

Consumer Price Indices and Headline and Core Inflation

(A view of selected CARICOM countries - Barbados, Jamaica, Suriname, Trinidad & Tobago)

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(Draft, not yet for quotation!)

INTRODUCTION

Measures of inflation; be they of import prices, export prices, consumption goods and services or economy wide inflation, are of interest to everyone in any country. With increasing globalization, inflation of major trading partners is also very important

The relevance of measuring and analyzing inflation is not questioned and in the second half of last year and the first half of this year, the world witnessed riots in several parts, because of rising Cost of Living. Although the CARICOM did not witness “food riots”, even in the CARICOM Region policy makers were concerned about rising Cost of Living, both nationally and regionally, contemplated and took mitigating actions.

This paper will start with a section discussing Consumer Price Indices in general. Secondly, attention will be given to the concepts of headline and core inflation. Selected desirable properties of annual inflation measures will also be discussed. Thirdly, Consumer Price Indices for selected CARICOM countries will be presented and described individually for the period July 2004- June 2008. Concomitant Headline and Core Inflation will also be presented, **as well as a mainly endogenous explanation** for the pattern in the selected country. Next, a modest comparative analysis will be presented. Some attention will be given to world market prices of selected commodities. Summary, Closing Remarks and conclusions will conclude this paper.

What has been left out?

Although we are discussing inflation, we are not discussing wage developments in the selected countries. Maybe even more important, although we are discussing core inflation we are not treating developments in money supply at all.

Acknowledgements

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THE CONSUMER PRICE INDEX AND INFLATION

THE CONSUMER PRICE INDEX

The Consumer Price index¹ (sometimes more restrictively termed: Cost-of-living index, Retail Price Index or Retail Sales Price Index) is an index that measures the average rate at which prices of consumption goods and services change periodically and is the most widely used indicator of inflation, most likely because of its long history, frequency and timeliness.

The CPI is inter alia used:

- (a) as a key indicator of economic performance and general measure of inflation (see next section)
- (b) for indexation purposes (e.g. indexation of wages, social security benefits, contractual payments)
- (c) for National Accounting deflation

Official Statisticians often witness that even laypersons consider themselves CPI experts. This can be explained in part by the fact that everybody has its own perception and experience of the phenomenon the CPI is supposed to be measuring. Furthermore, it is a fact that measuring price developments has a long history and thus people tend to be familiar with the CPI, which contributes to their “expert opinion”. However, as has been aptly noted elsewhere *“Despite its apparent simplicity, the CPI is a sophisticated concept that draws upon a great deal of economic and statistical theory, and requires complex data manipulation”*. (ILO et al 2004, p xxix)

Serious attempts to measure price developments can be traced back all the way to 1823 when Lowe proposed the use of a “representative commodity basket” to measure price change between two periods (ILO et al 2004, p 265). From Lowe’s proposal evolved the most widely known fixed basket formulae included in all elementary Statistics text books namely the Laspeyres Index formula (fixed basket and fixed weights from the base period) and the Paasche formula (fixed basket and fixed weights from the current period). In principle, all other CPI formulae developed from combining these formulae one way or the other and justify the choice based on the approach or approaches to index number theory that one favours. The approaches (ILO et al 2004, p xxii)² are:

- 1- **fixed basket approach and symmetric averages of fixed baskets**
- 2- **stochastic (statistical estimator) approach**
- 3- **test axiomatic approach**
- 4- **economic approach**³

¹ In what follows we shall often use the common abbreviation CPI

² The colours – from light to dark – are utilized to indicate the historical development as well as which approaches, more or less belong together.

³ Which lead to the Cost of Living index also called constant utility price index, the only alternative that is not necessarily based on comparing the same basket in different periods, but rather based on fixed utility.

Since to arrive at the CPI several goods and services (making up the so-called representative basket) have to be combined into one composite figure the CPI is a composite index, calculated as a weighted sum of the indices of elementary aggregates. The weights denote the relative importance of particular goods and services, and most of the time they are provided by a Household Income and Expenditure Survey (HIES). In that case, the weights are the expenditure shares of the goods and services in the “representative basket”. The prevailing ICLS resolution (ILO, 2004, p) calls on countries to take a HIES at least every five years.

Normally, we are not interested in a single index number, but in the development over time of a series of index numbers. It thus follows that CPI analysis lends itself well to a time series analysis (TSA) approach. Like most time series measuring a magnitude either monthly or quarterly, the CPI is conceptualized to consist of three components:

C_t the Trend-cycle component,

S_t the Seasonal component and

I_t the Irregular component.

Modern univariate - time series - analysis often utilizes ARIMA⁴ modeling in describing a series as a function of past values and lagged random disturbances. Actually, the X-11 ARIMA Seasonal adjustment Program claims that “... *the lack of fit by an ARIMA model indicates that the series is either deterministic or is practically a purely random process, or that it is so contaminated by the irregular component that its systematic movement is unidentifiable.*” (Extracted from Dagum, 1992).

However tempting the TSA avenue looks, we shall not explore it further, but refer to it when we look at selected desirable properties of annual inflation measures. In addition, one cannot look at time series data and not allude to TSA.

INFLATION

Textbook definitions of inflation define it as a sustained rise in the general or overall level of prices and it is the foremost target of monetary and fiscal policies in many countries. At least in the short run the CPI, and consequently the inflation rate based on it, reacts to almost every shock that hits an economy. Unlike the general public policymakers are interested in the underlying trend of inflation, hence a distinction is being made between “headline inflation” and “core inflation” also termed “underlying inflation”, “permanent inflation”, “trend inflation” and “monetary inflation”.

Headline inflation is the CPI inflation measured by the official raw⁵ all-items index, which normally gets most media attention.

⁴ ARIMA is the acronym for Auto Regressive Integrated Moving Average models represented as follows: $O_t = \text{ARIMA}(p,d,q) \times (P,D,Q)_s$ and s is the seasonal periodicity, 12 for monthly and 4 for quarterly data

⁵ Raw means not seasonally adjusted and not stripped from any constituting element.

It is often thought that inter alia because of volatility, headline inflation may convey wrong signals to policymakers and hence the quest for an inflation measure that conveys the persistent trend in inflation on which policy interventions⁶ can be based. A second reason for the identified problem is that the CPI is supposed to measure the increase in the general price level, but because of the way it is constructed (a weighted mean of prices of individual goods and services), it measures both the increase in the general price level, as well as the changes in relative prices. (Aucremane, DNB staff reports 61/2001, p 5). We therefore have to “... *disentangle the relative price ‘noise’ from the inflation signal.*” (Aucremane, *ibid.*)

According to Folkertsma and Hubrich (DNB Staff Reports 63/2001, p 1), there is no consensus in the literature on what core inflation actually is. However, it is noted that all approaches to arriving at a measure termed “core inflation”, seek a measure that is more informative than the change in the official CPI.

According to the CPI manual (ILO 2004, p 229): **Core inflation is inflation resulting from measures, which exclude movements in the inflation rate that are attributable to transient factors.** The ILO manual continues to note that several methods can be used to derive a measure of underlying inflation and that the most traditional approach is to exclude particular components of the CPI on a discretionary basis. Most often food and energy items are excluded from the index, but it is noted that if one wants to reduce volatility simply computing an index “excluding food and energy” or an index “excluding non-manufactured foodstuffs and energy” does not suffice, as at times other sections of the index may contain the main causes of volatility. Consequently, arbitrarily trimmed means and even the median have also been suggested as measures of core inflation.

The CPI manual (ILO et al 2004, p 36) notes that although the CPI does not measure general inflation, for several reasons its movements may be expected to be highly correlated with those of a general measure and that it should provide a reliable indicator of whether inflation is accelerating or decelerating.

To conclude the topic of core inflation we note that broadly core inflation measures can be classified into two approaches (Aucremane 2001, p 3). On the one hand, we have a time series approach (either univariate or multivariate) and on the other hand, we have an approach to reweigh or exclude particular items (“excluding food and energy” is mentioned again) or to use robust estimators such as trimmed means or the median.

⁶ Core inflation is mainly of interest to monetary authorities.

DESIRABLE PROPERTIES OF ANNUAL INFLATION⁷

When disseminating CPI data Statistics Offices usually release annual and monthly figures. As noted by Rhoades and Elhawary-Rivet in a famous paper (in Diewert & Montmarquette 1983, p 878), sometimes confusion is created because the monthly rate may decline at the same time as the annual rate increases. In the present paper, we shall only pay attention to annual inflation.

Even if one is only interested in annual inflation pertaining to a calendar year, confusion is sometimes created. Basically, there are two measures of annual inflation used by statistical offices around the world. One is the average-to-average variation or the 12-months-change in the CPI averaged over 12 months of a calendar year (12AG) and the other one is the December-to-December variation or the 12-months change in the December CPI (12DD). These two measures need not provide the same outcome or even the same development over time. In fact, it can be shown that only if the CPI develops according to a pure geometric progression both results would be identical.

The following three desirable properties are listed in a 1999 internal note of the GBS:

- 1- Absence of seasonal variation in the measure
- 2- Absence or minimal influence of incidents
- 3- Shortest possible time lag

It is clear that these desirable properties are all based on a time series perspective of the CPI and that both 12DD and 12AG do not suffer from undue seasonal influence, as by definition there is no seasonal variation in an annual average and if one assumes fixed seasonality than comparing two indices 12 months apart is not problematic.

The choice between 12MM and 12AG now depends on the weight given property 2 and property 3, since 12MM “only”⁸ has a time lag of 6 months, but is more prone to shocks in one or both December months. On the other hand, 12AG, by virtue of being based on 24 months of data is robust to shocks in a (small) subset of the months, but has a time lag of 11.5 months.

We hope that it is clear that the desirable properties of annual inflation and the importance one wishes to give to a particular property influence the choice of core inflation measure. Some researchers have identified a 37-month central moving average as a core inflation measure with very desirable properties, but because it is so slow it is not useful.

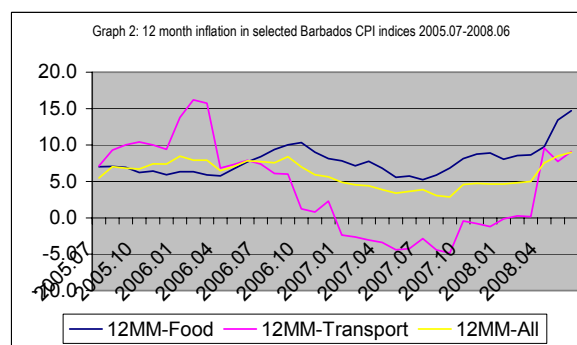
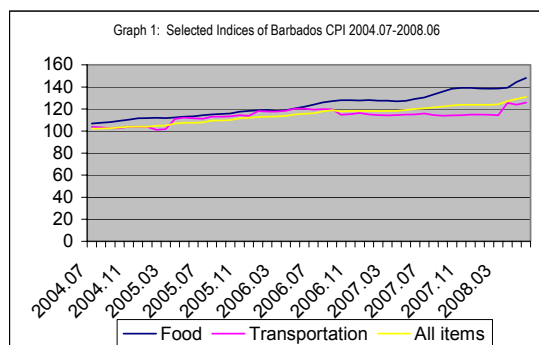
⁷ It is assumed that the CPI used to calculate inflation is up to desired quality standards.

⁸ Some analyst still consider that too much, particularly when compared to a time lag of only

CPI AND INFLATION IN SELECTED CARICOM COUNTRIES

BARBADOS

The all-items CPI of Barbados rose from 102.2 in July 2004 to 130.8 in June 2008. This implies a moderate increase of circa 0.5% per month (circa 6.5% per year) over the period in question. The 12-month change in the same period showed developments portraying a minimum of 2.9% in September 2007 and a maximum of 9.0% in June 2008. If the goal is always to keep CPI all-items inflation to a single digit than the Barbados Authorities clearly succeeded.



Concentrating on the last twelve-month change, we notice the following characteristics:

Table 1: Selected characteristics of Barbados CPI, June 2007- June 2008

Major Group	A	B	C
1. FOOD	0.9397	5.3	59.5
2. ALCHOLIC BEVERAGES AND TOBACCO	0.8066	0.3	3.6
3. HOUSING	0.6677	0.4	4.0
4 FUEL & LIGHT	0.8746	0.5	5.7
5 HOUSEHOLD OPERATIONS & SUPPLIES	0.6705	0.3	3.9
6 CLOTHING & FOOTWEAR	0.5099	0.1	0.8
7 TRANSPORTATION	0.8502	1.5	16.6
8 MEDICAL & PERSONAL CARE	0.8941	0.2	2.6
9 EDUCATION, RECREATION AND MISCELLANEOUS	0.8291	0.3	3.4
All items Index	1.0000	9.0	100.0

A: Correlation⁹ with all-items index

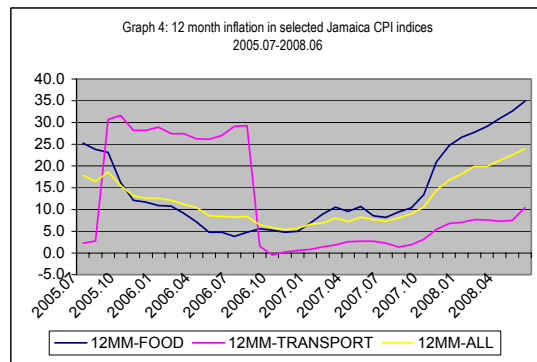
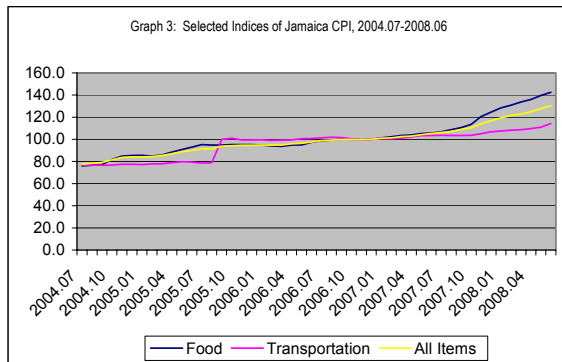
B: Contribution to 12 month change June 2007-June 2008

C: Percentage distribution of B

⁹ Correlations are presented for illustrative purposes, rather than for significance testing purposes!

JAMAICA

The all-items CPI of Jamaica rose from 77.3 in July 2004 to 130.3 in June 2008. This implies an increase of circa 1.1% per month (circa 14.2% per year) over the period in question. The 12-month change in the same period showed developments portraying a minimum of 5.3% in November 2006 and a maximum of 24.0% in June 2008. If the goal is always to keep CPI all-items inflation to a single digit than the Jamaica Authorities clearly did not succeed, as in 19 of the 48 months studied (i.e. circa 40%) there was double-digit inflation.



Concentrating on the last twelve-month change, we notice the following characteristics:

Table 2: Selected characteristics of Jamaica CPI, June 2007- June 2008

Major Group	A	B	C
Food and Non Alcoholic Beverages	0.9978	13.1	54.7
Alcoholic Beverages and Tobacco	0.9064	0.4	1.8
Clothing and Footwear	0.9864	0.7	2.7
Housing and Utilities	0.9896	4.3	17.9
Household Furnishings	0.9852	0.8	3.4
Health Care	0.9667	0.3	1.2
Transportation	0.9674	1.3	5.5
Communication	0.8365	0.0	0.0
Recreation and Culture	0.9820	0.4	1.7
Education	0.9390	0.3	1.1
Food Away from Home	0.9813	0.9	3.7
Miscellaneous Goods and Services	0.9788	1.5	6.4
All Items Index	1.0000	24.0	100.0

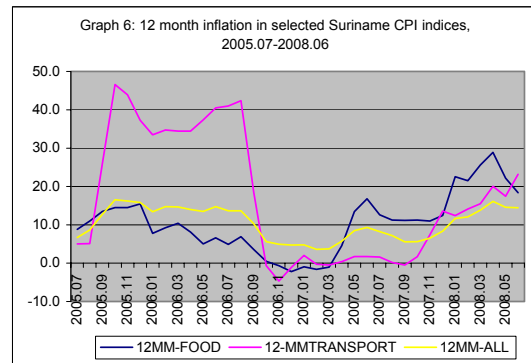
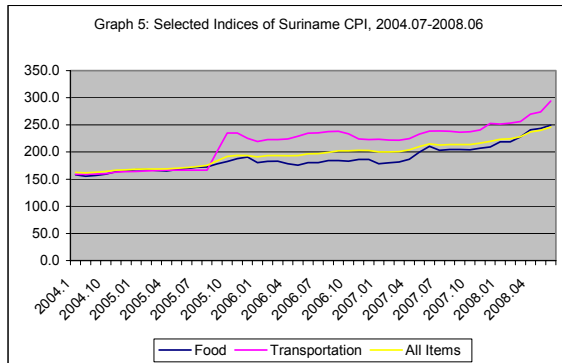
A: Correlation with all-items index

B: Contribution to 12 month change June 2007-June 2008

C: Percentage distribution of B

SURINAME

The all-items CPI of Suriname rose from 162.4 in July 2004 to 246.0 in June 2008. This implies an increase of circa 0.89 % per month (circa 11.2% per year) over the period in question. The 12-month change in the same period showed developments portraying a minimum of 3.6 % in February 2007 and a maximum of 16.5% in October 2005. Just like the Jamaica authorities, those of Suriname did not succeed in keeping annual inflation down to a single digit, all the time, but failed in 19 out of 48 cases.



Concentrating on the last twelve-month change, we notice the following characteristics:

Table 3: Selected characteristics of Suriname CPI, June 2007- June 2008

Major Group	A	B	C
Food and Non Alcoholic Beverages	0.9550	6.1	41.9
Alcoholic Beverages and Tobacco	0.8490	0.1	0.8
Clothing and Footwear	0.9754	0.1	0.4
Housing and Utilities	0.9701	0.9	6.0
Household Furnishings	0.9760	0.4	2.4
Health Care	0.9241	0.5	3.2
Transportation	0.9585	3.9	27.0
Communication	-0.0454	0.0	0.0
Recreation, Culture and Education	0.9719	1.3	9.0
Food Away from Home	0.9920	0.7	4.6
Miscellaneous Goods and Services	0.9563	0.7	4.6
All Items Index	1.0000	14.5	100.0

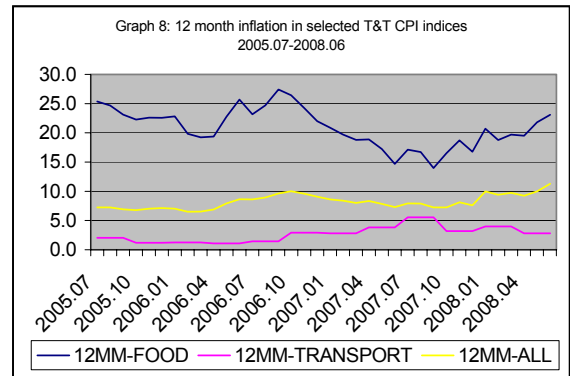
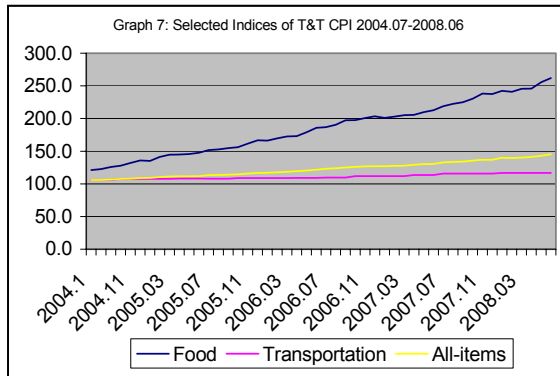
A: Correlation with all-items index

B: Contribution to 12 month change June 2007-June 2008

C: Percentage distribution of B

TRINIDAD & TOBAGO

The all-items CPI of Trinidad and Tobago rose from 105.8 in July 2004 to 145.5 in June 2008. This implies an increase of circa 0.68 % per month (circa 8.5% per year) over the period in question. The 12-month change in the same period showed developments portraying a minimum of 6.5 % in February 2006 and a maximum of 11.3% in June 2008. The Trinidad & Tobago authorities failed only twice (October 2006 and June 2008) to keep annual inflation down to a single digit.



Concentrating on the last twelve-month change, we notice the following characteristics:

Table 4: Selected characteristics of Trinidad & Tobago CPI, June 2007- June 2008

MAJOR GROUP	A	B	C
Food and Non Alcoholic Beverages	0.9986	6.8	59.8
Alcoholic Beverages and Tobacco	0.9807	0.3	2.8
Clothing and Footwear	0.6715	0.1	0.8
Housing and Utilities	0.9842	1.4	12.2
Household Furnishings	0.8064	0.6	5.7
Health Care	0.9870	0.3	2.6
Transportation	0.9753	0.4	3.6
Communication	-0.7994	0.0	0.0
Recreation and Culture	0.9245	0.5	4.0
Education	0.9784	0.3	2.4
Food Away from Home	0.9705	0.5	4.8
Miscellaneous Goods and Services	0.9841	0.1	1.0
All Items Index	1.0000	11.3	100.0

A: Correlation with all-items index

B: Contribution to 12 month change June 2007-June 2008

C: Percentage distribution of B

COMPARATIVE ANALYSIS OF THE FOUR COUNTRIES

We start with presenting the weighting pattern of the four countries in question:

Table 5: Weighting structure¹⁰ of the CPI in selected CARICOM countries

COICOP	MAJORGROUP	Barbados		Jamaica		Suriname		Trinidad & Tobago	
		Share	Rank	Share	Rank	Share	Rank	Share	Rank
1	Food and Non Alcoholic Beverages	30.7	1	37.4	1	33.6	1	18.0	2
2	Alcoholic Beverages and Tobacco	3.7	7	1.4	11	2.9	10	2.5	11
3	Clothing and Footwear	3.4	8	3.3	9.5	3.8	9	5.3	6
4	Housing and Utilities	18.6	2	12.8	2.5	7.4	5	26.2	1
5	Household Furnishings	10.1	4	4.9	7	8.5	4	5.4	5
6	Health Care	5.9	5	3.3	9.5	6.7	6	5.1	7
7	Transportation	17.0	2	12.8	2.5	15.2	2	16.7	3
8	Communication	3.8	6	4.0	8	1.2		4.1	8
9/10	Education, Recreation and Culture	1.5	11	5.5	6	6.5	7	10.1	4
11	Food Away from Home	3.1	9	6.2	5	4.5	8	3.0	10
12	Miscellaneous Goods and Services	2.1	10	8.4	4	9.7	3	3.6	9
	All Items Index	100.0		100.0		100.0		100.0	

In this section, all major group indices are rebased to July 2004 = 100. Thereafter the country specific weighting schedule is applied to obtain the all-items index. This method yields results that differ from simply rebasing the all-items index to 100. Generally, particularly close to the base period, inflation measured from (Laspeyres CPI) series thus rebased is lower than inflation from the original series.

For purposes of calculating core inflation, two approaches are used. Firstly, we exclude major group food and non-alcoholic beverages and transportation¹¹ indiscriminately; this will be called CORE-1. Secondly, based on volatility we compute an all-items index keeping only the three¹² least volatile major groups over July 2004 to June 2008. This will be called CORE-2. To measure volatility the standard deviation (SD) of the index series is used¹³.

We start with comparing the level of the index and the 12-month inflation of the rebased series for the four countries. Looking at the rebased series, we observe that over the period under consideration, Jamaica reaches the highest level of the index, as well as for the 12-month inflation, followed by Suriname.

¹⁰ Barbados did not provide information using the COICOP classification, but since they also provided subgroup information, we were able to produce table 5. However, for the calculations we used the major group information provided by the Barbados Authorities (COICOP is Classification of Individual Consumption according to Purpose).

¹¹ "Transportation" is used as a proxy for "Fuels and lubricants for personal transport equipment", since in most cases we only have Major Group information. It is also expected that the price developments of "Fuels and lubricants for personal transport equipment", will dominate that section. Please see Annex-1 for an attempt to verify this assumption.

¹² The choice for three was made arbitrarily!

¹³ Please note that this approach may have the same drawback as the 37-month moving average mentioned in the section on desirable properties of inflation measures. Furthermore, sometimes volatility is measured using the standard deviation of the first difference of the series of interest.

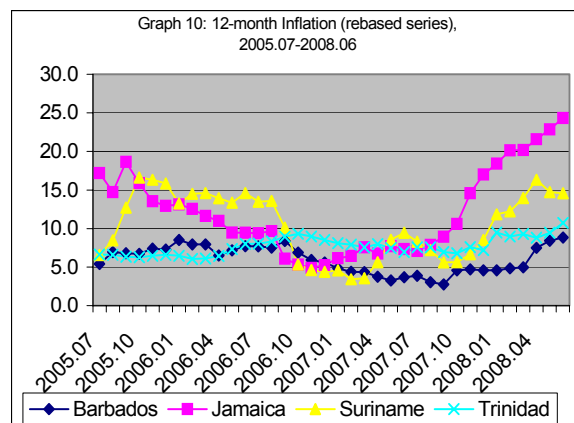
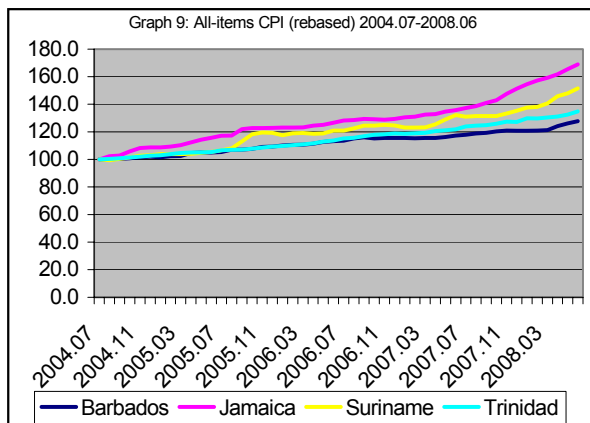


Table 6: Volatility (standard deviation) in the all-items CPI

CPI	Mean				Standard deviation			
	Barbados	Jamaica	Suriname	T&T	Barbados	Jamaica	Suriname	T&T
2004.07-2005.06	102.2	108.2	102.7	102.8	1.8	4.8	2.0	1.9
2005.07-2006.06	109.5	122.5	116.5	109.6	2.3	2.8	4.7	2.4
2006.07-2007.06	115.5	130.9	124.8	118.6	0.9	2.5	3.0	2.0
2007.07-2008.06	121.6	152.1	137.9	128.5	2.9	10.7	7.1	3.5
2004.07-2008.06	112.2	128.4	120.5	114.9	7.6	17.2	13.7	10.0

All available information attests to Barbados and Trinidad & Tobago performing well always or most of the time while Suriname and Jamaica are not doing so well. One could ask if Suriname and Jamaica are more prone to shocks. Before we turn our attention to selected core inflation measures, we present the groups included in the computations of CORE-2. It is repeated that CORE-1 is the “Excluded Food and Transportation CPI”.

Table 7: COICOP Major groups included in Core inflation measure computation

COICOP	Included Major Groups in CORE-2	Barbados*	Jamaica	Suriname	Trinidad & Tobago
1	Food and Non Alcoholic Beverages				
2	Alcoholic Beverages and Tobacco	X			
3	Clothing and Footwear	X		X	X
4	Housing and Utilities				X
5	Household Furnishings			X	
6	Health Care		X		
7	Transportation	X			X
8	Communication		X	X	
9	Recreation and Culture		X		
10	Education				
11	Food Away from Home				
12	Miscellaneous Goods and Services				

* See footnote 10 on the previous page!

Table 8 and Table 9 below contain the results, which are very informative, while Annex 2 contains the pertinent graphs

Table 8: Volatility (standard deviation) in the “Excluded Food and Transportation CPI”

CORE-1	Mean				Standard deviation			
	Barbados	Jamaica	Suriname	T&T	Barbados	Jamaica	Suriname	T&T
2004.07-2005.06	101.5	108.0	102.2	100.7	1.6	4.0	1.4	0.7
2005.07-2006.06	109.3	119.8	112.5	103.8	2.5	3.0	3.6	1.1
2006.07-2007.06	114.3	128.4	123.3	108.7	1.5	2.5	2.7	1.1
2007.07-2008.06	120.1	146.4	130.9	114.3	3.4	8.2	3.6	2.3
2004.07-2008.06	111.3	125.6	117.2	106.9	7.3	14.9	11.3	5.4

Table 9: Volatility (standard deviation) in the “Three least volatile Sections CPI”

CORE-2	Mean				Standard deviation			
	Barbados	Jamaica	Suriname	T&T	Barbados	Jamaica	Suriname	T&T
2004.07-2005.06	101.0	113.3	100.5	100.9	2.9	4.4	0.7	0.6
2005.07-2006.06	107.6	118.2	105.4	102.3	2.2	1.2	1.8	0.6
2006.07-2007.06	108.1	123.8	109.2	105.7	1.2	1.8	0.7	1.4
2007.07-2008.06	110.0	130.5	111.8	109.6	4.1	2.5	1.6	1.1
2004.07-2008.06	106.7	121.5	106.7	104.6	4.4	7.0	4.4	3.5

From the standard deviation values in the tables it can be seen that all countries improved over the entire span, but not necessarily in each particular 12-month period. As regards CORE-1 T&T and Jamaica made the greatest improvements and as regards CORE-2, these were T&T and Suriname.

It is also clear that Trinidad & Tobago now outperforms all other countries, even Barbados. T&T outperforming Jamaica and Suriname is not surprising, but T&T outperforming Barbados is indeed. In our opinion the utilized “core inflation” measures actually discriminate against Barbados that did a fine job in keeping food prices and gas prices at a reasonable level. Trinidad & Tobago and Jamaica have the highest volatility in their Food index, while Suriname and Jamaica have the highest volatility in Transportation. Excluding these sections will sure benefit these countries in getting the “signal” right.

Trinidad & Tobago and Barbados have the lowest volatility in Transportation. T&T is an oil producing country and most likely can satisfy its domestic vehicle fuel and industrial fuel demand. Suriname is also an oil producing country, but so far – except some heavy oil for specific industrial purposes – no oil is provided to the domestic market.

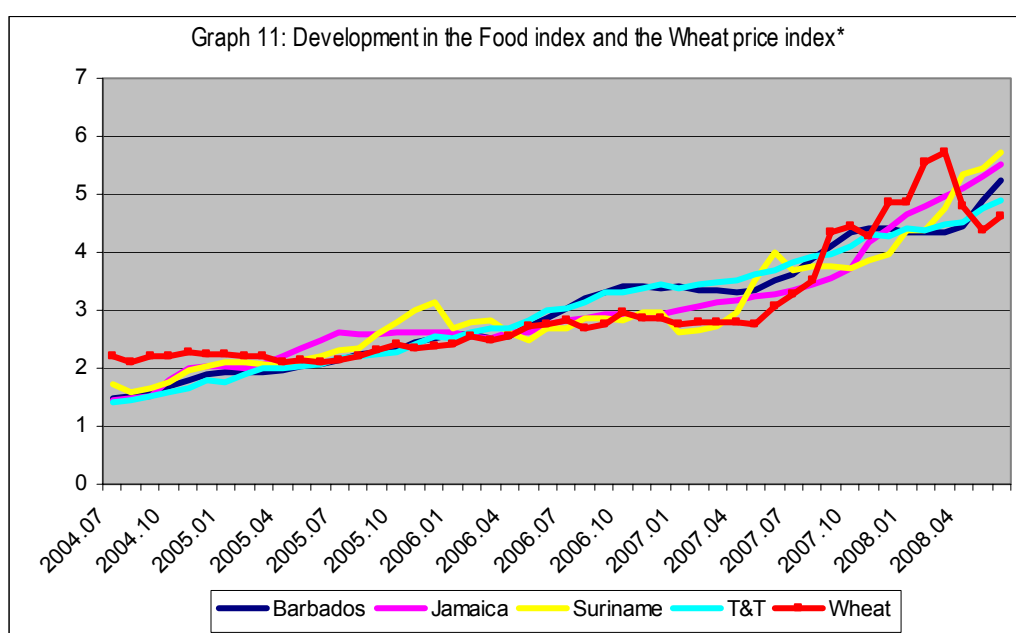
Crude oil is a very important commodity and we expect input-output analysis to reveal interesting direct and indirect effects of the development of gas prices on the price level. One can clearly envisage (assuming no price controls or subsidies) the following scenario. A rise in the price at the gas pump will directly exert an upwards pressure on the CPI. As crude oil, may be used for generating electricity, this may also trigger a rise in cost for utilities. Furthermore, producers will certainly raise the price for their goods and services to deal with higher transportation cost!

SELECTED EXOGENEOUS INFLUENCES

We shall continue with showing the influence of selected world market prices on the price level in the four countries. The commodities chosen are wheat and crude oil.

Wheat is chosen to represent the influence of imported foodstuff on domestic prices, and the importance of oil was discussed earlier. We compare the developments in the world market price of wheat to the development in the Food index of the four countries.

All indices were normalized (first the mean was subtracted from all values and then the result was divided by the standard deviation, finally – to aid graphing – 3 was added to the result), for charting purposes.



* Wheat price obtained from Indexmundi on the internet.

The next step was to quantify the influence by regressing the respective food indices on the wheat price index and a constant.¹⁴

Regression Output:		Barbados	
Std Err of Y Est		4.723711	
R Squared		0.7928313	
No. of Observations		48	
Degrees of Freedom		46	
	Constant	Wheat-price	
X Coefficient(s)	91.7255	0.1672853	
Std Err of Coef.	1.932905	0.0126081	
t-stat	47.45474	13.268053	

Regression Output:		Jamaica	
Std Err of Y Est		8.7200631	
R Squared		0.840838	
No. of Observations		48	
Degrees of Freedom		46	
	Constant	Wheat-price	
X Coefficient(s)	81.42014	0.3628292	
Std Err of Coef.	3.56818	0.0232748	
t-stat	22.81839	15.588899	

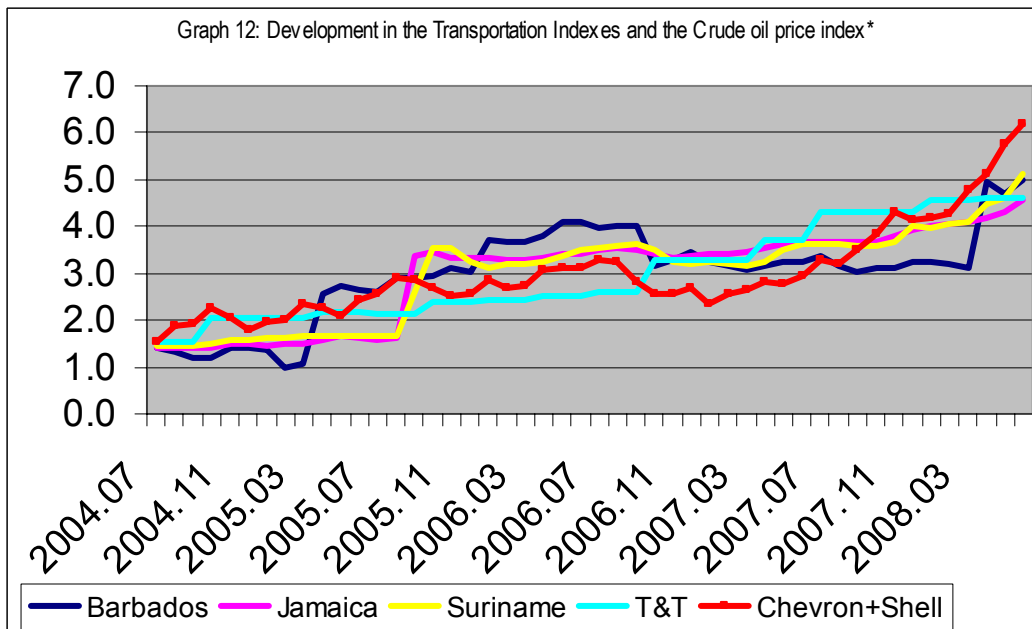
¹⁴ It is well known that with considerable serial correlation, the usual formulae seriously overestimate the precision of the estimates (Ostrom 1990, p 26). It should be noted that the parameters are still unbiased.

Regression Output:		Suriname	
Std Err of Y Est		7.0692943	
R Squared		0.7656037	
No. of Observations		48	
Degrees of Freedom		46	
	Constant	Wheat-price	
X Coefficient(s)	85.49242	0.2312857	
Std Err of Coef.	2.892699	0.0188688	
t-stat	29.55455	12.257602	

Regression Output:		T&T	
Std Err of Y Est		16.232623	
R Squared		0.7679702	
No. of Observations		48	
Degrees of Freedom		46	
	Constant	Wheat-price	
X Coefficient(s)	76.39693	0.5346076	
Std Err of Coef.	6.64226	0.0433267	
t-stat	11.50165	12.338979	

The results indeed look very impressive, as between 76% (Suriname) and 84% (Jamaica) of the variation in the Food section of the CPI of the four countries is “explained” by variation of the food price on the world market. The lowest coefficient for the wheat price (average change in the food index, associated with one index point change in wheat) is also according to expectations, but the highest value for T&T (albeit warranted by the high volatility in its food index) is not what one would expect from a country otherwise performing well.

The same approach is used to look at the developments of the world market crude oil prices and the development in the transportation indexes in the four countries. It is expected that from these four countries, T&T will be least affected.



* Obtained from West Texas Intermediate (using simple average prices for Shell and Chevron quotations)

Again, the graphical inspection is followed by a regression analysis and once more we like to state that we suspect that (positive) serial correlation will be indeed present.

Regression Output: Barbados		
Std Err of Y Est	4.239502	
R Squared	0.490877	
No. of Observations	48	
Degrees of Freedom	46	
	Constant	Crude Oil
X Coefficient(s)	96.48371	0.069431
Std Err of Coef.	2.040879	0.010426
t-stat	47.27557	6.659687

Regression Output: Jamaica		
Std Err of Y Est	10.44857	
R Squared	0.56012	
No. of Observations	48	
Degrees of Freedom	46	
	Constant	Crude Oil
X Coefficient(s)	87.79627	0.196651
Std Err of Coef.	5.029899	0.025695
t-stat	17.45488	7.653367

Regression Output: Suriname		
Std Err of Y Est	13.64164	
R Squared	0.657079	
No. of Observations	48	
Degrees of Freedom	46	
	Constant	Crude Oil
X Coefficient(s)	76.74735	0.314952
Std Err of Coef.	6.567029	0.033547
t-stat	11.68677	9.388383

Regression Output:		
Std Err of Y Est	1.960179	
R Squared	0.663734	
No. of Observations	48	
Degrees of Freedom	46	
	Constant	Crude Oil
X Coefficient(s)	96.34092	0.045932
Std Err of Coef.	0.943622	0.00482
t-stat	102.0969	9.528718

The lowest X-coefficient for (oil producer) Trinidad, followed by the coefficient for Barbados is according to expectations.

SUMMARY, CONCLUSIONS AND CONCLUDING REMARKS

SUMMARY

In this paper, we discussed the Consumer Price (CPI), the most widely used indicator of inflation, as the index that measures the average rate at which prices of consumption goods and services change periodically. We also discussed the major uses of the CPI and continued with a short historical overview. We alluded to the Time Series Analysis (TSA) approach, and continued with discussing to some extent the concepts of headline and core inflation. A short note on selected desirable properties of annual inflation concluded the preparatory sections

In the substantive sections, selected characteristics of the four countries (Barbados, Jamaica, Suriname and Trinidad & Tobago) are presented, followed by a comparative analysis. The emphasis is on explaining the movements from an endogenous point of view, i.e. to explain the movements in the all-items CPI by looking at the movements (and their relative contribution) of the constituent major COICOP groups. Some attention was devoted to selected exogenous influences as measured by regression analysis utilizing the world market price for wheat and for crude oil.

CONCLUSIONS AND CONCLUDING REMARKS

- 1- To describe and analyze developments in CPI and (headline and core) inflation both an endogenous and exogenous approach may prove rewarding.
- 2- It is to be expected that when the CPI and its constituent Sections or Major Groups are used in regression that autocorrelation may be a problem. The extent of the autocorrelation as well as a remedy for it needs to be researched.
- 3- While Policymakers and Monetary Authorities may prefer Core inflation, the public at large will most likely prefer Headline inflation as a tool for escalating and indexation purposes.

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ANNEX 1 – The importance of Fuel on the “Transportation Index”

To illustrate the importance of fuel on the transportation index, we regress the transportation index on the fuel index and a constant. Most likely the series suffers from autocorrelation¹⁵, but as we utilize spreadsheets for the calculations we have no Durbin-Watson statistics to guide us. We will just concentrate on the coefficient of determination and the t-statistics. Please note that we still consider this an endogenous analysis, as at this instance we are not interested to know why the price at the pump has risen!

This illustration can only be provided for Barbados and Suriname, as the Trinidad & Tobago oil price remained fixed over the entire span and Jamaica only provided information as of December 2006.

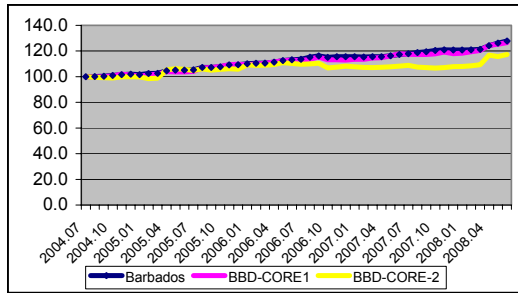
Regression Output:		Barbados	
Std Err of Y Est		2.118763	
R Squared		0.872838	
No. of Observations		48	
Degrees of Freedom		46	
	Constant	Fuel	
X Coefficient(s)	74.49662	0.268087	
Std Err of Coef.	1.990712	0.015087	
t-stat	37.42209	17.76915	

Regression Output:		Suriname	
Std Err of Y Est		4.297355	
R Squared		0.96597	
No. of Observations		48	
Degrees of Freedom		46	
	Constant	Fuel	
X Coefficient(s)	54.39227	0.486068	
Std Err of Coef.	2.33042	0.013451	
t-stat	23.34011	36.13508	

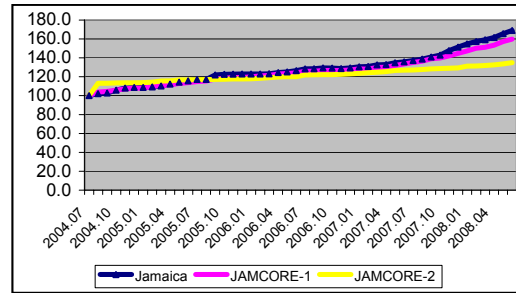
¹⁵ When autocorrelation (a.k.a. serial correlation) is present, the least squares parameter estimates are still unbiased; however the significance tests and confidence intervals are invalid (Lewis-Beck, 1980, p 28)

ANNEX-2: CPI AND ITS ALTERNATIVES TO PRODUCE CORE INFLATION

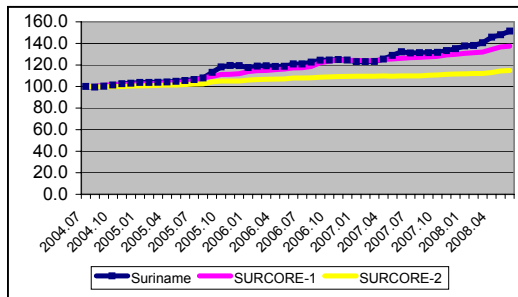
CPI INDEXES BARBADOS



CPI INDEXES JAMAICA



CPI INDEXES SURINAME



CPI INDEXES TRINIDAD & TOBAGO

