National Accounts expert in the Office for National Statistics (ONS). Many of his recommendations were adopted and reflected in the published methodology note (see link above) and have subsequently been adopted in the current work. Some of Martin's suggestions for further work will be considered more fully in the next stages of this exercise, balancing quality improvements with their resource implications.

The current project re-establishes this work employing similar methods and assumptions but using an updated model which allows for more timely results and more regular updates. The first output of the project was the Experimental Statistics Development Paper 'Development of a Primary Income Account and Gross National Income (GNI) for Scotland'<sup>5</sup> published on 2 May 2018.

## Objectives

The principal aim of this project is to develop the statistical framework and methods for extending Scotland's national accounts to include estimates of Gross National Income (GNI) in addition to Gross Domestic Product (GDP) for the wider geographical area of Scotland (i.e. including the onshore and offshore economies). Specific objectives are:

- To apportion the UK Primary Income Account to Scotland – estimating the financial flows between Scotland and the (non-UK) Rest of the World (ROW).
- To estimate Scottish flows to and from the Rest of the UK (RUK).
- To estimate the secondary flows i.e. between Scotland and the ROW via RUK.
- To develop this work as a step in a wider project, along with the Whole of Scotland Economics Accounts Special Project, to try to ultimately estimate Scotland's Balance of Payments.

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<sup>5</sup> <https://www.gov.scot/Resource/0053/00535006.pdf>

## **Producing GNI Estimates for Scotland**

To establish GNI for Scotland we need to construct a Primary Income Account which provides the flows needed to adjust GDP to GNI.

### **Primary Income**

Primary income represents the income of institutional units (such as households, companies etc.) from their contribution to the production process or for the provision of financial assets and renting natural resources to other institutional units.

To estimate GNI from GDP the following flows need to be considered:

#### **Compensation of Employees (CoE)**

This includes wages and other benefits received by workers who cross national borders to reach their place of normal work or to seasonal or short-term workers who are resident in the country for less than a year.

#### **Earnings on Direct Investment**

This covers earnings made when Scottish residents have an equity interest of 10% or more in a foreign company (or vice versa). Changes in the stock of direct investment (i.e. mergers and acquisitions, etc.) are not included in GNI.

#### **Earnings on Portfolio Investment**

This includes earnings from investment in equity securities (shares) or debt securities where the investor owns less than 10% of the enterprise. This also includes UK Government debt interest payments to non-residents. Changes in the stocks held as portfolio investment (i.e. purchase or sale of shares, etc.) are not included in GNI.

#### **Earnings on Other Investment**

Other Investment primarily covers interest received from deposits or paid on a loan where one of the parties is not resident in Scotland.

#### **Other Primary Income**

Taxes paid (and subsidies received) on production from non-residents (e.g. EU import duties and VAT and receipts of EU production subsidies). Taxes on income and wealth, and the majority of EU budget contributions and funding are not included in GNI.

#### **Reserve Assets**

Interest received on official foreign exchange reserves and relating to the International Monetary Fund (IMF).

### **Challenges in Developing a Primary Income Account for Scotland**

Whereas the System of National Accounts (SNA)<sup>6</sup> provides guidance for countries to produce sub-national GVA or GDP statistics, there is no guidance or requirement in either the SNA or Balance of Payments<sup>7</sup> (BOP) for the equivalent production of sub-national GNI. We are unaware of any precedent for GNI being produced for sub-national areas (for example, whereas regional accounts for GDP are commonplace, there are no Gross

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<sup>6</sup> <https://unstats.un.org/unsd/nationalaccount/sna.asp>

<sup>7</sup> <https://www.imf.org/external/pubs/ft/bop/2007/bop6comp.htm>

Regional Income statistics or similar). This highlights the boldness and novelty of this work, but also underlines why there are conceptual and practical challenges leading to uncertainty in the results.

Developing a Primary Income Account for Scotland involves several challenges not present in the production of estimates such as GDP for Scotland. Firstly, a different set of concepts is involved: in producing GDP, the focus is on collating information which measures the economic activity in Scotland, regardless of who is undertaking it. Production of a Primary Income Account requires the measures of economic activity to be disaggregated into activity undertaken by residents and non-residents (or businesses owned by non-residents); it therefore requires another level of information to be added to the data which inform GDP. In addition, a Primary Income Account requires information to be collected on the economic activities of Scottish residents, and the activities of any business that they own, in foreign countries. This information is not required in the production of GDP.

In producing a Primary Income Account for Scotland, there is the additional difficulty that UK firms reporting their activity in the UK or overseas are not required to report whether or not they are Scottish firms. This requires further work looking at which UK firms can be considered to be Scottish firms. Finally, there is the problem that for some income flows, no or only limited Scottish data are collected – such as when an income flow is assigned to the UK headquarters, the company could then reinvest the earnings in different sites. Where the ONS undertakes surveys of UK companies, Scottish companies are included in these surveys, but as the surveys are designed to represent the whole of the UK, the coverage in Scotland may be smaller than might be desired. These surveys also tend to only cover interactions between UK residents and foreign residents. Data on financial flows between Scotland and the rest of the UK (RUK) are limited.

Taken together, the challenges mean that it is inevitable that the estimates in the Primary Income Account will be subject to uncertainty. It also means that a range of different data sources and methodologies have to be used. For most flows with the rest of the world (ROW), Scotland is allocated a share of the UK total, based on an apportionment method. Direct Investment flows with ROW have been derived from company level data, and these, which include flows associated with the North Sea, are considered the best quality estimates in the analysis. Flows with RUK have been estimated at the aggregate level from existing National Accounts and UK and Scottish business statistics data.

## Key data sources and model parameters

The headline Primary Income Account figures for the UK are taken from two sources:

- Quarterly high-level results from the UK Economic Accounts<sup>8</sup>; and
- Annual detailed breakdowns from the UK Pink Book<sup>9</sup>.

These provide the starting point for the estimate of Primary Income flows between Scotland and ROW.

There are four main data sources used in estimating Scotland's Primary Income Account:

- ONS Foreign Direct Investment (FDI) Survey
- Annual Survey of Hours and Earnings (ASHE)
- ONS Regional GVA(B)
- Scottish Government GDP/Quarterly National Accounts Scotland

Other estimates are derived by using various apportionment methods, based on a range of sources including:

- ONS and NRS – mid-year population estimates
- Oil and Gas UK – Demographics Report
- FAME database
- Companies House databank
- London Stock Exchange – market capitalisation data
- ONS – Share Ownership survey
- Debt Management Office – debt holdings
- SG – EU subsidies

Further details are set out in Annexes A and B.

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<https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/datasets/unitedkingdomeconomicaccountsbalanceofpaymentscurrentaccount> (See table B4 - seasonally adjusted and table B4A – non seasonally adjusted)

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<https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/bulletins/unitedkingdombalanceofpaymentsthepinkbook/2018> (See Chapter 4 - Primary Income)



## Provisional Results (Experimental Statistics)

### Key Results Summary

All results are designated as **experimental statistics**. Users should be aware that **the results in this paper are provisional and will be revised and updated** when further developments are made. They should therefore be used with appropriate caution at this time.

The results set out below focus on the calendar year estimates of Scottish GNI for 1998 to 2017. Financial year estimates for the period 1998/98 to 2017/18 are also available in the online tables.

Key findings include:

- In 2017 Scottish GNI (including a geographic share of UK extra-regio) was estimated to equal 94.5% of Scottish GDP. Scottish GNI was estimated at £159.3bn (£29,357 per head) compared to Scottish GDP of £168.5bn (£31,055 per head). (see e.g. chart 13)
- The gap between GNI and GDP initially widened between 1998 and 2007 with GNI falling from 95.3% of GDP in 1998 to 86.9% of GDP in 2007. Since 2007 the gap has narrowed again with GNI having returned to 94.5% of GDP in 2017. (Chart 12)
- In 2017 direct investment (-3.1% of GDP), portfolio investment (-2.5%) and compensation of employees (-0.3%) made negative contributions to Scottish GNI while other investment made a positive contribution (+0.4%). (Chart 11)
- Scottish GNI has remained below GDP throughout the period from 1998 to 2017. (Chart 12). This reflects in part a large insurance and pension sector with policy holders outside Scotland, a predominance of company headquarters in London and the South East and the high level of foreign ownership among North Sea operators.

Table 1 provides an annual summary of Credits, Debits and Balances for the key primary income components for each calendar year for 1998 to 2017. An equivalent table (table 1a), containing the same information for financial years from 1998/99 to 2017/18 is available in the associated online tables. More information on GNI for financial years is available on request. Note: much of the attention in this project to date has been for the years from 2010 onwards. The results prior to 2010 (or 2010/11) have been derived using similar apportionment techniques, however these estimates have not had the same levels of scrutiny. Care should therefore be taken when analysing longer term trends.

### Revisions to previously published figures

The results presented here include some revisions to figures that were published in the May paper. These are presented in Annex C which shows the May figures subtracted from the latest, revised figures. Generally the revisions are relatively small and are the result either of revisions made by ONS to the UK series on which the Scottish analysis is based or changes made by ONS or the Scottish Government to the data used to apportion UK figures to Scotland. In a small number of cases minor improvements to the method used to estimate the Scottish flows may also contribute to the changes.

Two series have undergone more significant revisions. These are the Compensation of Employees (CoE) flow from Scotland to the rest of the UK and the other investment flow

from Scotland to the rest of the UK. In both cases these changes are due to revisions to the underlying data.

In the case of the CoE flow, the changes are mainly due to revisions made to the CoE estimate associated with Scotland's GDP as part of the Quarterly National Accounts for Scotland (QNAS).

In the case of the other investment flow the changes are mainly due to revisions made by ONS and the Scottish Government to the estimates of UK and Scottish Gross Value Added (GVA) associated with insurance and pension firms. These GVA figures are used to determine the apportionment factor to be applied to UK flows in order to estimate other investment flows to and from Scotland.

Table 1: Credits, Debits and Balances for key primary income components, Scotland, 1998 to 2017

	£ million																			
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>CREDITS</b>																				
(Earnings of Scottish residents on investment in RUK / abroad)																				
<b>Compensation of Employees</b>	1,790	2,038	2,040	2,175	2,247	3,196	3,217	3,461	3,085	3,068	3,420	3,882	4,032	4,129	4,457	4,615	4,521	4,870	4,660	4,923
<b>Investment income</b>																				
Earnings on direct investment	1,027	1,029	1,192	1,205	1,396	1,542	1,637	1,993	2,099	2,271	2,172	1,866	2,239	4,143	4,858	4,436	1,663	2,818	2,182	2,768
Earnings on portfolio investment																				
Earnings on equity securities	1,053	1,303	1,260	1,311	1,599	1,491	1,638	1,815	2,300	2,341	2,658	2,249	1,978	2,128	2,478	2,619	2,531	2,701	2,620	2,928
Earnings on debt securities	3,292	2,881	3,230	3,255	2,971	3,105	3,303	3,653	4,006	4,647	4,936	4,412	4,490	4,887	4,668	4,298	3,784	3,916	3,482	3,829
Total portfolio investment	4,345	4,184	4,490	4,566	4,570	4,596	4,940	5,468	6,306	6,988	7,594	6,661	6,468	7,016	7,147	6,917	6,315	6,618	6,101	6,757
Earnings on other investment	9,550	9,217	10,991	11,021	10,681	10,554	11,824	13,239	17,355	19,233	18,851	12,282	12,735	11,762	10,751	10,398	11,697	10,079	10,362	10,019
Earnings on reserve assets	98	100	85	82	70	67	60	56	54	51	65	66	60	64	58	54	53	70	91	97
Total investment income	15,021	14,529	16,757	16,874	16,716	16,758	18,461	20,755	25,815	28,543	28,682	20,875	21,502	22,984	22,814	21,805	19,728	19,584	18,735	19,640
<b>Other primary income</b>	400	426	332	407	426	467	469	549	437	303	381	561	551	546	429	504	319	354	370	287
<b>Total credits</b>	17,210	16,993	19,130	19,456	19,389	20,422	22,147	24,765	29,337	31,914	32,484	25,318	26,085	27,659	27,700	26,924	24,568	24,808	23,765	24,849
<b>DEBITS</b>																				
(RUK / foreign earnings on investment in Scotland)																				
<b>Compensation of Employees</b>	991	762	1,290	2,592	1,188	2,280	3,159	3,987	3,834	2,877	3,361	4,386	3,364	4,003	3,777	4,437	5,749	4,930	4,712	5,461
<b>Investment income</b>																				
Earnings on direct investment	3,326	4,667	5,521	4,903	4,740	5,790	6,536	7,733	11,202	13,315	13,609	11,851	11,303	12,099	12,389	9,962	8,832	7,460	7,889	8,055
Earnings on portfolio investment																				
Earnings on equity securities	1,007	1,380	1,039	1,419	1,551	1,574	1,694	1,887	2,261	2,278	2,416	1,974	1,979	2,524	2,907	3,655	3,418	3,748	3,563	3,985
Earnings on debt securities	3,404	3,123	3,357	3,235	3,051	3,212	3,855	4,748	5,402	6,663	6,866	5,744	7,113	7,058	6,731	7,070	6,837	6,099	6,230	6,926
Total portfolio investment	4,410	4,504	4,396	4,653	4,602	4,786	5,550	6,635	7,663	8,941	9,282	7,718	9,092	9,583	9,638	10,725	10,255	9,847	9,793	10,911
Earnings on other investment	12,385	12,256	15,495	15,820	18,550	17,705	20,260	19,291	23,431	25,108	25,339	18,608	14,758	15,276	13,491	12,178	12,630	11,195	9,593	9,347
Total investment income	20,121	21,427	25,411	25,377	27,892	28,281	32,345	33,659	42,296	47,364	48,231	38,178	35,153	36,958	35,517	32,865	31,717	28,502	27,275	28,314
<b>Other primary income</b>	184	179	183	180	166	166	184	192	203	204	226	223	247	246	242	243	245	255	274	282
<b>Total debits</b>	21,296	22,368	26,885	28,148	29,246	30,727	35,688	37,838	46,333	50,445	51,818	42,786	38,764	41,206	39,536	37,546	37,710	33,686	32,261	34,057
<b>BALANCES</b>																				
(Net earnings)																				
<b>Compensation of Employees</b>	799	1,276	750	-417	1,059	916	58	-526	-750	191	59	-504	668	127	680	178	-1,227	-60	-52	-538
<b>Investment income</b>																				
Earnings on direct investment abroad	-2,298	-3,639	-4,329	-3,699	-3,344	-4,249	-4,899	-5,740	-9,103	-11,044	-11,438	-9,985	-9,064	-7,956	-7,531	-5,526	-7,169	-4,643	-5,707	-5,288
Earnings on portfolio investment abroad																				
Earnings on equity securities	47	-78	221	-108	48	-83	-57	-72	39	63	242	275	-1	-396	-429	-1,036	-887	-1,046	-944	-1,057
Earnings on debt securities	-112	-243	-127	20	-80	-107	-553	-1,095	-1,396	-2,016	-1,931	-1,332	-2,623	-2,171	-2,062	-2,772	-3,053	-2,183	-2,748	-3,097
Total portfolio investment	-65	-320	94	-88	-32	-190	-610	-1,168	-1,357	-1,953	-1,689	-1,057	-2,624	-2,567	-2,491	-3,808	-3,940	-3,229	-3,692	-4,155
Earnings on other investment abroad	-2,835	-3,039	-4,504	-4,799	-7,869	-7,151	-8,436	-6,052	-6,075	-5,875	-6,488	-6,326	-2,023	-3,514	-2,739	-1,780	-933	-1,116	768	671
Earnings on reserve assets	98	100	85	82	70	67	60	56	54	51	65	66	60	64	58	54	53	70	91	97
Total investment income	-5,100	-6,898	-8,654	-8,503	-11,176	-11,523	-13,884	-12,904	-16,481	-18,821	-19,549	-17,302	-13,651	-13,973	-12,703	-11,061	-11,988	-8,918	-8,540	-8,674
<b>Other primary income</b>	216	247	149	227	260	301	285	357	234	99	155	338	304	300	187	261	73	99	96	5
<b>Total</b>	-4,086	-5,374	-7,755	-8,692	-9,857	-10,305	-13,541	-13,073	-16,997	-18,531	-19,334	-17,468	-12,679	-13,547	-11,836	-10,622	-13,142	-8,879	-8,496	-9,207

## Detailed results

The figures in this release are expressed in current prices, also known as nominal terms, meaning that they do not take account of price changes over time. This should be borne in mind when making comparisons over time. Some figures have also been presented as a percentage of nominal GDP which may provide a more meaningful basis on which to make comparisons between time periods.

The charts in this section show the size of credits, debits and balances split between the rest of the world (ROW) and the rest of the UK (RUK) between 1998 and 2017. Bear in mind that results prior to 2010 have not received the same level of scrutiny as those for 2010 onwards and so should be treated with extra caution. These are complemented by the tables published alongside this document here:

[www.gov.scot/Topics/Statistics/Browse/Economy/SNAP/GNI](http://www.gov.scot/Topics/Statistics/Browse/Economy/SNAP/GNI).

### Credit Flows from RUK

Chart 1: Contribution of components to **credit** flows to Scotland from **the rest of the UK**, 1998 to 2017

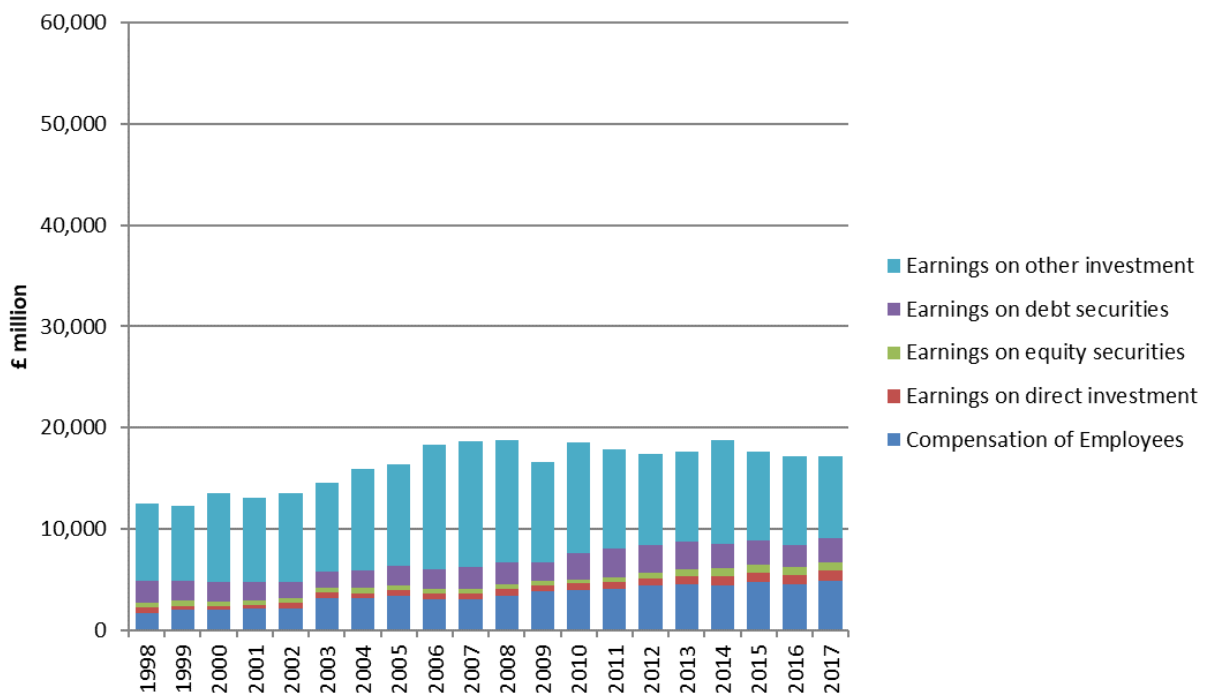


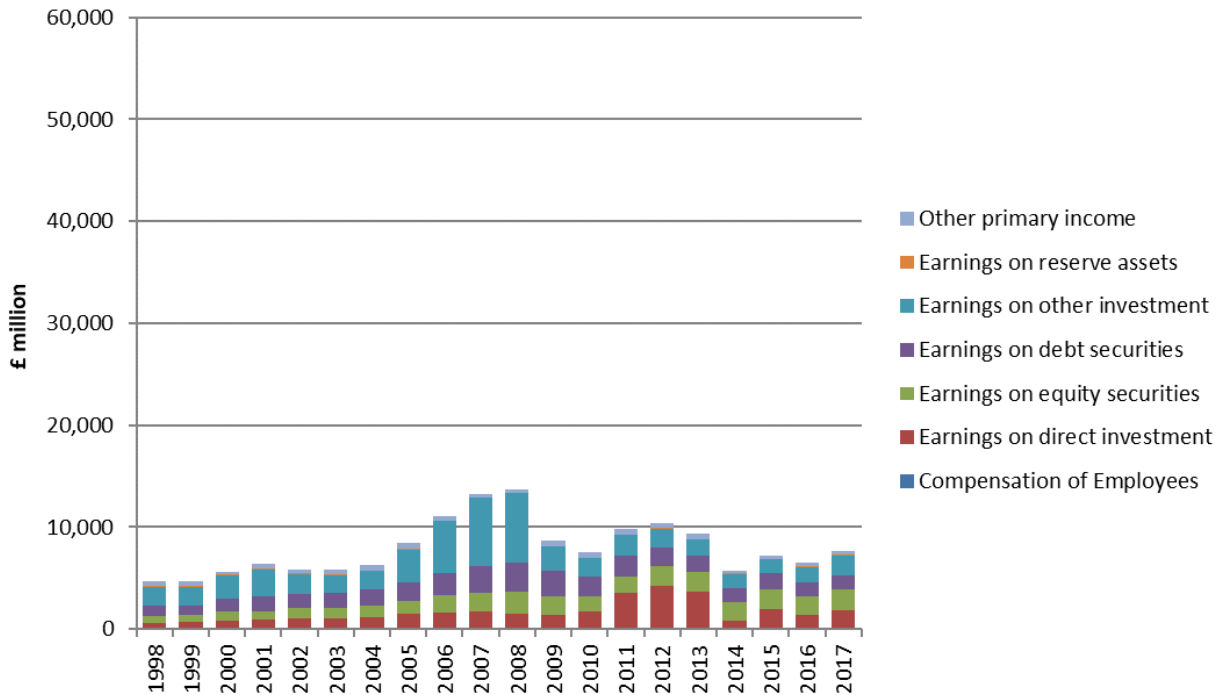
Chart 1 shows that earnings on other investment have formed the largest single flow of income from the rest of the UK into Scotland each year since 1998. However this proportion has generally been falling since the middle of the last decade and whereas other investment formed at least half of the overall inflow to Scotland from the rest of the UK in each year between 1998 and 2016 it accounted for 47% in 2017. The largest contribution to these other investment flows from the rest of the UK comes from pension entitlements paid by insurance corporations and pension funds in the rest of the UK to Scottish households.

In 2017, the total inflow to Scotland from the rest of the UK was estimated at £17.2bn. Other investment contributed £8.1bn (47% of the total inflow to Scotland from the rest of the UK) followed by compensation of employees (£4.8bn, 28%). Portfolio investment

(earnings on equity securities + earnings on debt securities) accounted for £3.3bn (19%). Equivalent figures for other years can be found in the accompanying tables ([www2.gov.scot/Topics/Statistics/Browse/Economy/SNAP/GNI](http://www2.gov.scot/Topics/Statistics/Browse/Economy/SNAP/GNI)).

### Credit Flows from non-UK ROW

Chart 2: Contribution of components to **credit** flows to Scotland from the **non-UK rest of the world**, 1998 to 2017

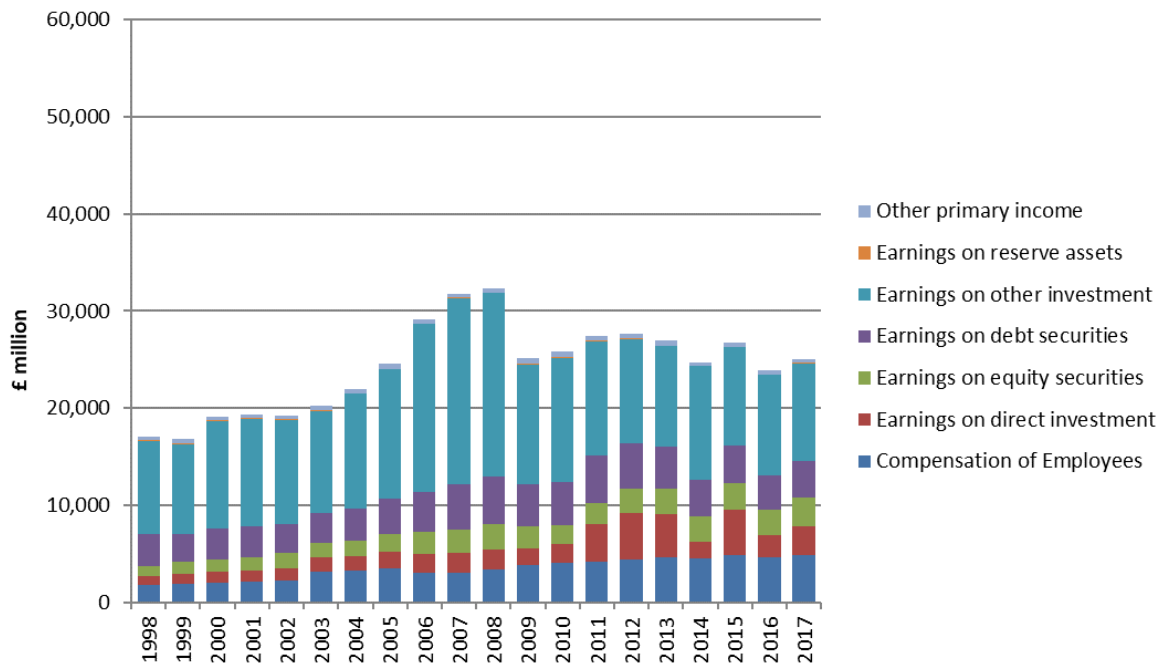


Flows into Scotland from the non-UK rest of the world were smaller than those from the rest of the UK. Prior to 2009 other investment (mainly earnings on foreign currency deposits by Scottish banks) generally made the largest contributions to flows into Scotland from RoW. This was particularly true in 2007 and 2008 when (other sector) UK earnings on overseas deposits peaked. Since then the flows have usually been made up of a more even split between direct investment, earnings on equity securities, earnings on debt securities and other investment although there were some exceptions at the start of this decade when direct investment flows formed the largest component.

In 2017, earnings on equity securities contributed £2.1bn and earnings on debt securities contributed £1.4bn giving a combined portfolio investment flow from the non-UK rest of the world of £3.5bn. This equates to 45% of the total £7.6bn inflow to Scotland from the non-UK rest of the world.

### Total Credit Flows from outside Scotland

Chart 3: Contribution of components to **total credit** flows to Scotland, 1998 to 2017

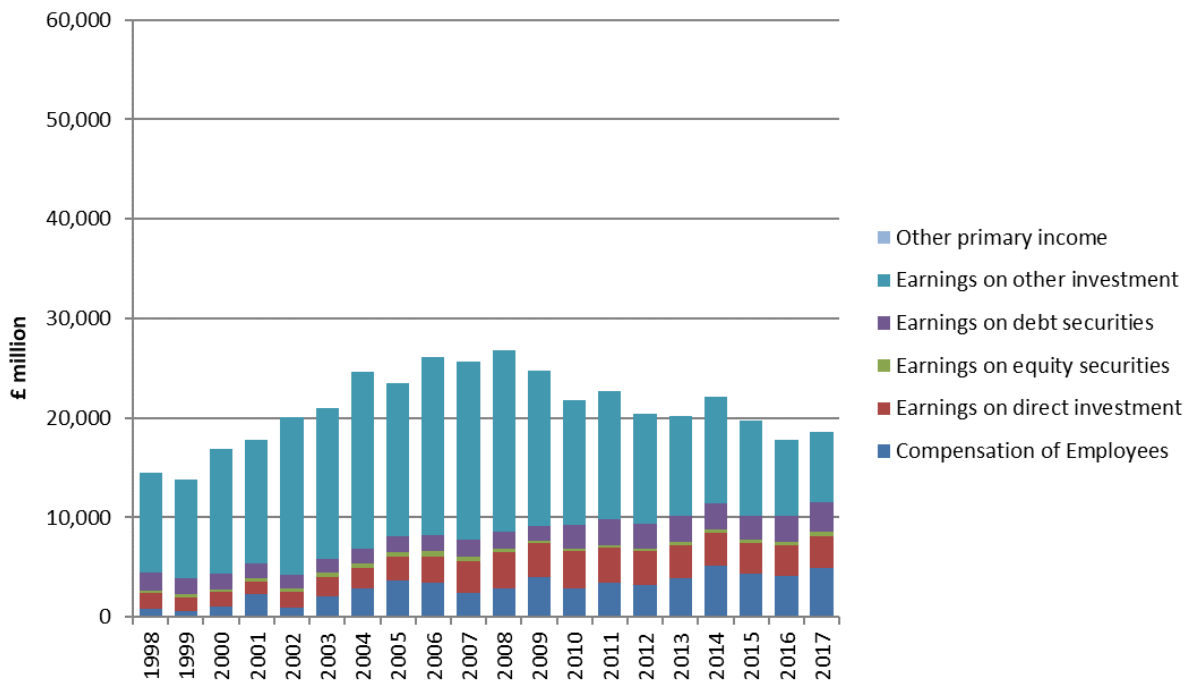


Combining flows into Scotland from both the rest of the UK and the non-UK rest of the world shows that credit flows into Scotland peaked in 2007 and 2008 when earnings on other investment reached their highest levels. As explained above, this was mainly due to a peak in UK earnings on overseas deposits. Since then these earnings on deposits have fallen back to more typical levels which has led to the reduction in total flows to Scotland since.

In 2017, £10.0bn (40%) of the total £24.8bn flow into Scotland came from earnings on other investment.

## Debit Flows to RUK

Chart 4: Contribution of components to **debit** flows from Scotland to the **rest of the UK**, 1998 to 2017



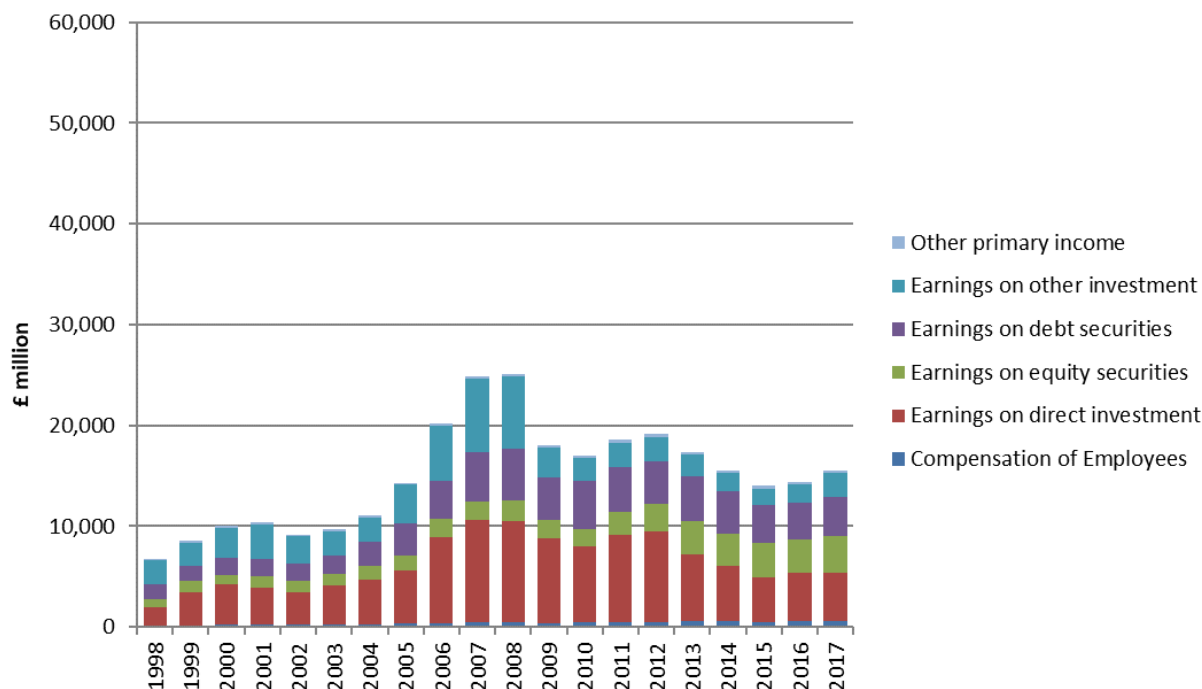
Flows out of Scotland to the rest of the UK were larger than flows in the other direction. Historically they were again dominated by earnings on other investment and this remains the biggest single component. This mainly consists of pension entitlements paid from Scottish insurance corporations and pension funds to residents in the rest of the UK. The size of these other investment outflows has reduced since around 2008 and this has led to a corresponding reduction in overall outflows from Scotland to the rest of the UK.

Scotland's large other investment outflow to the rest of the UK occurs because Scotland has a relatively large share of the UK's insurance and pension industry. Insurance and pension policy holders are assumed to be distributed throughout the UK based on population. Flows from the Scottish insurance and pension industry to RUK households are therefore relatively large (in comparison to flows in the other direction). The fall in the size of the other investment outflow since 2008 reflects in part a fall in the size of Scotland's share of the UK's insurance and pension industry.

In 2017, earnings on other investment contributed £7.0bn (38%) to the total outflow of £18.5bn from Scotland to the rest of the UK.

## Debit Flows to non-UK ROW

Chart 5: Contribution of components to **debit** flows from Scotland to the **non-UK rest of the world**, 1998 to 2017



Earnings on direct investment have historically been the largest single component of outflows from Scotland to the rest of the world although in recent years they have reduced in size.

At least some of this reduction is due to a dramatic fall in earnings on direct investment in the North Sea in 2013 and 2014. Earnings on direct investment in the North Sea accounted for over half of total earnings on direct investment until 2013 but have since fallen to around one third in 2017. In addition, direct investment flows from onshore Scotland to RoW fell in 2015 and have remained at this level since.

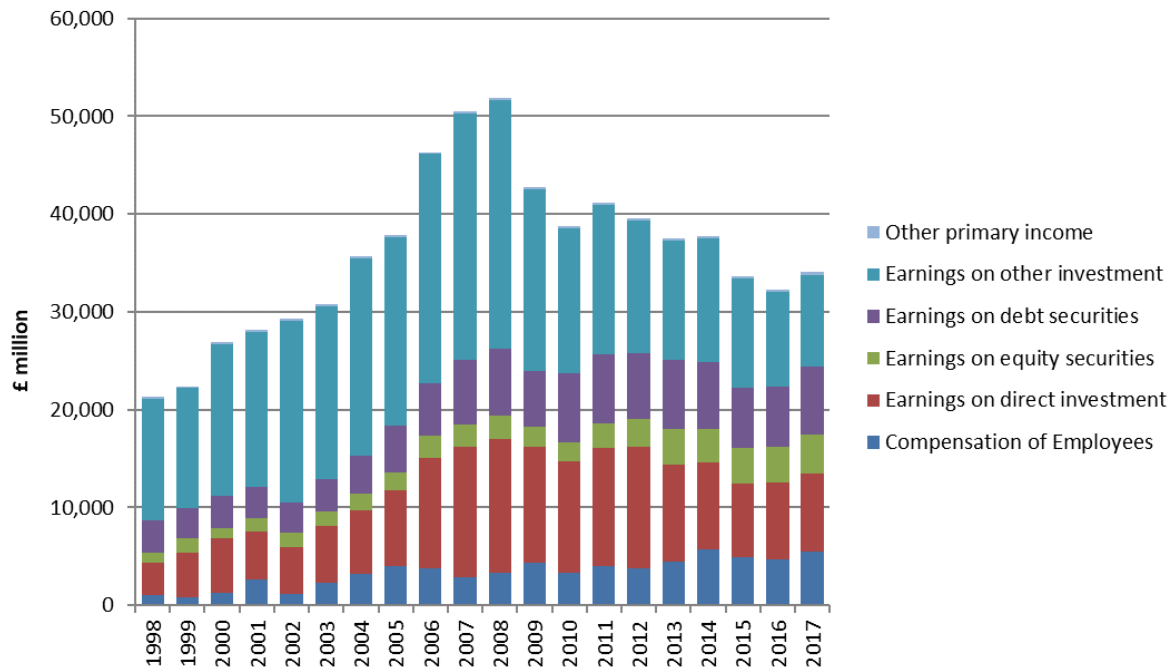
The overall level of outflows from Scotland to the rest of the world has fallen since a peak in 2007 and 2008 with this reduction due to the combination of the fall in earnings on direct investment along with a fall in earnings on other investment back to more typical levels.

In 2017, portfolio investment made up around half (£7.5bn, 48%) of the total outflow from Scotland to the non-UK rest of the world. This was made up of earnings on equity securities (£3.6bn, 23% of the total outflow from Scotland to the non-UK rest of the world) and earnings on debt securities (£3.9bn, 25%).



## Total Debit Flows to outside Scotland

Chart 6: Contribution of components to **total debit** flows from Scotland, 1998 to 2017



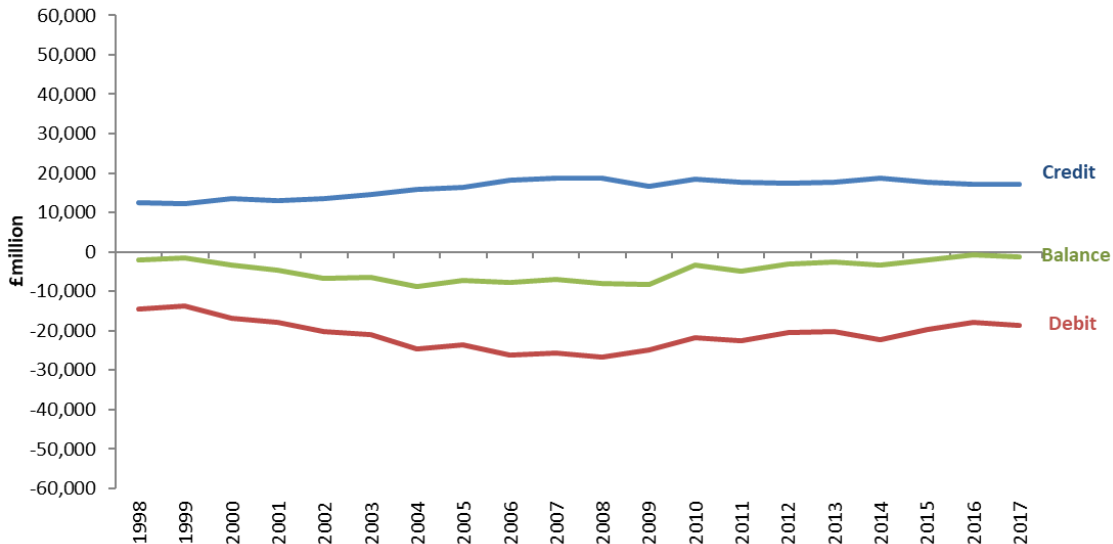
The overall outflows from Scotland peaked in 2008 mainly due to a combination of earnings on other investment and direct investment. Since then both of these components have reduced in size, particularly earnings on other investment and, as a result, the overall outflow from Scotland has reduced.

In 2017, earnings on portfolio investment accounted for £10.9bn (32%) of the total £34.1bn outflow from Scotland whilst earnings on other investment accounted for £9.3bn (27%).

## Flow Balances

The charts below summarise the overall credit and debit flows and the net income flow between Scotland and elsewhere.

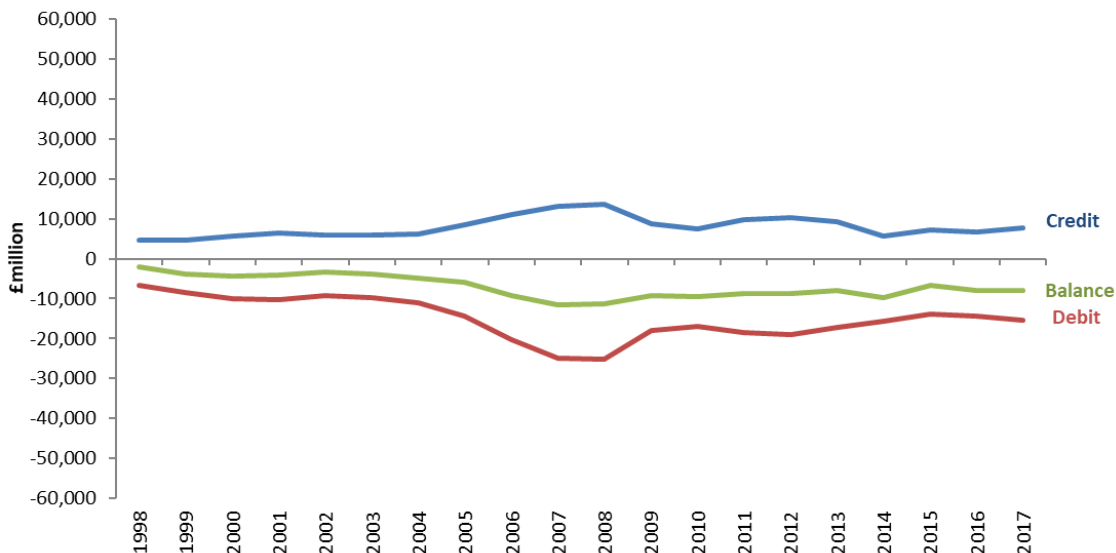
**Chart 7 Total credit and debit flows and balance between Scotland and rest of UK, 1998-2017**



Scotland has had a net outflow of income to the rest of the UK throughout the entire period covered by these statistics. This net outflow was largest around the mid-2000s but has fallen away in recent years. This reduction in the net outflow has been largely due to a fall in the size of the debit flow (from Scotland to the rest of the UK) and this in turn has been caused by a reduction in the size of earnings on other investment.

In 2017, an estimated £17.2bn came into Scotland from the rest of the UK whilst an estimated £18.5bn went in the other direction. This resulted in a net outflow from Scotland to the rest of the UK of around £1.3bn.

**Chart 8 Total credit and debit flows and balance between Scotland and non-UK rest of the world, 1998-2017**



Scotland has also had a net outflow of income to the non-UK rest of the world throughout the entire period covered by these statistics. Both credit and debit flows peaked in around 2007 and 2008 due mainly to high earnings on other investment which have subsequently reduced in size. In recent years this net outflow to the non-UK rest of the world has dominated Scotland's overall net outflow as the net outflow to the rest of the UK has reduced in magnitude.

In 2017, an estimated £7.6bn came into Scotland from the non-UK rest of the world whilst an estimated £15.5bn went in the other direction. This resulted in a net outflow from Scotland to the non-UK rest of the world of around £7.9bn.

Chart 9 Total credit and debit flows and balance, 1998-2017

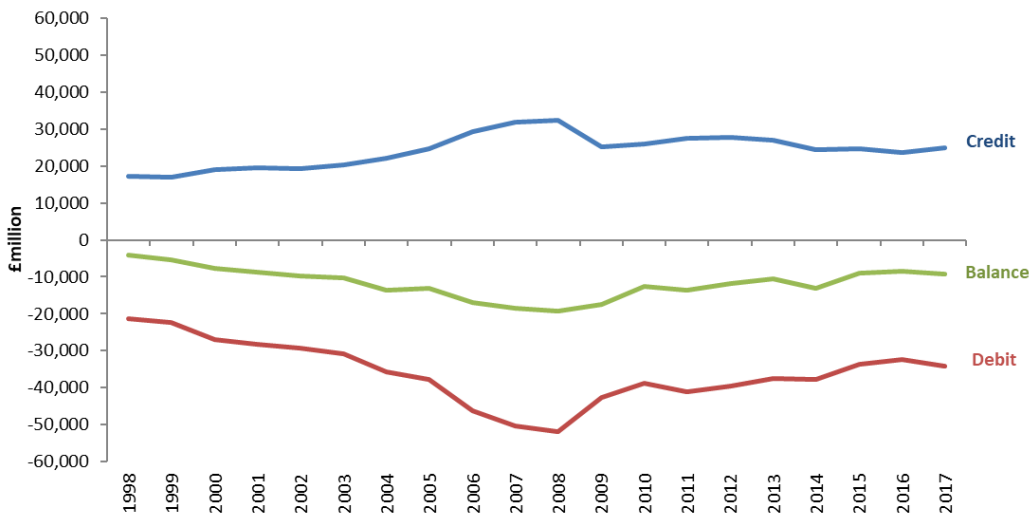


Chart 9 combines the flows with the rest of the UK with those with the non-UK rest of the world. In 2017 an estimated £24.8bn came into Scotland whilst an estimated £34.1bn went in the other direction. This resulted in a net outflow of around £9.2bn.

### Flows between the Scottish North Sea and elsewhere

The total flows described above include flows between offshore Scotland and elsewhere (RUK and RoW) and between onshore Scotland and elsewhere (RUK and RoW). The model used to perform this analysis allows for direct investment and compensation of employees flows associated with the North Sea to be separated from the equivalent flows associated with onshore Scotland.

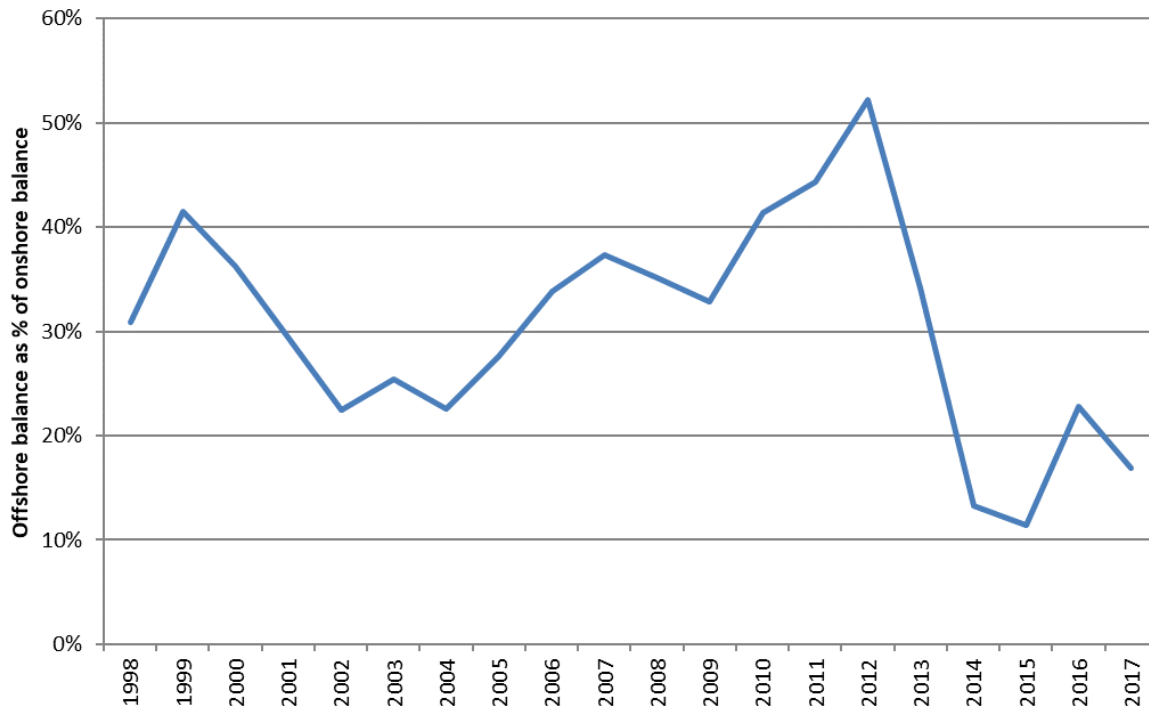
Most of the flows involving offshore Scotland relate to foreign direct investment with foreign-owned companies operating in the North Sea earning money on their investment.

Between 1999 and 2012 offshore direct investment outflows accounted for between 42% and 49% of the total direct investment outflows from Scotland, reflecting a period of rising profitability in the sector. This fell in 2013 and has remained below these previous levels. This has been driven first by increased North Sea investment and subsequently by lower levels of profitability. In 2017, slightly under one quarter (23%) of direct investment outflows were made up of flows from offshore Scotland.

These offshore flows clearly have a significant impact on the Scottish primary account balance and consequently on GNI. In 2017 the total net outflow of £9.2bn was made up of a net outflow of £7.7bn from onshore Scotland and a net outflow of £1.6bn from offshore Scotland (CoE and direct investment) meaning that offshore Scotland accounted for around 17% of the total net outflow.

The chart below shows how this proportion has changed over time.

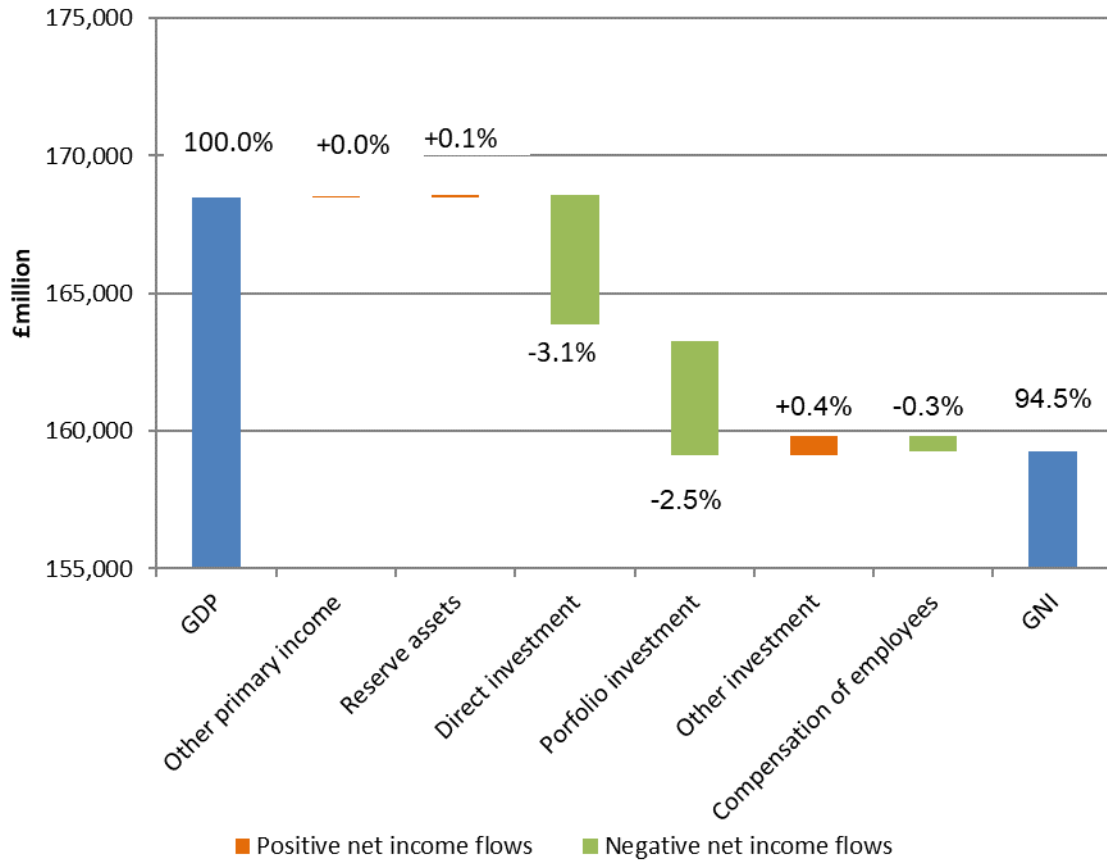
*Chart 10 Proportion of total net outflow accounted for by flows between offshore Scotland and elsewhere, 1998 to 2017*



The proportion of the total net outflow accounted for by flows between offshore Scotland and the rest of the UK / rest of the world increased from just under a quarter (23%) in 2004 to over half (52%) in 2012 before falling dramatically in 2013 and 2014.

## Gross National Income

Chart 11: GDP and GNI, Scotland, 2017



In 2017, Scottish GDP (including a geographic share of UK extra-regio) was estimated at £168.5 billion. Other investment (+0.4%) and reserve assets (+0.1%) made small positive contributions to GNI. However direct investment (-3.1% of GDP) and portfolio investment (-2.5%) made negative contributions. As a result, in 2017, Scottish GNI is estimated at £159.3 billion or 94.5% of GDP.

Chart 12 GNI as % of GDP and contribution of primary income account components, 1998-2017

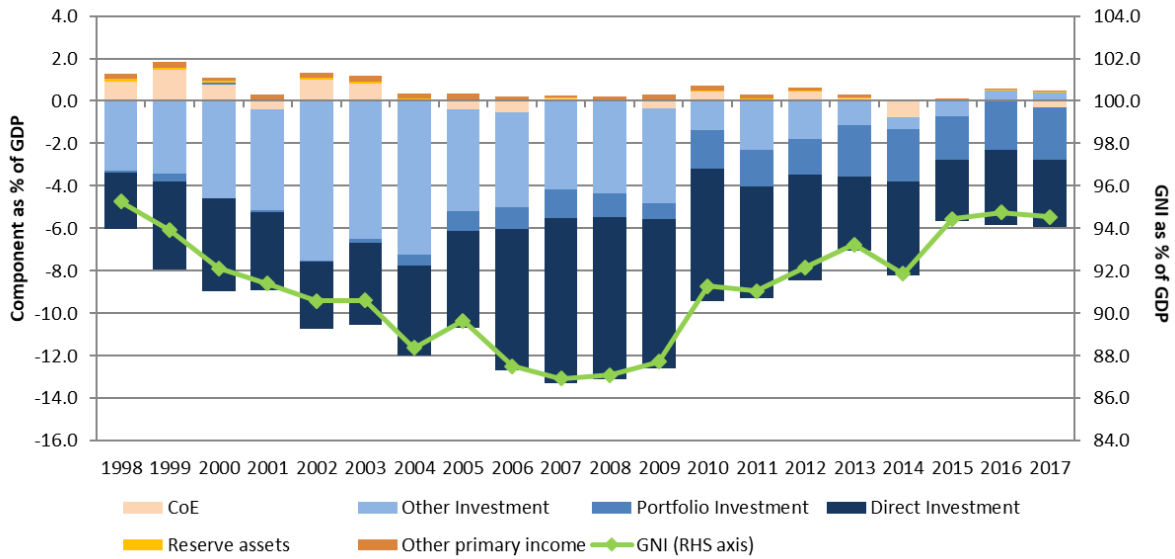


Chart 12 summarises the information provided in chart 11 for all years between 1998 and 2017. It shows that direct investment, portfolio investment and other investment have tended to make negative contributions to GNI throughout much of this period. The negative contribution of other investment increased at the start of the century but has fallen off since. This, coupled with a reduction in the negative contribution of direct investment, has led to the narrowing of the gap between GDP and GNI since 2007 despite an increase in the negative contribution of portfolio investment in recent years.

Chart 13 GDP and GNI per head and GNI as % of GDP, Scotland, 1998-2017

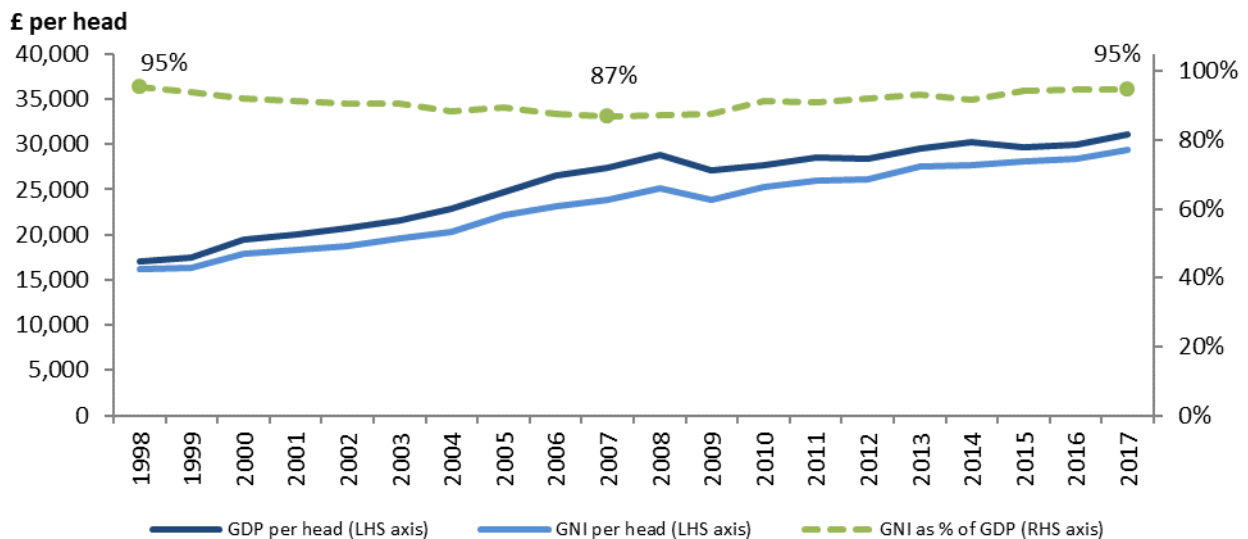


Chart 13 shows GNI per head alongside GDP per head as well as GNI as a percentage of GDP. Scottish GNI has remained below GDP throughout the period from 1998 to 2017. The gap between GNI and GDP initially widened between 1998 and 2007 with GNI falling from 95% of GDP in 1998 to 87% of GDP in 2007. Since 2007 the gap has narrowed again with GNI having returned to 95% of GDP in 2017. Such a gap between GDP and

GNI is not uncommon. For example, in Czechia (the Czech Republic) GNI was 94% of GDP in 2017, whilst in Ireland GNI was 83% of GDP in 2016<sup>10</sup>.

Chart 14 GDP and GNI per head and GNI as % of GDP, UK, 1998-2017

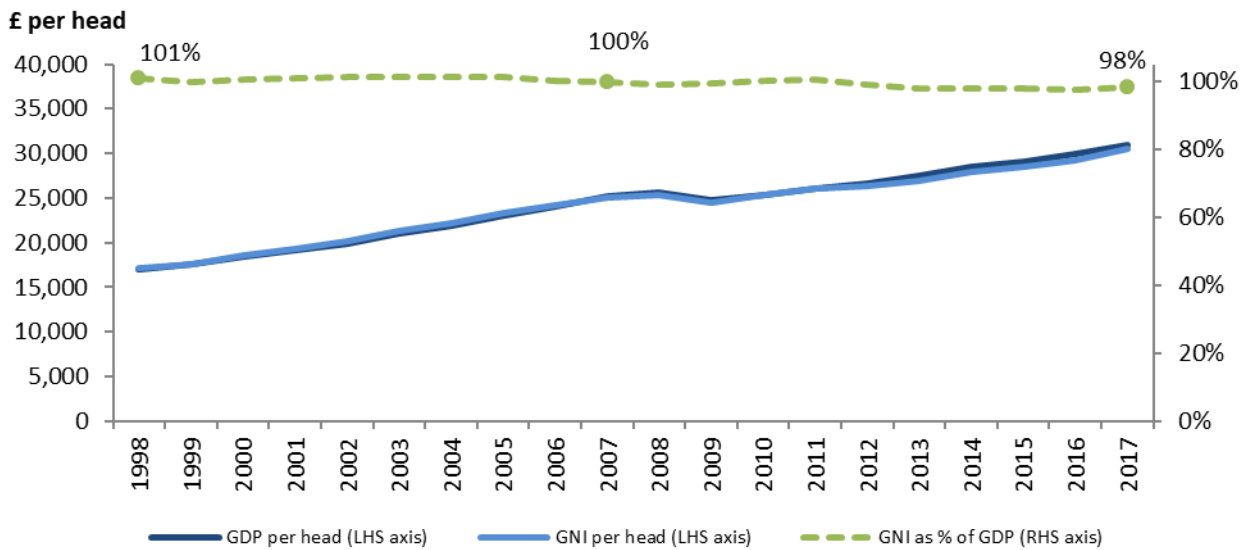


Chart 14 provides the same information for the UK as a whole. There is less of a discrepancy between GNI and GDP in the UK than in Scotland. This is due in part to the fact that the financial outflows associated with North Sea operators have a proportionately smaller impact on UK GNI than they do for Scotland.

<sup>10</sup> Figures taken from OECD website (<https://stats.oecd.org/#>). Latest figures available for Ireland are for 2016.

## Next Steps

### Data Sources

The principal aim of this project to date has been the development of a Primary Income Account for the Whole of Scotland to provide the credit and debit flows required to derive an estimate of GNI from existing GDP estimates. The paper published on 2 May 2018 demonstrated that this aim has been met whilst this release demonstrates that it is possible to update this regularly. However, there is still considerable work to be done to refine the estimates. The key data sources, modelling parameters and assumptions made have been discussed throughout this publication and in the annexes. The next steps are to challenge these assumptions and to explore whether there are additional data sources or industry intelligence that can be used to improve the quality of the estimates and reduce the uncertainty in components which are primarily based on modelling at this time.

We are keen to discuss the strengths and limitations of this analysis with stakeholders as part of the on-going development programme over the next year.

### Stakeholder Engagement

Over the course of the next year we will consult a range of users and data suppliers about the quality of the data sources used, the availability of any other data sources or industry intelligence, the robustness of the methodology and assumptions made, and the interpretation of trends in the initial results. This will shape the development of the analysis with a view to it being produced as a regular official statistics output and an extension to the current Scottish Government national accounts.

The initial results were presented and discussed at the last meeting of the Scottish Economic Statistics Consultation Group (SESCG) on 16 March 2018. We shall present and discuss the analysis with other experts across UK Government departments, industry experts and academics with an interest in the area.

Alongside that, we will consult all potential users of the analysis through a statistical consultation early in 2019.

### Existing Plans

We have set out below some areas that we plan to investigate over the coming months to improve the GNI estimates presented in this report. These may be added to (and/or refined) as we discuss with users and data suppliers.

#### *Portfolio Investment – flows with RUK*

At present the overall value of dividends paid to UK shareholders is estimated using the value of shares paid to shareholders outside the UK (UK Economic Accounts) and information on the proportion of shares owned by various sectors (share ownership survey). Market capitalisation data from the London Stock Exchange is then used along with information on the location of company headquarters to estimate flows of dividends between Scotland and the rest of the UK.

We are in the process of working with the Office for National Statistics (ONS) to investigate whether we can improve this method, possibly by making use of the data they collect for the UK share ownership survey.



### *Financial Services industry*

In the work carried out in 2013 the Scottish share of UK insurance companies' and pension funds' assets were used to apportion some RoW portfolio investment flows to Scotland. Similarly a share of other financial intermediaries' assets were used for other RoW portfolio investment flows to Scotland. These shares were estimated using data from FAME company accounts.

Currently the estimates in this paper do not make use of these apportionment factors but instead use the relevant GVA shares. We will investigate the impact of using shares of assets instead and determine the most appropriate approach to take going forward.

### *North Sea*

The analysis presented in this paper uses detailed information on earnings from direct investment associated with the North Sea. Amongst other things this makes it possible to estimate the proportion of direct investment flows associated with North Sea companies.

We will investigate whether similar work can be undertaken to estimate portfolio investment associated with firms operating in the North Sea. Currently earnings from portfolio investment cannot be broken down in this way.

### *Mergers & Acquisitions*

Changes in (country of) ownership of companies are taken into account in direct investment flows via the FDI survey and IDBR database (RoW flows) and the 'Business in Scotland' publication (RUK flows). However the country of ownership of companies listed on the London Stock Exchange (used to determine dividend (equity security) flows between Scotland and the Rest of the UK) is, at present, assigned on a one-off basis and not updated. We will investigate the use of the ONS 'Mergers and Acquisitions' publication and/or combining the IDBR with the LSE data as a means of updating the country of ownership of listed companies to take account of mergers and acquisitions.

### *Foreign Direct Investment apportionments*

The estimates of direct investment flows between Scotland and the rest of the world are considered to be the most reliable of all the estimates included in the GNI calculation as they use Scottish company level data from the FDI survey. At present a single apportionment factor is used to apportion credit flows (excluding flows involving North Sea companies and flows involving banks which are dealt with separately) to Scotland and another to apportion debit flows (again other than flows involving North Sea companies and banks). We will explore whether this method can be improved.

### *Companies/profits database*

We will investigate the possibility of creating a company/profits database that would help us to better understand the way that profits made by Scottish companies are distributed. This could lead to improved understanding and estimates of direct investment and portfolio investment.

*Other Investment – earnings on deposits*

Rest of the world

The ONS and/or the Bank of England may have data that could lead to improvements here.

Rest of the UK

It is assumed that there are no cross-border income flows between Scotland and the rest of the UK associated with deposits or loans. This follows the approach taken in the 2013 work which drew upon expert advice from Martin Kellaway. This remains an area for further work.

*Ownership of GVA in Scotland and the rest of the UK*

Undertake further work to obtain estimates of Scottish owned GOS in RUK and RUK owned GOS in Scotland rather than GVA using IDBR/ABS.

*Pension and Insurance GVA*

Access the MQ5 survey on investment by insurance companies, pension funds and trusts. In theory this would allow a similar approach to FDI (rather than taking a share based on combined Pension & Insurance GVA).

*Modelling*

Improve modelled estimates underpinning this analysis. For example, data from the FDI survey provides information on how much income foreign-owned UK companies return to their parent companies. This could be compared to their UK activity and used to estimate the income which Scottish firms might return to RUK parent companies and vice versa.

**Consultation and Feedback**

We welcome any initial thoughts or views on this analysis. Please feel free to contact us and to let us know what you think or whether you would like to be alerted to the statistical consultation in due course.

Please contact us at [economic.statistics@gov.scot](mailto:economic.statistics@gov.scot)

or write to:

The Scottish Government  
National Accounts Unit  
Office Of The Chief Economic Adviser – Economic Analysis  
St Andrew's House  
Regent Road  
Edinburgh  
EH1 3DG

## Annex A – Detailed Methodology

### Methodology

The methods used are unchanged from those used in the previous publication in May and are similar to those developed in the 2013 work. The detail set out below is a reproduction of the information provided in the May release.

The general approach is to calculate an appropriate Scottish share of the income flows between the UK and the rest of the world as published in the UK Pink Book<sup>11</sup> and the Quarterly UK Economic Accounts<sup>12</sup>. The shares are usually based on population or Gross Value Added for a given industry. For direct investment detailed company level data from the Office for National Statistics' (ONS) Foreign Direct Investment (FDI) survey has been used with a range of methods used to determine Scottish data from this survey.

The model used to produce the results in this paper is based on quarterly data. This is particularly necessary for the production of financial year results which have been published in the additional online tables. The quarterly figures have been calculated by combining annual figures from the Blue Book and Pink Book publications with quarterly figures from the UK Economic Accounts. Some figures are only available annually and so these are used to apportion the more sparse quarterly information to the more detailed breakdowns required by the quarterly GNI model.

There are 2 additional complexities that need to be addressed.

Firstly, flows between Scotland and the rest of the UK need to be taken into account. Data on interactions between Scotland and the rest of the UK are extremely limited. Surveys of UK companies by the ONS include Scottish companies but (i) these companies are not always easy to identify, (ii) the coverage in Scotland may be smaller than might be desired and (iii) the surveys tend to cover solely interactions between UK residents and foreign residents and don't include interactions between Scottish residents and residents in the rest of the UK.

Secondly, a large share of UK Extra Regio (offshore and overseas) activity takes place in Scottish waters. This is complicated because data associated with the Scotland's offshore economy are limited and can be difficult to estimate.

Taken together, these challenges mean that it is inevitable that the estimates in the income account will be subject to uncertainty. It also means that a range of different data sources and methodologies have been used.

The Primary Income Account consists of the main components outlined below.

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<sup>11</sup> This is the UK balance of payments publication:  
<https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/bulletins/unitedkingdombalanceofpaymentsthepinkbook/2018>

<sup>12</sup> <https://www.ons.gov.uk/releases/ukeconomicaccountsapriltojune2018>

## **1. Compensation of Employees (CoE)**

This includes wages and other benefits received by workers who cross national borders to reach their place of normal work, or to seasonal or short-term workers who are resident in the country for less than a year.

The overall net balance is controlled to match the difference between GDP CoE figures and GDHI CoE figures with the outflow from Scotland to RUK calculated to ensure this is the case. This means that the inflows and outflows themselves, the methods used to estimate which are outlined below, have no direct effect on GNI.

### **1.1. Estimating flows between onshore Scotland and the non-UK rest of the World**

Outflows: Scottish onshore CoE as a proportion of UK onshore CoE is calculated. This is then multiplied by UK CoE outflows taken from the UK Economic Accounts.

Inflows: Scottish onshore CoE as a proportion of UK onshore CoE is calculated. This is then multiplied by onshore UK CoE inflows based on the UK Economic Accounts.

### **1.2. Estimating flows between offshore Scotland and the non-UK rest of the World**

The measure of extra-regio COE from the mining and quarrying industry is taken from the regional accounts. A Scottish geographical share is applied to estimate the Scottish element. This in turn is multiplied by an estimate of the proportion of workers in the UK continental shelf who are non-UK nationals taken from the UK Continental Shelf offshore Demographics Report published by Oil & Gas UK.

### **1.3. Estimating flows between onshore Scotland and the rest of the UK**

Inflow: The Annual Survey of Hours and earnings (ASHE) is used to estimate the proportion of employment income in the rest of the UK being earned by Scottish residents. This is then multiplied by an estimate of RUK onshore COE to estimate the flow from RUK to Scotland.

Outflow: This is effectively a balancing item, calculated to ensure that the overall net balance is consistent with the difference between GDP CoE and GDHI CoE.

### **1.4. Estimating flows between offshore Scotland and the rest of the UK**

Flows between the Scottish offshore economy and the rest of the UK and between the rest of UK offshore economy and Scotland are again based on the measure of extra-regio CoE from the mining and quarrying industry in the regional accounts. A combination of Scotland's (/RUK's) geographic share of the north sea, the proportion of workers in the UK continental shelf who are UK nationals and the proportion of these workers estimated to be resident in the rest of the UK (/Scotland) are then used to estimate these flows.

## **2. Direct Investment**

This covers earnings made when Scottish residents have an equity interest of 10% or more in a foreign company (or vice versa).

### **2.1. Estimating flows between onshore Scotland and the non-UK rest of the World**

The figures for UK income flows associated with direct investment in the Pink Book are based on the Office for National Statistics' Foreign Direct Investment (FDI) survey. This same source has been used as the basis for estimates of Scottish flows with the non-UK rest of the world. In line with the approach taken in the Pink Book, FDI flows for Scotland have been calculated using the asset & liability approach. This is one of two FDI measurement principles details of which can be found here:

<http://www.oecd.org/daf/inv/FDI-statistics-asset-liability-vs-directional-presentation.pdf>.

Note that the alternative directional approach was used in the 2013 work making this one area of divergence between the method used in 2013 and that used in this more recent work.

The company level information in this survey has been mapped to the Government Office Region of the UK headquarters using the Inter Departmental Business Register (IDBR). Using this, a Scottish share of FDI flows was estimated. However this attributes the whole of an outflow to the location of the UK headquarters. In reality there would be an income flow from the company's operations in the rest of the UK to the headquarters and then the entire UK income flow would occur from the UK headquarters to the overseas parent company. These 'indirect income flows' have been calculated based on the share of the company's turnover generated in Scotland and in the rest of the UK.

The FDI survey does not include the banking sector. Instead, estimates are supplied by the Bank of England for UK flows only. This means it is not possible to map data associated with banks to a Government Office Region in the manner described above. Instead Scotland is attributed a Banking GVA share of the total UK FDI flows associated with banks.

## 2.2. Estimating flows between offshore Scotland and the non-UK rest of the World

North Sea flows are also dealt with separately. Scotland is assigned a share of UK North Sea outflows based on the estimated share of UK profits occurring in Scottish waters. This share is estimated on a company by company basis and is derived from the database underpinning the model used to produce Scottish Oil and Gas production Statistics<sup>13</sup>.

## 2.3. Estimating flows between onshore Scotland and the rest of the UK

Flows of direct investment between Scotland and the rest of the UK are calculated by estimating the proportion of Post Tax Operating Surplus (PTOS) generated in Scotland and owned by companies based in the rest of the UK and vice versa.

PTOS estimates are based on Gross Operating Surplus, Net Operating Surplus and tax data (from GERS). Turnover data from the Inter-Departmental Business Register (IDBR) is then used to estimate the proportion of PTOS generated in Scotland but owned by RUK companies and the proportion of PTOS generated in RUK but owned by Scottish companies.

## 2.4. Estimating flows between offshore Scotland and the rest of the UK

The flow between the Scottish part of the North Sea and the rest of the UK is calculated by applying an appropriate share/ratio to the flow between the Scottish North Sea and the non-UK rest of the world.

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<sup>13</sup> <https://www2.gov.scot/Topics/Statistics/Browse/Economy/oilgas1718>

Firstly the country of ownership of the companies on the oil and gas database is determined. This is used to calculate a ratio of profits made in the Scottish North Sea by rest of UK companies to non-UK rest of world companies. This ratio is applied to the flow between the Scottish North Sea and the rest of the world to estimate the outflow from the Scottish North Sea to the rest of the UK. Note that it does not reflect changes in ownership of companies over time. Note also that, at present Royal Dutch Shell has been treated as half owned by RUK and half owned by non-UK rest of world.

Similarly a ratio of Scottish to rest of world profits in the rest of the UK North Sea has been calculated to determine the inflow to Scotland from the rest of the UK North Sea.

### **3. Portfolio Investment**

This includes earnings from investment in equity securities (shares) or debt securities where the investor owns less than 10% of the enterprise. This also includes UK Government debt interest payments to non-residents.

#### **3.1. Estimating flows between Scotland and the non-UK rest of the World**

In line with the standard methodology, Scotland has been allocated appropriate shares of the flows between the UK and the rest of the world.

Various apportionments are used for different elements of the earnings on equity securities and earnings on bonds and notes and money market instruments. Further details of the apportionments used can be found in Annex B.

#### **3.2. Estimating flows between Scotland and the rest of the UK**

##### **3.2.1. *Income from equity securities***

The ONS Share Ownership Survey is used to identify the proportion of UK shares owned by UK individuals and by the rest of the world. Using data on foreign earnings on equity securities from the UK Economic Accounts it is possible to estimate the value of dividends paid to UK individuals.

The London Stock Exchange (LSE) publishes market capitalisation data on a company by company basis. This can be combined with the estimate of the value of dividends paid to UK individuals to estimate company level dividends.

By identifying which of these companies are based in Scotland (using Companies House and FAME databases) the data can be used to estimate Scottish and RUK dividend payments. These can then be split between those that stay in Scotland and those that are paid to RUK residents based on population share (assuming share ownership is broadly similar between Scottish and RUK residents).

##### **3.2.2. *Income from debt securities***

Debt securities cover UK Central Government debt interest payments. Inflows relate to Scottish residents' receipt of debt interest payments from the rest of the UK.

Debt security outflows are based on the idea that some of the UK debt is in effect held on behalf of Scotland. Interest is then paid to residents in the rest of the UK on this theoretical share of UK debt.

The Debt Management Office publishes figures on who owns UK Government debt. Excluding the Bank of England and overseas residents, UK debt is owned by insurance companies and pension funds, monetary financial institutions, other financial institutions and households. Scotland is assigned a share of each of these sectors based on the relevant GVA share or a population share. At the same time Scotland is assigned a notional (population) share of the UK debt. These are combined together to create estimated flows between Scotland and the rest of the UK.

#### **4. Other Investment**

Other Investment primarily covers interest received from deposits or paid on a loan where one of the parties is not resident in Scotland.

##### **4.1. Estimating flows between Scotland and the non-UK rest of the World**

In line with the standard methodology Scotland has been allocated appropriate shares of the flows between the UK and the rest of the world.

Various apportionments are used for different elements of the earnings on loans, earnings on deposits and other investments which make up this category. Further details of the apportionments used can be found in Annex B.

##### **4.2. Estimating flows between Scotland and the rest of the UK**

It is assumed that there are no cross-border income flows between Scotland and the rest of the UK associated with deposits or loans. This follows the approach taken in the 2013 work which drew upon expert advice from Martin Kellaway. This remains an area for further work.

This leaves property income attributable to insurance policy holders, payable on pension entitlements and attributable to collective investment fund shareholders. The UK Blue Book shows flows under these 3 headings between one part of the economy and another (so for example, property income attributable to insurance policy holders is paid by insurance corporations and pension funds to households, financial corporations and other insurance corporations and pension funds). Scotland is allocated a share of each of these based on GVA or population and flows between Scotland and the rest of the UK can then be calculated.

#### **5. Other Primary Income**

Taxes paid and subsidies on products and production received from non-residents (e.g. contributions to EU and receipts of EU subsidies).

##### **5.1. Estimating flows between Scotland and the non-UK rest of the World**

In line with the standard methodology Scotland has been allocated appropriate shares of the flows between the UK and the rest of the world.

Various apportionments are used for the different elements which make up this category. Further details of the apportionments used can be found in Annex B.

*5.2. Estimating flows between Scotland and the rest of the UK*

Taxes and subsidies within the National Accounts GNI framework relates to payments and receipts to and from EU institutions. It is therefore assumed that cross-border flows with the rest of the UK will be zero.

**6. Reserve Assets**

Interest received on official foreign exchange reserves and relating to the International Monetary Fund (IMF).

*6.1. Estimating flows between Scotland and the non-UK rest of the World*

Reserve assets have been apportioned to Scotland using a population share.

*6.2. Estimating flows between Scotland and the rest of the UK*

There are assumed to be no income flows associated with reserve assets between Scotland and the rest of the UK.



## Annex B – Data Sources and Apportionment methods

Data sources and apportionment methods remain unchanged to those outlined in Annex B of the May publication. This information has been reproduced below.

### Compensation of employees flows with the rest of the world

As outlined in Annex A, a number of sources are used to estimate CoE flows. These include estimates of CoE from GDP and GDHI, information on the North Sea workforce and the Annual Survey of Hours and Earnings.

### Compensation of employees flows with the rest of the UK

As outlined in Annex A, a number of sources are used to estimate CoE flows. These include estimates of CoE from GDP and GDHI, information on the North Sea workforce and the Annual Survey of Hours and Earnings.

### Direct Investment flows with the rest of the world

Category	Series code	Apportionment
<b>Inflows</b>		
Dividends	CNZN	FDI survey (direct)/ banking GVA share
Distributed branch profits	M79N	FDI survey (direct)/ banking GVA share
Reinvested earnings	HDNY	FDI survey (direct)/ banking GVA share
Earnings on property investment	HHBW	FDI survey (direct)/ banking GVA share
Earnings on other capital	N2PH	FDI survey (direct)/ banking GVA share
<b>Outflows</b>		
Dividends	BCEA	FDI survey (direct + indirect) / banking GVA share / North sea profits
Distributed branch profits	M8LN	FDI survey (direct + indirect) / banking GVA share / North sea profits
Reinvested earnings	CYFV	FDI survey (direct + indirect) / banking GVA share / North sea profits
Earnings on property investment	HESG	FDI survey (direct + indirect) / banking GVA share / North sea profits
Earnings on other capital	N2OZ	FDI survey (direct + indirect) / banking GVA share / North sea profits

### Direct Investment flows with the rest of the UK

As explained in Annex A, flows between Scotland and the rest of the UK are calculated by estimating Post Tax Operating Surplus (PTOS) using Gross Operating Surplus, Net Operating Surplus, tax data and the Inter-Departmental Business Register.

## Portfolio Investment flows with rest of the world

Category	Series code	Apportionment
<b>Inflows</b>		
<u>Equity securities</u>		
Earnings on equities - MFIs	MT4A	Scottish share of banking GVA
Earnings on equities - Central Government	MT4B	Population share
Earnings on equities - Insurance and Pensions	MT4C	Scottish share of insurance company and pension trust GVA
Earnings on equities - Other Financial Intermediaries	MT4D	Scottish share of financial auxiliary company GVA
Earnings on equities - Private non-financial corps	MT4E	Scottish share of non-financial company GVA
Earnings on equities - Household Sector	MS8B	Population share
Earnings on investment funds - dividends	MT3O	Population share
Earnings on investment funds - re-invested earnings	MT3P	Population share
Inv Funds - Other Fin Intermediaries - dividends	MT3Q	Population share
Inv Funds - Other Fin Intermediaries - re-invested earnings	MT3R	Population share
Inv Funds - Households - dividends	MT3S	Population share
Inv Funds - Households - re-invested earnings	MT3T	Population share
<u>Debt securities</u>		
Debt Sec - MFIs	HBMX	Scottish share of banking GVA
Debt Sec - Central Government	LSPA	Population share
Debt Sec - Other Financial Intermediaries	NHQV	Scottish share of financial auxiliary company GVA
Debt Sec - Private non-financial corps	HGBX	Scottish share of non-financial company GVA
Long term Debt Sec - MFIs	HPCQ	Scottish share of banking GVA
Long term Debt Sec - Central Government	HF6Q	Population share
Long term Debt Sec - Insurance cos and pension funds	CGOZ	Scottish share of insurance company and pension trust GVA
Long term Debt Sec - Other Financial Intermediaries	CGPA	Scottish share of financial auxiliary company GVA
Long term Debt Sec - Private non-financial corps	EGNF	Scottish share of non-financial company GVA
Long term Debt Sec - Household sector	HEOH	Population share
<b>Outflows</b>		
<u>Equity securities</u>		
Earnings on equities - MFIs	HBQJ	Scottish share of banking GVA
Earnings on equities - Other Sectors	MS86	Scottish share of non-financial company GVA
Earnings on investment funds - dividends	MT3W	Population share
Earnings on investment funds - re-invested earnings	MT3X	Population share
<u>Debt securities</u>		
Short term debt - MFI - certificates of deposit	HCEE	Scottish share of banking GVA
Short term debt - MFI - other short term debt	HCEF	Scottish share of banking GVA
Short td - Issued by CG - Sterling Treasury Bills	XAMR	Population share
Short td - Issued by CG - Euro Treasury Bills	HHNV	Population share
Short td - Issued by CG - other short term debt	N447	Population share
Short td - Issued by other sectors	HHZT	Scottish share of non-financial company GVA
Long term debt - Issued by MFIs	HBOT	Scottish share of banking GVA
Long term debt - Issued by CG - Foreign currency	ZMRA	Population share
Long term debt - Issued by CG - Other long term debt	N448	Population share
Earnings on gilts - by foreign central banks	HESK	Population share
Earnings on gilts - by other	HCEV	Population share
Local authority bonds	HHGH	Population share
Public corporation bonds	HESY	Population share
Issues by other sectors	HGUW	Scottish share of non-financial company GVA

## Portfolio Investment with rest of UK

### Equity Securities

As explained in Annex A, a combination of data from the ONS Share Ownership Survey, UK Economic Accounts, London Stock Exchange, Companies House and FAME databases are used to estimate Portfolio Investment flows between Scotland and RUK.

### Debt Securities

The Debt Management Office publishes figures on who owns UK Government debt. Scotland is assigned a share of each of these sectors based on the relevant GVA share or a population share as shown in the table below.

<b>UK debt owned by:</b>	<b>Apportioned with:</b>
Insurance companies & Pension funds	Insurance companies' and pension funds' GVA
Other financial institutions and other	Financial Auxiliary GVA
Monetary financial institutions	Banking GVA
Households	Population
Total	Weighted average of the above

At the same time Scotland is assigned a notional (population) share of the UK debt. These are combined together to create estimated flows between Scotland and the rest of the UK.

### Other Investment flows with the rest of the world

<b>Category</b>	<b>Series code</b>	<b>Apportionment</b>
<b>Inflows</b>		
<u>Deposits</u>		
Earnings on deposits - by MFIs - Sterling deposits	IFD7	Scottish share of banking GVA
Earnings on deposits - by MFIs - Foreign currency deposits	IFD8	Scottish share of banking GVA
Deposits by local authorities	L67O	Population share
Deposits by other fin corporations	MT8I	Scottish share of financial auxiliary company GVA
Deposits by other non-fin sectors	MT8J	Scottish share of non-financial company GVA
<u>Loans</u>		
Earnings on loans - short term	VTUN	Weighted average of SPI income from other investment and GVA
Long term loans - bank loans ECGD	AINM	Population share
Long term loans - Inter government loans	XBGI	Population share
Long term loans - by other financial intermediaries	MT8K	Scottish share of financial auxiliary company GVA
Long term loans - by public corporations - Commwth Dev Corp	HGEN	Population share
Long term loans - by public corporations - ECGD	CY95	Population share
<u>Other</u>		
Earnings on trade credit - CG	XBGJ	Population share
Earnings on trade credit - Other sectors	HGQD	Population share
Earnings on other assets - trusts and annuities	HHLF	Scottish share of insurance company and pension trust GVA
Earnings on other assets - foreign currency exchanges	HHKX	Population share
Earnings on other assets - misc central government	HPPK	Population share
<b>Outflows</b>		
<u>Deposits</u>		
Foreign earnings on deposits - MFI - sterling	JJT3	Scottish share of banking GVA
Foreign earnings on deposits - MFI - foreign currency	JJT4	Scottish share of banking GVA
<u>Loans</u>		
Foreign earnings on loans - Central government	CGLF	Population share
Foreign earnings on loans - Local authorities	CGLG	Population share
Foreign earnings on loans - Other fin corps	MT8L	Scottish share of financial auxiliary company GVA
Foreign earnings on loans - Public corps	CGLH	Population share
Foreign earnings on loans - other non-fin sectors	MT8M	Scottish share of financial auxiliary company GVA
<u>Other</u>		
Foreign earnings on investment income	MT8N	Scottish share of insurance company and pension trust GVA
Foreign earnings on trade credit - Public corps	XBGW	Population share
Foreign earnings on trade credit - other sectors	HHLW	Population share
Special drawing rights	MT8O	Population share
Earnings on other liabilities	CGME	Population share

### Other Investment flows with the rest of the UK

<b>Category</b>	<b>Series code</b>	<b>Flows calculated using</b>
Investment income attributable to insurance policy holders, paid to households & NPISH	L8GL	Share of insurance company and pension trust GVA <b>AND</b> population share
Investment income attributable to insurance policy holders, paid to others	L8GN minus L8GL	Share of insurance company and pension trust GVA
Investment income payable on pension entitlements	L8GU	Share of insurance company and pension trust GVA <b>AND</b> population share
Investment income attributable to collective investment fund shareholders, paid to households & NPISH	L8GZ	Share of financial auxiliary company GVA <b>AND</b> population share
Investment income attributable to collective investment fund shareholders, paid to others	L8H3 minus L8GZ	Share of financial auxiliary company GVA <b>AND</b> Share of insurance company and pension trust

### Other primary income flows with the rest of the world

Category	Series code	Apportionment
<b>Inflows from EU institutions</b>		
Agriculture Guarantee Fund - subsidies	MU24	Scottish share of EU agriculture subsidies
<b>Outflows to EU institutions</b>		
Customs duties and Agricultural levies	QYRD	Population share
Sugar levy	GTBA	Population share

### Reserve Assets with the rest of the world

Reserve assets (series code HHCB) have been apportioned to Scotland using a population share.

## Annex C – Revisions to Primary Income flows and GNI

	<i>£ million</i>																		
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>CREDITS</b>																			
(Earnings of Scottish residents on investment in RUK / abroad)																			
<b>Compensation of Employees</b>	6	131	3	3	8	-3	-4	-5	-9	-8	-10	-6	-14	-15	-11	-19	-15	-6	-14
<b>Investment income</b>																			
Earnings on direct investment	52	67	77	102	135	175	178	222	209	250	243	228	344	211	52	-16	-101	-1,791	-136
Earnings on portfolio investment																			
Earnings on equity securities	-48	-55	-64	-66	-104	-92	-122	-48	-134	-97	-18	-63	-19	-18	37	123	114	37	-233
Earnings on debt securities	-156	-135	-175	-198	-185	-196	-231	-122	-238	-240	-145	-193	-100	-146	55	318	273	135	-592
Total portfolio investment	-203	-190	-239	-264	-289	-287	-353	-171	-372	-337	-163	-257	-119	-164	93	441	388	172	-825
Earnings on other investment	-202	-244	-332	-396	-274	-318	-399	-193	-791	-705	-270	-222	-119	-134	-46	182	292	180	-65
Earnings on reserve assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total investment income	-353	-367	-494	-558	-428	-430	-573	-142	-954	-793	-190	-250	106	-87	99	606	579	-1,439	-1,025
<b>Other primary income</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	2	-3	14	-130
<b>Total credits</b>	-347	-237	-491	-555	-421	-434	-578	-148	-963	-800	-199	-257	92	-102	87	590	560	-1,432	-1,169
<b>DEBITS</b>																			
(RUK / foreign earnings on investment in Scotland)																			
<b>Compensation of Employees</b>	-529	-781	-905	-747	-536	-528	-936	-843	-1,109	-1,191	195	-330	-402	-557	-46	886	704	-310	-108
<b>Investment income</b>																			
Earnings on direct investment	-29	-12	-20	-11	-7	-161	-137	-250	-325	-234	-97	28	616	157	8	209	251	73	211
Earnings on portfolio investment																			
Earnings on equity securities	-3	-5	-3	-1	-5	-8	-9	-6	-10	-22	3	0	-2	4	-62	48	55	57	9
Earnings on debt securities	-33	-35	-49	-59	-52	-65	-85	-48	-108	-140	-68	-79	-94	-96	-41	15	22	99	50
Total portfolio investment	-36	-40	-51	-59	-57	-73	-94	-54	-119	-162	-65	-79	-97	-91	-103	63	77	156	59
Earnings on other investment	-1,095	-1,043	-1,402	-1,629	-1,933	-1,957	-2,478	-812	-2,099	-1,693	-276	-773	-129	-113	280	1,052	1,245	488	-1,963
Total investment income	-1,161	-1,095	-1,474	-1,699	-1,997	-2,191	-2,710	-1,116	-2,543	-2,090	-439	-824	390	-47	186	1,323	1,573	716	-1,693
<b>Other primary income</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total debits</b>	-1,690	-1,876	-2,378	-2,446	-2,534	-2,719	-3,645	-1,959	-3,651	-3,281	-244	-1,155	-12	-603	139	2,209	2,277	406	-1,802
<b>BALANCES</b>																			
(Net earnings)																			
<b>Compensation of Employees</b>	535	911	907	751	544	525	931	838	1,100	1,183	-204	324	388	542	35	-905	-719	304	94
<b>Investment income</b>																			
Earnings on direct investment	81	79	97	113	142	336	316	471	534	484	341	201	-272	54	44	-225	-352	-1,863	-347
Earnings on portfolio investment abroad																			
Earnings on equity securities	-45	-49	-61	-66	-99	-84	-113	-42	-124	-75	-21	-64	-16	-22	99	75	60	-20	-242
Earnings on debt securities	-123	-100	-126	-139	-132	-131	-146	-74	-129	-100	-77	-114	-6	-50	97	303	251	36	-641
Total portfolio investment	-167	-150	-187	-205	-232	-215	-258	-116	-253	-175	-98	-178	-23	-73	196	378	311	16	-884
Earnings on other investment abroad	893	799	1,070	1,233	1,659	1,639	2,079	619	1,308	988	6	551	11	-22	-326	-870	-953	-308	1,899
Earnings on reserve assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total investment income	808	728	980	1,141	1,569	1,760	2,137	974	1,588	1,297	249	574	-284	-41	-87	-717	-994	-2,156	668
<b>Other primary income</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	2	-3	14	-130
<b>Total</b>	1,343	1,639	1,887	1,892	2,113	2,285	3,068	1,812	2,688	2,480	44	898	104	501	-52	-1,620	-1,717	-1,838	632

## Annex D – Comparison with UK and 2013 work

This annex provides some simple comparisons between the GNI figures calculated in this work and (i) UK GNI and (ii) Scottish GNI for 2010 as calculated in 2013. The purpose is to provide some basic quality assurance by showing that the figures produced here look broadly comparable with these other, related figures.

### Comparison with UK

Chart C1 compares Scottish and UK GNI per head. It shows that, until 2008 Scottish GNI per head was lower than that in the UK. Since 2008 the 2 measures have been at similar levels until 2016 when UK GNI per head grew more quickly than the Scottish rate.

Chart C1, GNI per head in Scotland and UK, 1998 - 2017

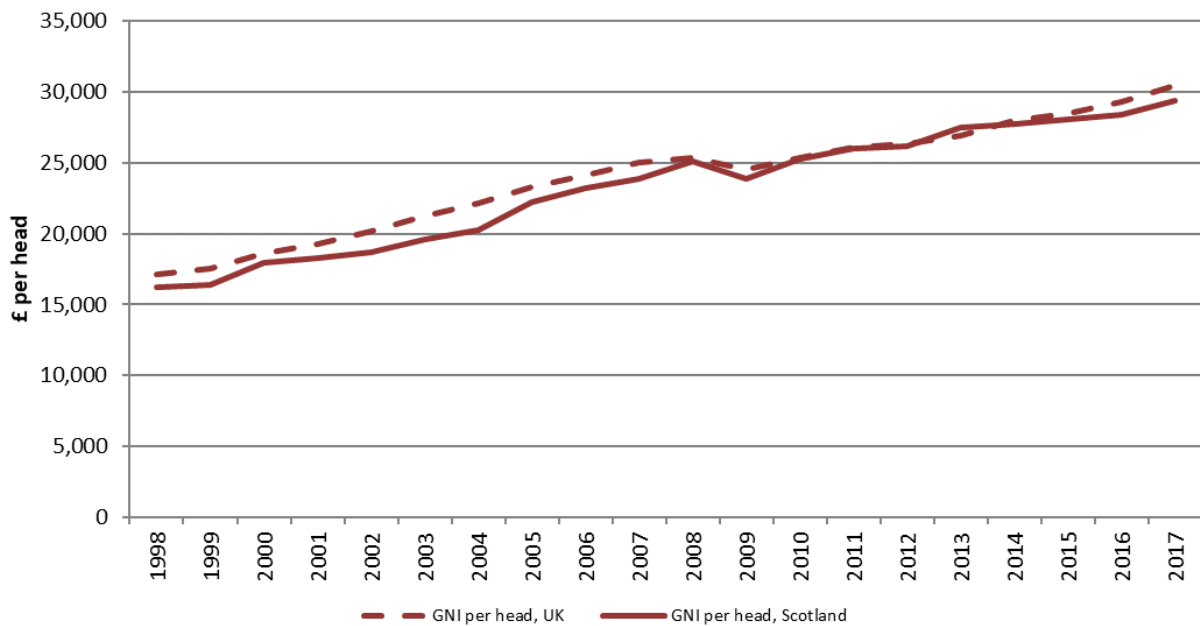


Table E in the accompanying tables

([www.gov.scot/Topics/Statistics/Browse/Economy/SNAP/GNI](http://www.gov.scot/Topics/Statistics/Browse/Economy/SNAP/GNI)) shows how the inflows and outflows between Scotland and the non-UK rest of the world compare with the flows between the UK and the rest of the world for each component. Overall, from 1998 to 2017, Scottish inflows accounted for between 4% and 6% of inflows to the UK from abroad whilst Scottish outflows accounted for 7-10% of total UK outflows.

### Comparison with 2013 work

The current work shows Scottish GNI at 91% of GDP in 2010. This compares to 94% in the analysis conducted in 2013. This difference is mainly due to portfolio investment income with the current work showing a debit balance whilst the 2013 work showed a credit balance.

There have been numerous changes since 2013 including revisions to the underlying data and methodological changes which mean that changes of this sort are to be expected.