NATIONAL STATISTICIAN'S
CONSUMER PRICES ADVISORY COMMITTEE

Outcome from the National Statistician's consultation on the Retail Prices Index, October – November 2012

Purpose

1. This paper summarises the issues raised in the National Statistician's consultation on the Retail Prices Index (RPI) and presents ONS's recommendations in response to the statistical points made. The information is provided to allow CPAC to advise the National Statistician and UK Statistics Authority on the implication for the RPI of the improvements to this index.

Timing

2. Immediate. CPAC's advice is needed at its meeting on 8 January 2013 to assist the National Statistician to form any recommendations for change that may be implemented and reflected in the RPI for 2013.

Action

3. Members of the Committee are invited to:
   - Consider the analysis of the responses to the RPI consultation and the recommendations provided by ONS and advise the National Statistician.
   - Consider and comment on the recommendation that the private housing rental data source is changed.

Recommendations

4. ONS notes:
   a. Users' responses to the consultation.
   b. That the use of the Carli in the RPI is the primary source of the formula effect difference between the RPI and the Consumer Prices Index (CPI).
   c. That the Carli does not meet current international standards.
   d. That the Carli's properties are well understood and there is significant value to users in continuity of the RPI's long time series.

5. Therefore, ONS recommends:
   i. That while the Carli would not be chosen were ONS constructing a new price index, the formulae used at the elementary aggregate level in the RPI should remain unchanged.
   ii. That ONS develops a new RPI-based series (called RPIJ), using the Jevons formula in place of the Carli at the elementary aggregate level.
   iii. That the basic formulation of the RPI is accepted as currently defined and that any future changes should be limited to issues such as the annual update of the basket and weights, improvements to data validation and quality assurance etc.
   iv. That ONS continues its research on the range of issues already set out in its work programme, which include for example, the collection of prices for clothing, the appropriate base month for the index, the use of scanner data and price collection methods – to inform the development of and future needs for consumer price indices.
   v. That ONS gives further advice on the strengths and weaknesses of each index in its family of consumer price statistics.
   vi. That private housing rental data from the Valuations Office Agency (VOA) plus comparable data from the Welsh and Scottish

Governments is used instead of the private housing rental data currently collected by ONS.

Background

6. The National Statistician's consultation on options for improving the RPI was stimulated by a desire to address the formula effect gap between the estimates produced by the RPI and the Consumer Prices Index (CPI). It was partly a response to concerns expressed by users, particularly after the decision to switch the indexation of a range of benefits from the RPI to the CPI, and in light of the widening of the gap following changes to the procedures for collecting clothing prices in 2010. The consultation ran from 8 October to 30 November 2012.

7. The consultation document invited views on 4 options:
    i. no change
    ii. stop using the Carli formula at the elementary aggregate level for clothing only
    iii. stop using the Carli formula at the elementary aggregate level for all items in the RPI
    iv. align the formulae used in the RPI at the elementary aggregate level with those used in the Consumer Prices Index (CPI)

8. Respondents were also asked for their views on a proposal to change the source for data on private housing rental prices.

9. The launch of the consultation was pre-announced on 18 September 2012 alongside the release of the August consumer price statistics. ONS drew attention to this announcement via e-mail and through press briefings. This was followed by a news release on 8 October 2012 highlighting the launch of the consultation, which received coverage in the national and broadcast media, followed by Twitter and Facebook updates. Additionally, ONS alerted users of consumer price statistics via e-mail and on StatsUserNet - the Royal Statistical Society's web forum for users of statistics. ONS also held public events in London, Edinburgh, Cardiff and Belfast to inform the public about the consultation. In addition to coverage of the launch, the consultation and the issues it addressed also received print and broadcast media coverage in the lead up to and during the consultation.

10. If change is to be made in 2013 in response to the consultation, CPAC should provide advice to the National Statistician at its January 2013 meeting so that she may consider whether to put any recommendations to the UK Statistics Authority Board. Subject to the Authority's decision, before making any change to the coverage or the basic calculation of the RPI, the UK Statistics Authority Board must consult the Bank of England as to whether the change constitutes a fundamental change in the index which would be materially detrimental to the interests of the holders of relevant index-linked gilt-edged securities. If the Bank of England considers that the change constitutes a fundamental change in the index which would be materially detrimental to the interests of the holders of relevant index-linked gilt-edged securities, the Board may not make the change without the consent of the Chancellor of the Exchequer.

Summary of the Consultation Response

11. The following table summarises the responses received:

Table 1: Summary of responses received

Summary of responses received			
Total responses	**406**		
Personal responses	307		
Organisation responses	99		
Response supports	**Total**	**Organisation**	**Personal**
Option 1	332	64	268
Option 2 -Dutot	6	3	3
Option 2 -Jevons	3	1	2
Option 3 -Dutot	2	1	1
Option 3 -Jevons	2	1	1
Option 4	7	2	5
No preferred option indicated	54	27	27
Responses including statistical content	64		
Support the change for private rental housing			
Yes	56		
No	27		
No comment	323		

12. In the context of the options for changing the RPI formulae, ONS received 406 responses. Of these 307 were from individuals and 99 from organisations. Of the 406 responses, 332 (82 per cent) preferred no change, 54 (13 per cent) did not express a view and 20 (5 per cent) supported one of the options for change.

13. Of the individuals who responded, 268 (87 per cent) preferred no change, 27 (9 per cent) did not give a preference and 12 (4 per cent) indicated they preferred a change of some kind (options 2-4). For organisations, the equivalent figures are: 64 (65 per cent) preferred no change, 27 (27 per cent) did not give a preference and 8 (8 per cent) preferred one of the options for change.

14. Users were asked to set out the methodological considerations behind their preferences. Of those who responded, 64 (16 per cent) provided answers to this question.

15. The response from users to the question on private housing rental prices was lower. There were 83 respondents who answered the question about this subject. Of those, 67 per cent were in favour of the proposed change and 33 per cent were against. A summary of the arguments against making a change is provided in Annex C.

16. The large majority of responses did not address methodological issues but identified the impact that the changes implied by options 2-4 would have for them. These were primarily in terms of the anticipated yield on investments such as NSI index-linked savings and index-linked gilts and the value of pension income. Further information on responses of this type is provided in Annex B.

Main Statistical Points

17. The statistical issues identified can be classified into the following main groups:
    - **the need for a consistent long-run historical time series** of the RPI
    - whether the Jevons implies **substitution** behaviour and if that is unrealistic or means that their utility would be diminished.
    - Whether **price bouncing** across a chain link is significant.
    - Whether the **time reversal** axiom is important.
    - what is meant by **bias** when discussing the Carli and Jevons.

18. There were few new methodological issues identified by respondents to the consultation, though some set out arguments that challenged the position taken by ONS based on previous expert advice.

19. In developing its position for the January 2013 meeting of CPAC, ONS involved a group of independent experts to review its analysis. The aim was to ensure that ONS systematically and thoroughly addressed all of the statistical issues raised in response to the consultation and that the analysis that underpins recommendations is comprehensive. Where it was felt necessary ONS contacted respondents to discuss the statistical points they had raised. Again, this was to attempt to ensure that all elements of the consultation response were understood and considered by ONS in developing its position.

20. The experts who provided advice to ONS were:
    - Professor Erwin Diewert (Professor of Economics, University of British Columbia), who is a world renowned expert in index number theory. As well as his duties at UBC, Professor Diewert is, among other honours, a Research Associate of the National Bureau of Economic Research, Chairman, Statistics Canada Advisory Committee on Prices (Ottawa) and a Distinguished Fellow of the American Economic Association. Erwin has already provided advice to ONS in this context, in the form of a report on ONS's price statistics work programme.
    - Mr Peter Levell (Research Economist, Institute for Fiscal Studies) who works in the consumption research sector. Mr Levell joined the IFS in September 2009 and his current work covers issues to do with inflation.
    - Professor Denise Osborn (Professor of Econometrics, University of Manchester), is a member of the Government Statistical Service's Methodology Advisory Committee. Professor Osborn's primary research interest has always been the modelling of macroeconomic time series. Her current interests focus primarily on issues associated with monetary policy and non-linear modelling of a wide range of economic and financial time series.

21. The experts' advice will be published, before the end of February 2013, when ONS releases its formal response to the consultation. At the same time, ONS will publish those responses it received where the author has confirmed that they were content for their response to be made public.

Code of Practice for Official Statistics

22. In developing its position in respect of responses to the consultation, ONS is required to comply with the Code of Practice for Official Statistics[1]. The Code covers issues around both user needs and quality, and states that "statistical methods should be consistent with scientific principles and internationally recognised best practices" (Principle 4, page 8). These methods have to be used to support the production of statistics that "…meet the requirements of informed decision-making by government, public services, business, researchers and the public." (Principle 1, page 5). The responses to the consultation have demonstrated the breadth of uses of the RPI and identified a broad range of user requirements. Similarly, the Code requires producers to "provide users with information about the quality of statistics" (Protocol 1.4, page 13).

23. The consultation has illustrated a real depth of knowledge in the user community of the statistical properties of the RPI as it is currently constructed, which has allowed each of the options set out in the consultation to be challenged in a thoughtful and helpful way. These have ranged from highly technical arguments about statistical methodology through to the less technical, but no less important, requirements for continuity of approach.

24. It has also allowed users to identify the impacts that the range of options might have on them.

Conclusions

25. The research programme undertaken in response to the gap between the CPI and RPI that is due to formula differences has considered detailed methodological issues and drawn on international best practice. It has identified the tensions that exist when a single, long-established statistic is used for a large number of purposes and the requirement to find a balance between aspects of user needs, continuity, and methodological considerations.

26. In particular, the need for an explicit target statistic has been identified. That is, it is not sufficient to describe a consumer price index as, for example, "an average measure of change in the prices of goods and services bought for the purpose of consumption by households"[2].The target should also be defined in statistical terms, and this topic will be included as part of ONS's research programme for consumer price statistics.

Private housing rental prices

27. Around one third of respondents to the question on the source for private housing rental data argued against the recommendation to change. However, there were limited reasons for doing so, with these, in the main, citing risks for security of continuity, the need for the RPI to be constructed without change, concerns around costs of the new data and questions about data quality. ONS judges that the responses did not identify any issues that should result in it changing its recommendation that the source of data for private housing rental prices should be switched. As a result, **ONS reaffirms the recommendation that private housing rental data from the Valuations Office Agency (VOA) plus comparable data from the Welsh and Scottish Governments is used** instead of the private housing rental data currently collected from a number of letting agencies by ONS[3].

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[1] http://www.statisticsauthority.gov.uk/assessment/code-of-practice/

[2] Consumer Price Indices Technical Manual – 2012, page 4. See: http://www.ons.gov.uk/ons/dcp19975_258210.xml

[3] Currently, private rental data are collected from letting agents in 141 locations throughout the UK. In each location rental prices for six furnished and six unfurnished properties are collected once a

Formulation of the RPI at the elementary aggregate level

28. On the basis of the work ONS has conducted into the formula effect, the expert advice available to it and the analysis of the consultation responses, ONS has concluded that there are sufficient arguments to support continuing production of the RPI on the current basis and **recommends that the formulae used at the elementary aggregate level in the RPI should remain unchanged**. There are counterbalancing arguments for and against this outcome, many of which favour option 3. However, the weight of users' requirements and the desire for continuity in a long-run time series all militate against change.

29. ONS recognises that users of the RPI will want to avoid uncertainty about potential changes in the future. As a result, **ONS recommends that the basic formulation of the RPI is accepted as currently defined** and that any future changes should be limited to issues such as the annual update of the basket and weights, improvements to data validation and quality assurance etc.

30. That is not to say that consumer price indices in general should remain static. Developments in technology and retail behaviour will drive changes in the way prices are collected, processed and aggregated. Users should recognise that the RPI was developed to reflect a consumer market that is barely recognisable today. The RPI's continued use should be reassessed by users, and other indices that are closer to international best practice should be considered as alternatives.

31. As noted above, there are counterbalancing arguments that would support change. To reflect these, **ONS also recommends that** a variant of option 3 in the consultation is taken forward. That is, **a new series (called RPIJ), with the same scope and content as the RPI, using the Jevons formula as an alternative to the Carli at the elementary aggregate level based on the RPI should be published.** This series would aid analysis of the impact that the Carli has on the RPI, since it will show how the index would move were a Jevons approach taken. It will differ from the index implied by the analyses produced each month by ONS that decomposes the differences between the RPI and CPI, since those analyses consider all (formulae and other) differences, not just those due to the use of the Carli.

32. The series should be produced and made available to users at the same time as the RPI, with effect from March 2013. While remaining within the framework of the RPI, RPIJ would use an approach that was more closely aligned with international standards.

33. In an associated vein, ONS will begin to deliver on the new strategy for consumer prices published in September 2012[4], which envisages it developing consumer price indices to meet UK users' needs in the form of a family of high quality and relevant indices. This work will maintain the process of quality improvement for its indices, and improvements, other than those that require a change in the formulation of elementary aggregates, will be recommended to be reflected in the RPI. To supplement this work it is **recommended that ONS reviews whether any further additional indices may be required to meet users' needs.**

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quarter. Different locations are allocated different months in the quarter, so some data are collected each month. This results in an average monthly sample size of around 1200 quotes.

[4] See Annex C of the CPAC Annual report 2012 at http://www.ons.gov.uk/ons/guide-method/development-programmes/other-development-work/consumer-prices-advisory-committee/cpac-papers/consumer-prices-advisory-committee---2012-annual-report.pdf

34. For example, the consultation identified considerable interest in further development of the pensioner index currently produced by ONS.

35. Changes in clothing price collection guidelines introduced in 2010 resulted in the formula effect gap widening. The research undertaken to help understand the reasons why the gap widened will be useful not only for clothing items, but more widely across the basket. It has highlighted the statistical challenges that real world pricing behaviour causes and posed further questions about methodology and process. ONS recognises that some solutions are easier to identify than others, such as greater tightening and sub-division of clothing items and descriptions, but these have associated (often high) costs attached to them and can have other practical blocks to their implementation.

36. The consultation has also shown that users would like ONS to give more advice on the strengths and weaknesses of each index in its family of consumer price indices and the uses to which they might be put. This will be even more important should ONS's family of consumer price indices be expanded and **ONS recommends that more advice is developed to meet this need**.

37. Additionally, the work programme has resulted in a thorough assessment of the methodology underpinning a range of price indices in ONS that should inform its future work programme. Issues include both the short- and long-term recommendations made in the report provided by Professor Diewert[5] as well as those already in the programme set out in CPAC's annual report for 2012, such as determining the appropriate base period and temporal sampling.

38. These illustrate that consumer price measurement is a complex and evolving task. To maintain the quality and relevance of its outputs, and to ensure that they continue to meet users' needs, ONS will set out its research priorities, working with users and experts to inform the development of and future needs for consumer price statistics.

Next Steps

39. CPAC is invited to consider the recommendations and the analyses provided in their support and advise the National Statistician on recommendations.

40. The National Statistician will then develop any recommendations and put them to the UK Statistics Authority Board for its consideration.

41. Subject to the views of the Authority Board, and should it be necessary, the National Statistician would consult the Bank of England in line with the requirements set out in section 21 of the Statistics and Registration Service Act 2007.

42. As announced on 11 December 2012[6], the National Statistician will announce her recommendation at 07.00 on 10 January 2013.

43. Any changes in the calculation of the RPI will be reflected in the index for February 2013, due to be published on 19 March 2013

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Prices Division

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[5] „Erwin Diewert on Consumer Price Statistics in the UK', ONS:
http://www.ons.gov.uk/ons/guide-method/user-guidance/prices/cpi-and-rpi/erwin-diewert-report-on-consumer-price-statistics-in-the-uk.pdf

[6] Operational note: Timetable for options for improving the RPI consultation (11 December 12), http://www.ons.gov.uk/ons/media-centre/statements/operational-note-timetable-for-options-for-improving-the-rpi-consultation/index.html

January 2012

List of Annexes

Annex A	Statistical issues raised in response to the National Statistician's consultation on options for improving the RPI
Annex B	Summary of non-statistical (user requirements) responses
Annex C	Summary of arguments against making a change to the source for private housing rentals data

Annex A

Statistical issues raised in response to the National Statistician's consultation on options for improving the RPI

Introduction

A number of the statistical issues raised during the National Statistician's consultation on the RPI focused on specific approaches of the argument underpinning the choice of elementary aggregate formula. Some focused on what is known as the economic approach, some on the test approach and others on the statistical approach.

This annex details the main statistical issues raised and details the ONS position on them.

Substitution Behaviour

A number of respondents argued that the Jevons introduces a measure that assumes there is substitution by consumers which is unrealistic or means that a consumers' utility would be diminished. This reflects the economic approach argument, such as that put forward in ILO (2004)[7], that use of the Jevons accounts for the way in which consumers substitute between goods as prices change.

ONS research into the economic approach, such as Elliott, Winton and O'Neill (2012)[8], determined that the assumptions underlying the economic argument, that the Jevons is an approximation to a cost of living index, are not valid in the choice of an elementary aggregate. Generally even when substitution behaviour is observed it is not possible to use this to determine which elementary aggregate is a more accurate estimator of a price index measure, a result which seems largely independent of the target index employed.

Diewert (2012)[9] further agreed that in the absence of quantity information the economic approach cannot be used to determine the choice of elementary aggregate.

As a result respondents who object to the Jevons because of considerations of substitution continue to assume that it is intended to approximate a cost of living index. In doing this they appear to have made additional assumptions which ONS rejects as valid. As a result ONS will not use 'consumer behaviour' as a factor when choosing its elementary aggregate formulae.

Of the expert responses on this issue one used a maximum entropy argument to suggest that similar results stand and that the economic approach has some validity. A second expert noted that while the theoretical argument was correct there was no evidence that this corresponded to the reality of price indices, a fact borne out by the ONS research identified above. These views did not lead ONS to amend its position as it does not consider the maximum entropy argument to be sufficiently persuasive in the face of the evidence compiled by ONS.

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[7] ILO (2004) *'Consumer Price Index Manual: Theory and Practice'*, Geneva, International Labour Office
[8] Elliott, Winton and O'Neill (2012) "Elementary Aggregate Indices and Lower Level Substitution Bias", CPAC12(15).
[9] Diewert, W.E. (2012) "Consumer Price Statistics in the UK"

Change as a break in the time series

Respondents noted that the changes to the way the RPI is calculated that were set out in the consultation document would represent a break in the historical time series of the RPI. Further these would be different in nature to the inclusion of new goods or extension of the coverage on an annual basis, and would affect the consistency of the time series.

A change in the formulae used in the RPI is likely to lead to a reduction in that measure. It is also correct that the RPI would be lower, if the Carli were replaced with the Jevons for some or all items. This therefore appears to be a break in the time series, albeit one which will be known to users of the time series. It is also not uncommon for ONS to adjust the methodology used to calculate indices as knowledge about improved methods becomes available. It is reasonable to make these changes around the point of a chain-link in order to ensure there is no strict discontinuity in the series provided the changes can be determined to represent improvements in the index. However, the respondents' views, that the properties of the Carli are known and have been used in the construction of the RPI since its creation are also pertinent, especially in the context of the Code of Practice for Official Statistics[10].

Distribution of price relatives

The ONS paper on the stochastic approach to index numbers (Elliott et al 2012) argued that if price relatives are lognormally distributed then the Jevons is the appropriate measure of central tendency, while if normally distributed then the Carli is the appropriate measure. Several respondents noted that in the lognormal case the Jevons would be downward biased as an estimate of the arithmetic mean of the distribution of price relatives.

The experts consulted had a range of views on this issue. One warned that caution must be used when looking at distributions of price relatives without being able to weight for their importance, a second noted that the downward bias of the Jevons was known and could be corrected for, and one respondent showed this in their response. Two of the experts made comments that it would be better to look at the overall variance of estimators with respect to a given target, which may or may not be the unweighted mean of price relatives. Overall the stochastic approach to index numbers does not produce a consensus regarding which of the elementary aggregate formulae is most appropriate for use in a price index and seems more suited for providing measures of moments of distributions of price relatives. It does not answer the fundamental question of which elementary aggregate formula to use.

Price Bounce

Several respondents asked for a clarification of the impact of price bouncing across a chain link that was referred to in the consultation document. Some suggested methods for doing this but the suggestions commonly involved methods for estimation of the more general chain drift effect.

ONS believes that without further research it is not possible to provide a reliable numerical estimate of the impact of price bouncing behaviour as the impact is

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[10] See para 22 of the main paper for further information on this aspect.

included in the more general effect known as chain drift. Any delineation of this effect into individual elements has not previously been attempted and would require concurrent work into measuring the amount of bouncing that is observed in price observations.

However, it is possible to show that in the presence of price bouncing across a chain link the chained Carli will have an upward bias that exceeds that of the Jevons when compared to direct indices. In this case ONS believes the argument to be made is a theoretical one, which it may not be possible to estimate. ONS is convinced however, that price bounce will produce a bias that is worse in the use of the Carli than the Jevons.

One expert noted that, in the case of time reversal, which can be seen as a special case of the wider price bouncing problem, the Carli can be shown to have a positive bias. It was this knowledge that makes the test so important in determining an elementary aggregate formula. A second expert commented that information on price bounce would be useful.

The responses to the consultation have made it clear that an estimate of chain drift, which includes price bounce, would be an important input to the debate surrounding the choice of elementary aggregate.

Importance of the time reversal test
Several respondents stated that they did not feel that the time reversal test was relevant to the choice of elementary aggregate formula in a price index.

The importance of the time reversal test has been debated by respondents; one noted the failure of the time reversal test should not be considered a fundamental test that must be satisfied by all price statisticians. A second argued that, statistically, it need not be that the expectation of a reciprocal is the reciprocal of an expectation and that the direction of time is not reversible -points which one expert disagreed with in their response(however noting that their differences are due in large part to differences in perspective). It was also noted that while the CPI and RPI do not satisfy time reversal themselves this is not a reason to disregard the time reversal property because it is known the Carli is upward biased in the case of time reversal.

Another expert adds to the argument by noting that despite this being an appealing property there is a need to consider how well the Carli estimates the target index when quantity data are available, as in this case the failure of the Carli to fulfil time reversal may be less important than its ability to approximate the target index, a claim supported to some extent by results in Elliott et al (2012).

 Another expert adds to the argument by noting that despite time reversal being an appealing property it may be more important to consider how accurate forecasts produced by a formula are. Although the Carli may fail time reversal and be upwardly biased, it may still be a more accurate estimator of a given inflation target. The argument for the time reversal test has an appealing logic to it, if prices return to their original values the index should return to 1 intuitively. However, the importance of this property is not agreed upon by index numbers experts. The issues surrounding time reversal are inextricably linked with the issue of chain linking and price bouncing. The ability of EA formulae to approximate a target index and a fuller understanding of the magnitude of these effects may help to demonstrate the importance of time reversal in the CPI and RPI.

Bias of the Carli Index

Several respondents noted that the consultation document stated that the Carli is biased and asked for a further explanation of this bias.

As noted above, bias can only be defined if the population target statistic is known. However, the property of the Carli, in that it fails the time reversal test in a unidirectional way, leads it to be described as biased, and was noted by one of the experts. The Carli can be stated to be upward biased if we accept that an index from period 0 to period 1 should be the inverse of that from period 1 to period 0. This then leads us back to the discussion of the time reversal property presented above.

Numerical examples

Some respondents provided numerical examples of how they felt the Jevons produced inaccurate measures of price change.

Numerical examples are difficult to generalise and the test approach has already attempted to codify and formalise these sorts of "common sense" arguments. A simple example is useful to illustrate a point; however, the use of examples does not, in itself, represent compelling evidence. In some cases the examples hinted at properties that people felt an index should have but have not been formalised in a test in the index numbers literature. This might be considered further evidence of the problem of relying too heavily on the test approach, as it may be dependent on an individual's interpretation of common sense behaviour of a price index.

Mix of formulae

Some respondents asked why 5 per cent of elementary aggregates in the CPI use Dutot while the proportion is 29 per cent in the RPI.

The 5 per cent in the CPI represent centrally collected indices that used Dutot at the inception of the HICP. As a change in formula for these was not required or considered appropriate these indices were not transferred to Jevons. All other CPI elementary aggregates were converted to Jevons from the formula used in the RPI.

Clothing prices and cotton prices

One respondent argued that as cotton prices had shown substantial growth in recent years it is reasonable to assume that RPI clothing inflation is more accurately reflecting this as it is closer to the growth in cotton prices.

From considering both RPI and CPI clothing indices it is apparent that clothing inflation does increase as cotton prices increased, however this occurred at the same time that the clothing collection instructions were changed.
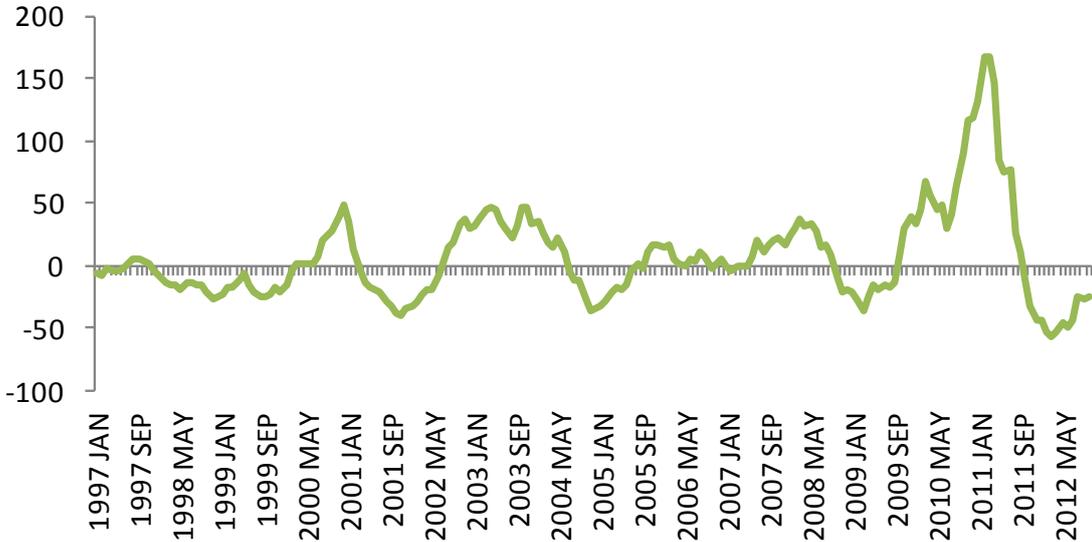
Previously the change in the level of CPI clothing and footwear inflation has been attributed to the change in clothing collection instructions, as has the increased formula effect. Based on this response ONS considered whether an increase in the cotton price of the type seen since 2010 (see graphs in appendix A below) might increase the volatility of clothing prices and thus be responsible for part of the increase in the formula effect. It can be seen that the CPI and RPI increase around the start of the upturn in cotton prices, which is also when the collection instructions changed.

An international comparison shows no similar increase in clothing prices in other major European economies (or in the US), although Ireland, who in the past have experienced similar clothing inflation to the UK did. It is noticeable then that UK HICP clothing inflation seems to have harmonised with other European countries and so it
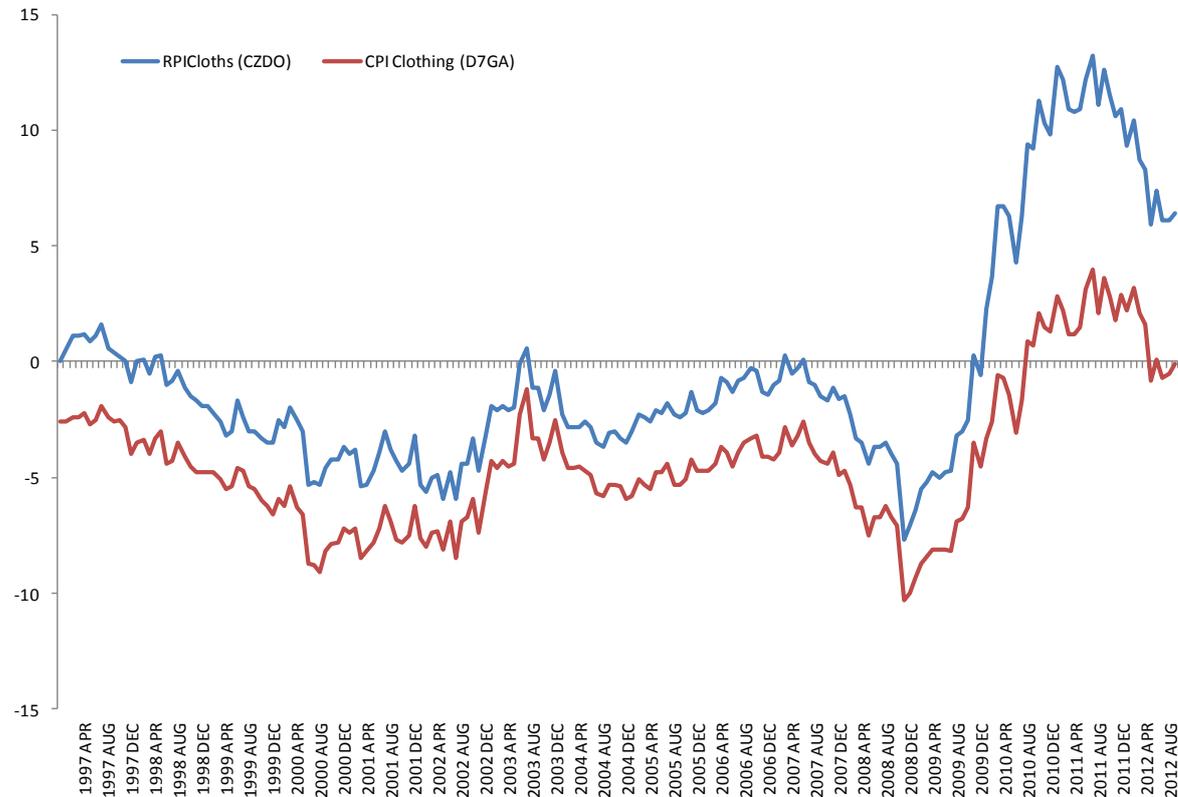
is difficult to say that the change is because of cotton prices or that the RPI is better measuring clothing inflation based on the evidence available.
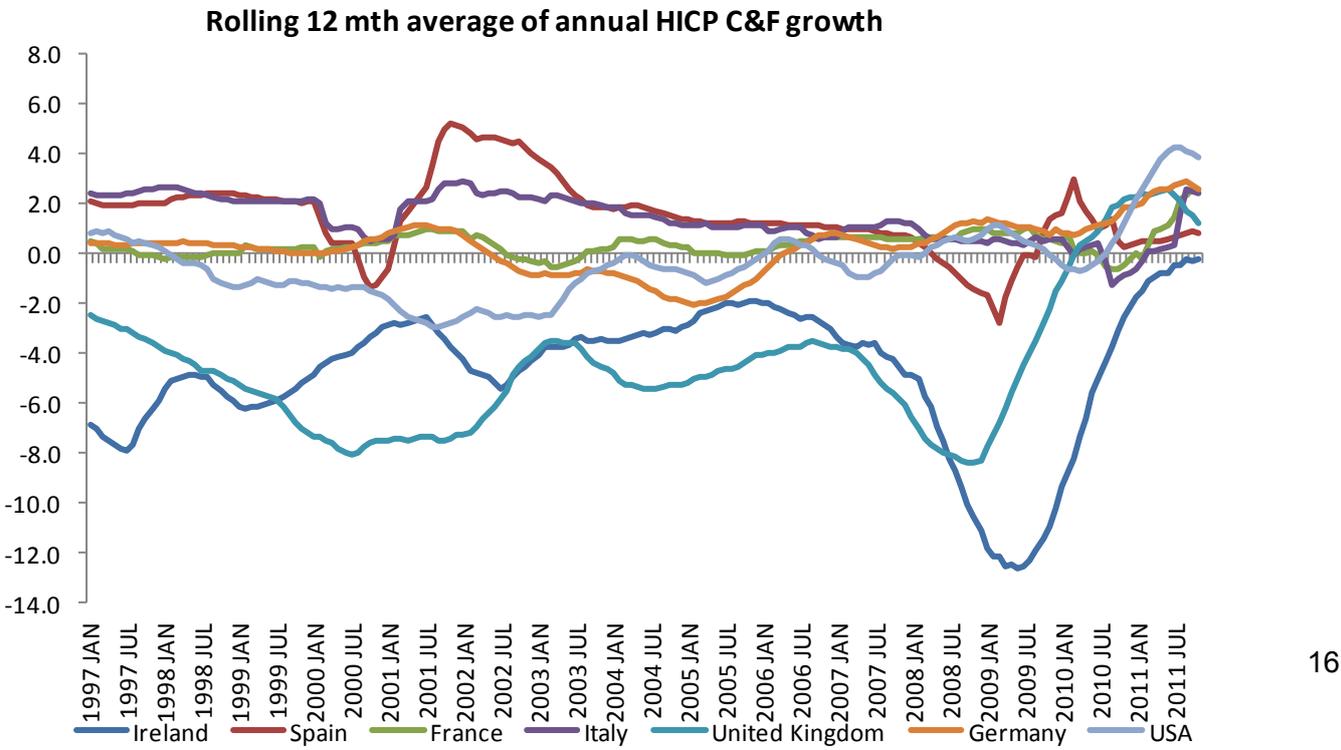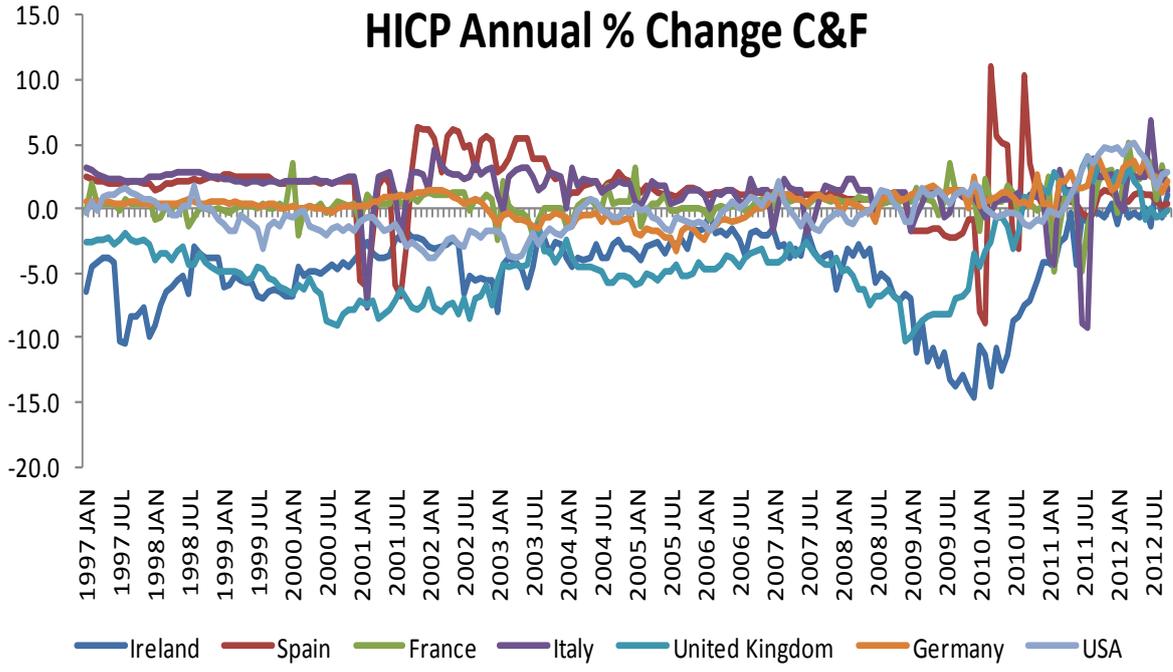
Appendix A Cotton Prices and Clothing Inflation

12mth change in cotton prices

UK Clothing and Footwear 12 month % change

HICP Annual % Change C&F

Legend: Ireland, Spain, France, Italy, United Kingdom, Germany, USA

Rolling 12 mth average of annual HICP C&F growth

Legend: Ireland, Spain, France, Italy, United Kingdom, Germany, USA

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Annex B - Summary of non-statistical (user requirements) responses

Issue	ONS Position
The National Statistician's consultation is a political move by the ONS and questions ONS's independence	The consultation is an independent statistical consultation, which was decided upon without any pressure from Government or external bodies. The consultation follows a detailed programme of statistical work undertaken by ONS, as set out in the Consumer Prices Advisory Committee's annual report for 2011, to seek to understand the reasons for the formula effect between the RPI and the CPI. The options for improvement set out in the consultation document are based on the findings of that independent statistical work and the National Statistician believes these were the right ones to consult upon.
Questions the integrity of ONS, and its unprofessional and unethical behaviour	ONS is an independent organisation that is committed to producing high quality, fair and impartial statistics. The consultation on the RPI was an independent statistical consultation which the National Statistician has decided on without any pressure from government or anyone else.
The maths behind the RPI is wrong	There is no error in the RPI. The RPI is constructed and calculated as defined in the Consumer Price Indices Technical Manual. ONS constantly keeps the composition of its indicators under review. The consultation addressed issues around the way that consumer price indices can be constructed.
The Carli formulae is easier to understand to the lay audience	ONS has attempted to ensure that the formulae in the consultation document are as accessible as possible. As this is a technical statistical consultation there are some complex points, which ONS understands may be difficult for some audiences to understand.
Method of consultation is not fit for purpose, the focus is almost exclusively on online responses, which excludes the elderly who are affected by the change	While the National Statistician's consultation has predominately been available online, ONS has made every attempt to advertise this event via open consultation meetings and consult through verbal and written communications.
The use of the word „improvements' is misleading in the consultation document	The consultation sought users' views on a range of options, some of which could have yielded a more relevant index. Any change that allows the index to meet users' needs better might reasonably be described as an improvement.

Issue	ONS Position
Highlights the negative impact of National Savings certificates and index-linked gilts	Until the completion of the consultation it is not possible to say what effect any change might have on the headline index and thus on assets and liabilities dependant on it. ONS published indicative estimates of the effect of each option on the historic RPI to allow users to estimate their potential impacts.
Highlights the negative impact of pensions	Until the completion of the consultation it is not possible to say what effect any change might have on the headline index and thus on assets and liabilities dependant on it. ONS published indicative estimates of the effect of each option on the historic RPI to allow users to estimate their potential impacts.
Legal implications for contracts linked to the RPI	Decisions on whether to use a particular index for a specific purpose or contract are matters for the business/corporation in question.
The consultation period was too short	ONS has been working on understanding the formula effect gap over a two year period and has published papers on the subject throughout the process. The majority of the statistical issues in the consultation have been in the public domain for some time and an announcement by the National Statistician on 18 September 2012 set out the issues that the consultation would address. The consultation ran from 8 October through 30 November 2012. ONS received more than 400 responses from a wide range of organisations and a significant number of individuals.
The proposed timetable would allow a very limited time to assess implications and alter business plans	The timetable/timeframe for changes to the RPI and CPI is a routine matter, with changes being introduced in the same month of each year to coincide with the normal update of the basket and weights.

Annex C - Summary of arguments against making a change to private housing rentals

Issue	ONS Position
General concern about the collection of data. Housing benefit changes could mean these data are not collected and there need to be safeguards on the validity of such data.	ONS understands the potential risks of not receiving the required private housing rentals data and a service level agreement has been developed to mitigate such risks.
There is no case made out for this being any better than the current well established basis of regular statistics from many private letting agencies throughout the UK.	Detailed analyses demonstrated that private housing rental data from the VOA, Scottish and Welsh Governments better meet the needs of a RPI/CPI private housing rental series than the existing data. Instead of using around 1,200 quotes each month the new sources provide around 800,000 quotes.
The high financial costs relating to purchasing external data.	The cost implications for obtaining these data are minimal.
Would like to see further explanation and research before conclusions are derived.	ONS undertook a number of comparison exercises of the private housing rental series to the current RPI/CPI private housing rental data, to VOA data and to the Devolved Administrations' private housing rental data prior to setting out the consultation.
Lack of understanding of the new data and the methodology to calculate inflation	ONS published analyses of the sources, nature and impact of the change as part of the change process. Documents on the subject are still available on the CPAC area of ONS's website[11]
Consistency in calculations	ONS seeks to achieve continuous improvement in statistical processes to ensure that official statistics are produced to a level of quality that meets users' needs.

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[11] See: http://www.ons.gov.uk/ons/guide-method/development-programmes/other-development-work/consumer-prices-advisory-committee/cpac-papers/index.html