Experimental monthly index of services – an update

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- The timeliness of the Index of Distribution (IoD) and experimental Index of Services (IoS) has been improved by one and a half weeks; they are now published coincidental with two of the three quarterly GDP releases.

- Reviews of five industries have been completed. Data will be revised to take on the new methodology on 30 September, when the national accounts Blue Book data set is published.

- Three new experimental Corporate Services Price Indices (CSPIs) have been introduced since June 2002, bringing the total number of CSPIs published to 31. A further 13 series are currently being developed.

- Developments in methodology include improvements to the briefing of source data and good progress in identifying businesses that only invoice their clients on a quarterly basis.

- Future plans include continuing the programme of industry reviews, taking on more monthly data and reviewing the level of detail at which the IoS is published.

Introduction

This article sets out the progress made in the development of the IoS since the last IoS Economic Trends article (Pike and Drew, 2002). It also gives details of the remaining work that must be done, and the issues that need to be addressed, before the IoS can be launched as a mainstream National Statistic.

This article covers:
- the background to the IoS;
- the achievements made since June 2002 in developing the IoS;
- an analysis of the revisions performance of the IoD and IoS;
- future plans;
- conclusion.

Background

ONS launched the IoS (an experimental constant price monthly Index of Services) in December 2000. This was the first step towards providing, for the service industries, the periodicity, range and quality of output indicators that have existed for the production industries for many years; plans for the future development of the IoS were also explained at the launch.

Since December 2000 the IoS development programme has included improving the conceptual appropriateness of the indicators, increasing the amount of monthly data used in the index and improving the timeliness of the publications. An article in the December 2000 edition of Economic Trends (Pike and Reed, 2000) set out this development programme; an article in the June 2002 edition provided details of progress made against this programme.
Achievements since the last article

This section covers:
• the developments made in the published outputs, including the improvement to timeliness;
• indicator developments, including: an overview of the industry review process; reviews of the retail, hotels and restaurants, post and telecommunications, computer services and business services industries;
• price developments;
• methods developments.

Published outputs

The IoS is published on an experimental basis and is broken down into five main components:
• distribution;
• hotels and restaurants;
• transport, storage and communication;
• business services and finance;
• government and other services.

Of these components, distribution became a mainstream National Statistic in May 2001 after undergoing a quality assurance process.

Improving timeliness

What commitment did we make in June's 2002 Economic Trends?

We said that we would aim to improve the timeliness of the IoD and the IoS by around one and a half weeks at the end of 2002.

Have we met the commitment?

We met this commitment in January 2003. The IoD and IoS are both now released eight weeks after the reference period.

How have we managed to speed up?

This has mainly been achieved due to our procedures becoming more established; this has improved our efficiency in quality assuring the data, compiling the indices and producing the releases. There has been very little impact on the availability of source data.

What are the benefits to users of the IoD and IoS speeding up?

The IoD and IoS are now available at the same time as the equivalent quarterly data. This allows users to see the monthly and quarterly paths of the service sector at the same time. The IoD and IoS can now also be used to better inform the quality assurance of the service sector element of output measure of GDP (GDP(O)); this is because the IoD and IoS production timetables are now similar to the GDP(O) timetable.

Table 1 below shows the current timing of the monthly IoD and experimental IoS compared to the publication dates of the quarterly national accounts. It is worth noting that from January 2004 the IoD and IoS will speed up by one day so that they are published on the same day as the Preliminary GDP First Release.

Table 1: The publication of the IoD/IoS in relation to the publication of quarterly GDP

<table>
<thead>
<tr>
<th>Date</th>
<th>National Accounts Publication</th>
<th>IoD &amp; IoS Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 October 2003</td>
<td>Gross Domestic Product Preliminary Estimate Quarter 2 2003</td>
<td>Not applicable</td>
</tr>
<tr>
<td>27 October 2003</td>
<td>Not applicable</td>
<td>IoD &amp; IoS – August 2003</td>
</tr>
</tbody>
</table>

* these dates are approximate (based on previous years) as the publication dates have not yet been finalised.

Indicator developments

The Economic Trends article in June 2002 explained that indicator developments were being taken forward within the industry review programme. This programme works by reviewing the data sources and methods used on an industry-by-industry basis, assessing available alternative data sources and then makes recommendations for improvement. Five industries have been reviewed since the last article and summaries of each review have been set out below. The industries are as follows:
• retail;
• hotels and restaurants;
• post and telecommunications;
• computer services;
• other business activities.
Retail industry review

Previous methodology
The retail sector represents 7.8 per cent of services and 5.5 per cent of the whole economy by gross value added (GVA) weight.

Monthly retail turnover data sourced from the Retail Sales Inquiry (RSI) are currently deflated by appropriate and representative components of the Retail Price Index (RPI) to derive a volume of retail sales. Since the RSI only covers Great Britain and only asks for retail turnover and GDP(O) and IoS require total turnover data at the UK level, the data undergoes a benchmarking process using the Annual Business Inquiry (ABI).

The main reasons for changing this approach are:
- the benchmarking methodology of moving from GB retail output to the total UK output for the retail industry used non-standard ONS methods;
- the previous methodology was not designed to produce annually chain-linked data (this is a requirement from Blue Book 2003 onwards).

New methodology
Although this review did not recommend any changes to the basic data sources, it has made fundamental changes to the way in which the results are produced. The review has recommended an improved methodology for moving from GB retail turnover to UK total turnover, using ONS standard methods.

Figure 1 shows the monthly path of the data produced by the new methodology for retail compared with the previous methodology up to June 2003.

Benefits of new methodology
- The improved system makes the process more transparent and easier to explain differences between the IoS and GDP(O) retail estimate and the RSI to users.
- The methodology for benchmarking to the ABI uses ONS standard methods.

Hotels and restaurants industry review

Previous methodology
The hotels and restaurants sector represents 4.7 per cent of services and 3.3 per cent of the whole economy by GVA weight.

Deflated turnover has been used as the proxy to measure the GVA of the hotels and restaurants industry. The turnover source mainly used was the Value Added Tax (VAT) turnover data (based on VAT returns to HM Customs & Excise), with one series coming from the Monthly Inquiry into Distribution and Services Sector (MIDSS). The deflators used were a combination of RPI components and an implied Household Expenditure (HE) deflator. The same deflators were used across the division, but with varying weights.

The main reasons for changing this approach are:
- hotels and restaurants is published as a single component of the IoS;
VA T turnover data is not timely enough for inclusion in first publication of IoS, or second estimate of quarterly GDP(O) – the UK Output, Income and Expenditure release;

VA T turnover data is only based upon 20 per cent monthly data, with the remainder being quarterly;

the deflators as detailed do not include any business-to-business components.

New methodology

replaces the VA T series that were previously being used with MIDSS turnover;

update the deflators previously being used, including the introduction of two CSPIs.

Figure 2 shows the monthly path of the data produced by the new methodology for hotels and restaurants compared with the previous methodology up to June 2003.

Benefits of new methodology

Since MIDSS are available quicker than VAT, data will now be available for the first estimate of IoS.

Since MIDSS also includes businesses not registered for VAT (from Inland Revenue data) the MIDSS have better coverage of the industry.

More appropriate deflators are being used.

Post and telecommunications industry review

Previous methodology

The post and telecommunications industry represents 4.6 per cent of services and 3.2 per cent of the whole economy by GVA weight.

The industry is split into three components, national post, which is measured by volume indicators, courier activities and telecommunications which are measured by MIDSS turnover deflated by RPI and CSPI price indices.

The main reasons for changing this approach are:

- The volume indicators used for National Post have over time become out of date and are supplied on a quarterly basis.
- Telecommunications is a rapidly changing industry, hence it is important to review this to keep up-to-date with industry developments.
- New business telecommunications deflators have been developed by the CSPI team.

New methodology

The industry review was able to source a wider and more representative range of volume indicators from Royal Mail Group and have also secured monthly data with them. For the courier services, the review confirmed that the methodology being used was satisfactory. For telecommunications, the review recommended that the new CSPI for business telecommunications should be introduced and also recommended that the turnover series should
be split out into British Telecom, mobiles and other companies in order to better reflect each component’s different gross value added to gross output ratios.

Figure 3 shows the monthly path of the data produced by the new methodology for post and telecommunications compared with the previous methodology up to June 2003.

Benefits of new methodology
- The use of monthly volume data for National Post increases the monthliness of the IoS.
- The extension of Royal Mail Group volume data improves the coverage and appropriateness of indicators.
- The updated CSPI for telecommunications improves the quality of deflation.

Computer services industry review

Previous methodology
Computer services represent 3.6 per cent of services and 2.6 per cent of the whole economy by GVA weight.

Currently the proxy used to measure the GVA of the computer services sector is the monthly MIDSS turnover data. This turnover series is deflated by the average earnings index (AEI) for business services combined equally with the general RPI excluding mortgage payments and indirect taxes (known as RPIY).

The main reasons for reviewing this industry were:
- computer services is a rapidly changing and growing industry;
- the turnover data that is currently used within the output measurement has historically been subject to volatility and revisions after the first month of publishing;
- owing to the historical lack of service price statistics, the current method of deflation is the best available option, but this is an area that needs to be reviewed;
- key users have stressed the importance of reviewing computer services as they regard this as a key growth area in the economy.

New methodology
No changes were recommended for computer services for this Blue Book, however the review did ratify the use of the current turnover data source. The review did recommend that once the CSPI for computer services has been fully re-developed and is ready for publishing, national accounts should assess the quality against acceptance criteria that have been set-out. It has also been agreed in principle that the CSPI should be introduced even though the price index will only cover part of the computer services industry (25 per cent by turnover according to the results of the Servcom survey). This can be justified as the deflator would be conceptually better as it is specific to the industry and is measuring the outputs of the industry.
Other business activities industry review

Previous methodology
The industry review for other business activities was split into two sets of work, to fit in with the progress on the CSPI development programme. The section of the business activities under review represents 3.9 per cent of services and 2.7 per cent of the whole economy by GVA weight.

In all cases IoS and GDP(O) have been using turnover deflated by the average earnings index (AEI) for business services combined equally with the general RPI excluding mortgage payments and indirect taxes (known as RPIY).

The main reasons for changing this approach are:
- the AEI used is a general series and is not specific to any of the industries reviewed;
- the RPIY is a consumer based price index and is not representative of these business activities.

New methodology
The review recommended the introduction of the relevant CSPI for each industry reviewed.

Figure 4 shows the monthly path of the data produced by the new methodology for other business activities compared with the previous methodology up to June 2003.

Benefits of new methodology
- more appropriate and representative deflators being used;
- good quality briefing supplied with the CSPIs.

Full reports

Full reports for each of the industries reviewed and detailed above are available from the following weblink:
http://www.statistics.gov.uk/themes/economy/Articles/shorttermindicators/IoS_Methodology/future_improvements.asp#irr

Increasing the monthliness of the IoS
The last article explained how converting the Quarterly Inquiry into the Distribution and Service Sector (QIDSS) to monthly collection had expanded the range of monthly data sources.

What commitment did we make in June’s 2002 Economic Trends?
We said that we would:
- Analyse the monthly data for those industries that were converted from quarterly to monthly inquiries in April 2000 and January 2001 to see whether stable seasonal patterns have emerged.
- Review the data sources and methods for those industries where monthly turnover data are being collected but are not being used to compile the IoS and GDP(O) and consider whether deflated turnover data would be a more appropriate proxy for estimating GVA.
• Explore whether monthly data are available for data sources outside the ONS.

Have we met the commitment?
• The data for those industries that became monthly inquiries in April 2000 and January 2001 have been reviewed by ONS time-series methodologists to see whether stable seasonal patterns have emerged.
• Of the 35 series, nine were deemed suitable for use as monthly indicators when reviewed in 2002.
• This year a further two have also been confirmed for use as monthly indicators; however, it has been deemed that one should revert to a quarterly indicator.
• As well as the MIDSS series, IoS have also been able to use the Civil Aviation Authority two indices of airline activity on a monthly basis following a change in supply from quarterly to monthly data.

Price developments
Progress has continued in the CSPI development programme. CSPIs measure the price movements of services provided to businesses and central and local government, but any element where the service is provided directly to the individual for final consumption is excluded (as these are measured by the RPI). An article in the July 2000 edition of Economic Trends (Palmer, 2000) outlined the progress made in developing CSPIs.

Improved range of CSPIs
Since the last article the number of published indices increased from 28 to 31 industries, when series for rail freight, business rail fares and hotels were published in February 2003. At present ONS is actively developing CSPIs for 13 industries. Table 2 sets out the industries that are presently undergoing active development:

<table>
<thead>
<tr>
<th>SIC</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>74.12</td>
<td>Accountancy</td>
</tr>
<tr>
<td>74.40</td>
<td>Advertising</td>
</tr>
<tr>
<td>74.20/1</td>
<td>Architectural services</td>
</tr>
<tr>
<td>65.12/1</td>
<td>Banking: commercial loans and deposits</td>
</tr>
<tr>
<td>64.20</td>
<td>Business telecommunications (new method)</td>
</tr>
<tr>
<td>72.00</td>
<td>Computer services</td>
</tr>
<tr>
<td>74.20/4</td>
<td>Consulting engineering</td>
</tr>
<tr>
<td>74.11</td>
<td>Legal services</td>
</tr>
<tr>
<td>74.14</td>
<td>Management consultancy</td>
</tr>
<tr>
<td>85.11/2</td>
<td>Private health care services</td>
</tr>
<tr>
<td>74.20/3</td>
<td>Quantity surveying</td>
</tr>
<tr>
<td>71.33</td>
<td>Rental of office machinery</td>
</tr>
<tr>
<td>60.22</td>
<td>Taxis and local transport</td>
</tr>
</tbody>
</table>

The development programme for CSPIs involves close liaison with the IoS development programme, to ensure that the priorities for indices being developed take account of the requirement for deflators within the IoS and the services element of GDP(O).

Methods developments

Data supply
The MIDSS survey (which collects monthly turnover data) is one of IoS’ main sources of data (it covers around 40 per cent of the IoS). We are continuing to work with the supplier to further develop this data source; good progress has already been made.

The main areas of development have been:
• Data briefing: written briefing has been developed to better meet IoS’ user requirement and there is now also a formal face to face data handover meeting between the IoS team and the survey data supplier. These developments have helped IoS to better understand the data and to explain the data story.
• Quarterly billing: quarterly billing is where businesses invoice their clients in the third month of the quarter and the invoice relates to work that has taken place outside this month; this type of activity reflects business accounting practices rather than the pattern of economic activity. There has been good progress in identifying and understanding these type of businesses, which has helped solutions to be reached, e.g. certain businesses have agreed to report on an accruals basis.
Revisions analysis

This section looks at the revisions performance of the IoS and IoD and the published components. The focus in this article is on the absolute size of revisions (i.e. irrespective of direction) and whether there is bias. The bias is given by the simple mean of revisions and shows whether they tend to be in a single direction.

As part of the IoS development, information on revisions is used to:

- assess the quality of the IoS and its components;
- target areas for improvement. Work to address ‘problem’ industries identified by revisions analysis, such as computer services, has already started.

Revisions performance will also be one of the criteria in deciding when we can drop the IoS’ ‘experimental’ label and whether it is appropriate to publish the components of the IoS at a more detailed level.

- Figure 5 shows the absolute average size of first revisions (i.e. ignoring sign) to three month-on-three month growth rates. It compares the first year of published IoS data with the second.
- Figures for the first year show revisions over the 12 months to September 2001. Figures for the second year show revisions over the 12 months to September 2002.
- Revisions are after constraining to the equivalent series within quarterly GDP(O) and to national accounts revisions policy.
- To indicate the relative importance of revisions to the components, weights within the IoS are shown in brackets next to the descriptions.

Main points

- The size of first revisions to the headline IoS has been broadly consistent between the first and second years of publication. Particularly in the second year, it compared well with the headline Index of Production (IoP).
- The favourable comparison with the IoP needs to be set in context. A proportion of the IoS is currently derived by forecasting/interpolating quarterly or annual data. This tends to give a relatively smooth series with small first revisions to the monthly path.
- It follows that first revisions to the monthly path are likely to increase when we replace or complement some of these quarterly/annual sources with true monthly data.
- There were larger revisions to the IoD in the second year. This was mainly due to wholesale but revisions to the motor trades also increased. There are legitimate reasons for this:
  - As part of the programme to improve sources and methods within the IoS, wholesale and motor trades changed to being entirely MIDSS-based in July 2002. This caused large one-off revisions.
The distortion to the seasonal path caused by the extended Jubilee holidays in June 2002 led to larger revisions than normal to wholesale and motor trades.

The larger overall revisions to ‘Business services and finance’ in the second year stem from non-MIDSS components, such as real estate and financial services. They conceal noticeable improvements in revisions to the MIDSS-based components in this category, such as computer services, law and accounting. Given the continuing work to improve the quality of the MIDSS data, this is encouraging.

Figure 6 compares the size of later revisions to the headline IoS and IoP. Taking the 12 months to September 2001, it shows the average size of revisions relative to the first estimates of month-on-month growth rates after 1, 3 and 12 revisions.

1st revisions are those in the first month after the initial estimates and so on.

Revisions are those to the underlying data before constraining to the equivalent series within quarterly GDP(O) and to national accounts revisions policy.

Main points

Revisions to the initial estimates of both the IoS and IoP roughly doubled between the first and twelfth revisions. With the exception of the IoD, there is a similar pattern in the published components, including ‘Government and other services’, which has a relatively high proportion of forecast data. This suggests that the revisions caused by replacing forecasts with actual data are reasonable.

Figures 7 to 10 follow the same format as Figure 6 and show the size of later revisions to the IoD and its three components (motor trades, wholesale and retail).

Main points

After the third revision, further revisions to the IoD were much larger than in the IoS.
It can be seen in Figures 8 and 9 that these later revisions stem mainly from motor trades (and also wholesale). This is largely explained by the introduction of the improved sources and methods in June 2002.

Figure 11 shows the bias (i.e. simple mean) of first revisions to three month-on-three month growth rates. It compares the first year of published IoS data with the second.

Main points

- The bias of revisions to the headline IoS was relatively small in the first year and improved in the second.
- In the first year, the upward biases in the headline IoS and ‘Business services and finance’ were statistically significant at the 95 per cent confidence interval. They weren’t statistically significant in the second year.
- The reduced bias in ‘Business services and finance’ was mainly due to improvements in the MIDSS based components within this category. This is another encouraging sign, given the continuing work to improve the quality of the MIDSS data.

Future plans

This section covers the work and issues that need to be addressed before the IoS becomes a mainstream National Statistic; it covers:

- the schedule for future industry reviews;
- increasing the monthliness of the IoS;
- level of detail at which to publish the IoS;
- seasonal adjustment;
- relationship with the quarterly national accounts.
Schedule for industry reviews

This article has already highlighted the progress made on the industry review programme. The future schedule of reviews has been set out below – the relative priorities for the review order have been agreed in consultation with our main users.

Table 3

<table>
<thead>
<tr>
<th>Industries to be reviewed</th>
<th>Implementation date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation, culture and sport</td>
<td>Blue Book 2004</td>
</tr>
<tr>
<td>Public Administration and Defence</td>
<td>Blue Book 2004</td>
</tr>
<tr>
<td>Education</td>
<td>Blue Book 2004</td>
</tr>
<tr>
<td>Health and social work</td>
<td>Blue Book 2004</td>
</tr>
<tr>
<td>Sewage and refuse disposal</td>
<td>Blue Book 2004</td>
</tr>
<tr>
<td>Real estate</td>
<td>Blue Book 2004</td>
</tr>
<tr>
<td>Land transport</td>
<td>Blue Book 2004</td>
</tr>
<tr>
<td>Auxiliary and supporting services</td>
<td>Blue Book 2004</td>
</tr>
<tr>
<td>Financial Intermediation</td>
<td>Blue Book 2005</td>
</tr>
<tr>
<td>Air transport</td>
<td>Blue Book 2005</td>
</tr>
<tr>
<td>Water transport</td>
<td>Blue Book 2005</td>
</tr>
<tr>
<td>Business services (part 2)</td>
<td>Blue Book 2005</td>
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<tr>
<td>Research &amp; Development</td>
<td>Blue Book 2005</td>
</tr>
<tr>
<td>Renting</td>
<td>Blue Book 2005</td>
</tr>
<tr>
<td>Membership organisations</td>
<td>Blue Book 2005</td>
</tr>
<tr>
<td>Other service activities</td>
<td>Blue Book 2005</td>
</tr>
</tbody>
</table>

Implications of Short-Term Output Indicators Review (STOIR) (ONS, 2000)

The IoS development programme has continued to address some of the STOIR recommendations. Two areas that are currently being assessed are:

- review of tax inconsistencies on the valuation of output;
- review of the importance of inventories and work in progress in the services sector.

Both projects are making good progress and we should be able to report our conclusions in a future article.

Increasing the monthliness of the IoS

As has already been set-out earlier in this article, IoS is now using as monthly series, 10 out of 35 of those QIDSS that have been converted to monthly collection. As well as the exploration of more monthly data through the industry review programme, we will continue to review those monthly inquiries, which are still not being used as monthly series to see whether stable seasonal patterns emerge and can therefore start to be used as monthly series.

We will also continue to investigate whether monthly data are available from data suppliers from outside the ONS, where the supply is not currently monthly data.

Level of detail at which the IoS is published

We currently publish a headline IoS and five main components:

- distribution;
- hotels and restaurants;
- transport, storage and communication;
- business services and finance;
- government and other services.

As the IoS becomes more established it may be appropriate to publish the IoS at a more detailed level (e.g. 2-digit Standard Industrial Classification (SIC)) for certain industries; we will work with ONS Time series methodologists to help reach a conclusion.

Seasonal adjustment

The IoS uses exactly the same data sources as the equivalent quarterly GDP(O) series. The monthly IoS is constrained to the quarterly GDP(O) series, at the 2-digit SIC level of detail, to ensure that the two indices show consistent growth rates for the service industries during the experimental stage of the IoS development.

When we reconcile the monthly and quarterly data there are differences between the two datasets that appear to be due to the different periodicity (i.e. monthly and quarterly) for seasonal adjustment.

We are planning to tackle the issue of whether the IoS (where components are based on robust monthly data) over GDP(O) should take precedence in these areas, i.e. should the monthly data take primacy over the quarterly data? As with the issue of increasing the level of detail at which the IoS is published, we will work with ONS Time series methodologists to reach a conclusion.

Improving timeliness and relationship with national accounts

The IoD and IoS will speed up by one day from January 2004 so that they are published on the same day as the Preliminary GDP First Release. This will then mean that the IoD and IoS will be published coincidentally with all three Quarterly GDP First Releases.

From January 2004, there are no immediate plans to further speed up the IoD and IoS (development will concentrate on improving the quality of the indicators through the industry review process). Whilst
the IoS is constrained to the equivalent quarterly GDP(O) data, it is
sensible to publish the IoS at the same time as the Quarterly GDP
First Releases. As monthly data becomes further developed; the IoS
cesses to be constrained to quarterly GDP(O); and the IoS becomes
non-experimental, the possibility of further improving the timeliness
of the IoS will be considered.

Conclusion

Good progress continues to be made in the development of the IoS.
Both the IoD and the IoS are now published coincidental with the
UK output, income and expenditure release and quarterly national
accounts release after eight weeks, representing an increase of one
and a half weeks since the previous article. As a result, the IoD and
IoS now offer more detailed breakdown of the service sector on a
monthly basis than has been previously published.

The industry review programme is now well established and has
continued to deliver improvements to the data sources and methods
to the timetable that has been set out. To date seven industries have
been successfully reviewed and the new methods implemented. A
further seven industries are currently under active development.

The quality of source data has been improving by tackling problem
areas in conjunction with our data suppliers. Analysis of revisions
has enabled us to target key industries.

Although there is still much to do in the development programme,
there is now a clear path of where the IoS is going and what issues
need to be tackled in order for the IoS to be considered ‘fit for purpose’
and the ‘experimental’ label dropped.

Any questions or comments on this article are welcome, as are
offers to participate in the process of improving industry sources
and methods.

References

Economic Trends, No. 583, pp 70–78.

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Palmer N (2000). Corporate Services Prices: Publication of Prototype

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http://www.statistics.gov.uk/nsbase/methods_quality/quality_review/
downloads/STOIR2000_econ.pdf

For more information on the IoS, including latest data and some of
the articles above, please visit the IoS area on the National Statistics