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## TITLE - NO MORE THAN 120 CHARACTERS (WITH SPACES) - THIS FILE IS AN EXAMPLE ON HOW TO USE THE “REVSTAT-V2.STY” PACKAGE

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Authors: AUTHOR ABCDEFG  \*  
– Some Department, Some University,  
A Planet Earth Country (author.abcdefg@org.country)  
AUTHOR HIJKLMN   
– Some Organization Department, Some Institute,  
Another Planet Earth Country (author.hijklmn@org.country)

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2 Abstract:

- 3 • A summary of less than one hundred words, followed by a maximum of six key words  
4 and the AMS 2000 subject classification. The paper should not have more than 25  
5 pages. If necessary authors may consider a file for Supplementary Material, from  
6 their own responsibility. This paper approaches issues related with frame problems  
7 and nonresponse in surveys. These *nonsampling errors* affect the accuracy of the  
8 estimates whereas the estimators become biased and less precise. We analyse some  
9 estimation methods that deal with those problems and give an especial focus to the  
10 poststratification procedures. We then address the Bootstrap methodology for vari-  
11 ance estimation.

12 Key-Words:

- 13 • *Poststratification; frame problems; nonresponse; reweighting; adjustment methods;*  
14 *Bootstrap.*

15 AMS Subject Classification:

- 16 • 49A05, 78B26.

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\*Corresponding author

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## 1. INTRODUCTION

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1        The importance of the treatment of factual items in the XYZ has long been  
 2 recognized in the literature<sup>1</sup>. If not excluded for the purposes of index number  
 3 compilation, the most common approaches to the treatment of such goods are  
 4 the so-called fix...

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## 2. DESCRIPTION OF THE PROBLEM

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### 2.1. Theoretical background

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5        As mentioned in section 1, in principle, the difficulties raised by the exis-  
 6 tence of factual items can be tackle by either:

- 7 a)    ignoring the issue and excluding all the possible ‘problematic’ items from  
 8        XYZ compilation;
- 9 b)    allocating fixed weights, assuming that factual items are to be treated in  
 10       the same way as all other items (this is the fixed weights approach);
- 11 c)    allocating variable/changing weights, according to the consumption pattern  
 12       found in the base year (this is the variable weights approach).

13        Table 1 summarises the main advantages and disadvantages of the three  
 14 considered approaches.

Approach	Advantages	Disadvantages
Ignore...	Simplicity	Overlooking...
Fixed-weight	Theoretical consistency	Choice of imputation...
Variable-weight	Minimisation...	Theoretical inconsistency

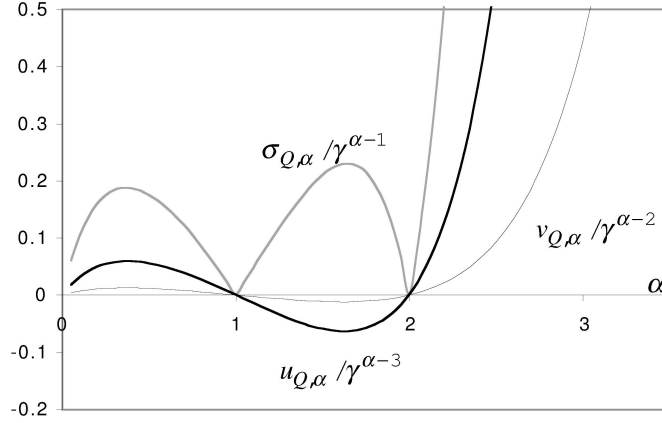
**Table 1:** Advantages and disadvantages of different approaches to the treatment of factual items in a XYZ.

15        Ignoring the ‘problematic’ or more ‘volatile’ items can be seen as a non-  
 16 solution in the context of an index that wants to reflect changes in consumption  
 17 prices. If these items have some importance in the XYZ basket, then there is, in  
 18 principle, no reason for ignoring them.

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<sup>1</sup>See, for instance, Rothwell ([2]).

Figure 1 compares the carry forward and percentage change indices. Although different in level, they nearly have the same turning points and behaviour in terms of movement.



**Figure 1:** Carry forward and percentage change indices.  
Both indices tend to approximate in the months with less prices.

**Theorem 2.1.** Consider aggregation with all the other XYZ components.

$$(2.1) \quad I_{i;o,m}^{t,m} = \frac{p_{i;t,m}}{p_{i;o,m}} .$$

**Proof:** This could be the proof of the previous Theorem... □

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#### 2.1.1. This is a subsubsection

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The percentage change index presents a higher volatility than the forward imputation method (2.1), (2.2) and (2.3) (see Theorem 2.1 and Lemma 2.1).

**Lemma 2.1.** Consider aggregation with all the other XYZ components. That is only possible at the class level:

$$(2.2) \quad I_{i;o,m}^{t,m} = \frac{p_{i;t,m}}{p_{i;o,m}} , \quad m, n \in \mathbb{N} ;$$

$$(2.3) \quad {}_s I_{o,m}^{t,m} = \sum_i I_{i;o,m}^{t,m} \frac{p_{i;t,m} \cdot q_{i;o,m}}{\sum_i p_{i;t,m} \cdot q_{i;o,m}} .$$

1 No matter which approach is followed, one has to bear in mind that no  
2 “perfect” solution exist...

3  
4 Similar environment for corollary, proposition, ...

5 **Remark 2.1.** First Remark...

6 Similar environment for note, definition, example, ...

7 **Proof of Lemma 2.1:** This is the proof of the previous Lemma... □

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