

## **Seasonally Adjusted Consumer Price Index**

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### **1.0 Introduction**

The Consumer Price Index (CPI) is widely used as a tool for measuring price changes over a period of time of a fixed basket of goods and services commonly consumed by the population. It has served a variety of purposes mainly for adjustments in transaction flows in the economic system. As one of the country's economic indicators, it gives the true picture of the current conditions in the national economy. It is composed of almost 400 items gathered twice a month all-over the Philippines.

The purpose of this study is to determine the presence of seasonality in the CPI series using X11-ARIMA/88 package. Through the use of the package, fluctuations due to seasonal variation will be determined. Seasonality in the series can mask the movement of long term trend and cause confusion to the economic picture. Thus, taking out the seasonal components in the series will give us a true picture of the current conditions in the national economy. The policy makers or policy advisers at a glance, can read the trend from an economic time series without being hampered by seasonal movements.

Computation of the CPI 1988 = 100 series was done with the use of 13 separate regional market baskets which were scientifically drawn based on the 1985 Commodity and Outlet Survey (COS) and the weights used were derived from the results of the 1988 Family Income and Expenditure Survey (FIES). The base price is the annual average price of a commodity or services in 1988 from January to December.

CPI series is available monthly from January 1973 to January 1993 and released every first week of the month. The over-all CPI is tabulated using six major commodity groups in the Philippines, Metro Manila and Areas Outside Metro Manila (AOMM). The six groups are:

1. Food, Beverages and Tobacco
2. Clothing
3. Housing and Repairs
4. Fuel, Light and Water
5. Services
6. Miscellaneous

The last five groups listed above comprise the non-food items.

The X11-ARIMA/88 is the software used to identify the presence of seasonality in the CPI. This method modifies the 1980 version of X11-ARIMA. The modifications were introduced by the Time Series Research and Analysis Division of Statistics Canada, under the direction of Dr. Estela Bee Dagum. This software allows to translate the original data into seasonally adjusted data. Identification of seasonality is done through an analysis of variance. It also includes statistical tests to determine the presence of trading day effect and easter effect in the series. Furthermore, charts are included in the software to assist in visually identifying trends and seasonality as well as locating outliers.

## **2.0 Results of the CPI from 1988 - 1992**

Using data from January 1988 to December 1992 (60 observations), the CPI of food, beverages and tobacco, and non-food items both in Metro Manila and AOMM were tested for the presence of identifiable seasonality assuming stability. The multiplicative decomposition model consistently had a higher F-value for the tests and thus was applied for the different series. The Total CPI for the Philippines, Metro Manila, for AOMM, for food and for non-food were seasonally adjusted using indirect method since this produced smoother adjusted series. Summary information are shown in Tables 1.1-1.4 and Table 2.

In Metro Manila, presence of stable seasonality were observed both for food and non-food items. However, the Total CPI in the area indicates that there is no seasonality in the series mainly due to the exhibited opposite direction of peaks and troughs of the two series, thus, cancelling out.

### *A. Food, Beverages and Tobacco in Metro Manila*

- There is evidence of stable seasonality in the CPI of food, beverages and tobacco in Metro Manila.
- There is no evidence of moving seasonality in the series.
- Model:  $(0,1,1)(0,1,1)$  with transformation log  
Moving average and seasonal moving average of order 1 and both at first regular and seasonal differencing with transformation log.
- Moving Average for Seasonal (MAVS) - 3 x 9 Moving Average
- Moving Average for Trend Cycle (MAVTC) - 9-term Moving Average

Table 1.1 shows the irregular component of FBT index in Metro Manila. Irregularity in the series may be noted for the months of June, September and November 1988 and August 1991.

The seasonal pattern in the series were seen in the months of March and September. The foods, beverages and tobacco index was low in March while high in September. Taking out the seasonal components in the series, the following trends were observed:

1. The seasonally adjusted index of food, beverages and tobacco exhibited an increment of 0.3 percent in February 1992 from their previous negative monthly rate of 0.7 percent while the original series posted a decrement of 1.4 percent in February 1992 from 0.9 percent in December 1991 level.
2. Although both series exhibited positive monthly rates in September from their previous growth level, the original series however, posted 2.1 percentage points higher than the seasonally adjusted series.
3. Decreasing trend in the monthly rates of seasonally adjusted series were observed from September to December.

#### *B. Non-Food Items in Metro Manila*

- There is an evidence of stable seasonality in the CPI of non-food items in Metro Manila.
- There is no evidence of moving seasonality in the series.
- Model:  $(0,1,1)(0,1,1)$  with transformation log.  
Moving average and seasonal moving average of order 1 and both at first regular and seasonal differencing with log transformation.
- Moving Average for Seasonal (MAVS) - 3 x 9 Moving Average
- Moving Average for Trend Cycle (MAVTC) - 9-term Moving Average

Irregular components in the non-food index in Metro Manila were seen in the months of April, October and also in December 1990 wherein the change was mainly due to the national increase in the price of petroleum products. Moreover, irregularity in the series is also present in the months of July 1991 (a month after the eruption of Mt. Pinatubo) and February 1992.

Seasonal components in the series displayed its peak in March and trough in December. After taking out these components in the series, the following trends were observed:

1. The seasonally adjusted series moved at a slower rate of 0.1 percent in February while the original series pushed up the index by 1.4 percent in February from the previous month's level.

2. The rest of the months followed the same trend throughout the year although the seasonally adjusted series exhibited higher increments than the original series from August to December.

### *C. All Items in Metro Manila*

- There is no evidence of stable seasonality in the over-all CPI in Metro Manila.
- There is no evidence of moving seasonality in the series.
- Model:  $(0,1,1)(0,1,1)$  with transformation log  
Moving average and seasonal moving average of order 1 and both at first regular and seasonal differencing with transformation log.
- Moving Average for Seasonal (MAVS) - 3 x 5 Moving Average
- Moving Average for Trend Cycle (MAVTC) - 9-term Moving Average

On the other hand, evidence of stable seasonality in the total CPI was seen in AOMM. This was attributed by the peaks of food and non-food indices found in the months of January and February, respectively. Troughs of both series were correspondingly noted in the months of June and October.

### *D. Food, Beverages and Tobacco Index in AOMM*

- There is evidence of stable seasonality in the food, beverages and tobacco index in AOMM.
- There is evidence of moving seasonality in the series.
- Model:  $(0,1,1)(0,1,1)$  with transformation log  
Moving average and seasonal moving average of order 1 and both at first regular and seasonal differencing with transformation log.
- Moving Average for Seasonal (MAVS) - 3 x 5 Moving Average
- Moving Average for Trend Cycle (MAVTC) - 9-term Moving Average

Irregular components in the food, beverages and tobacco index in areas outside Metro Manila (AOMM) was noticeably seen in the month of January 1989. Seasonal component in the series was high in January and low in June. The monthly rates of the original series and the seasonally adjusted series is shown in Table 1.2. From this table, the following trends were seen:

1. Monthly growths of seasonally adjusted series were higher in February, March, April, May, October and November 1992 than the original monthly rates.
2. In December 1992, the food, beverages and tobacco index remained stable from November level.

*E. Non-Food Items in AOMM*

- There is evidence of stable seasonality in the food, beverages and tobacco index in AOMM.
- There is evidence of moving seasonality in the series but at a very weak rate.
- Model:  $(0,1,2)(0,1,1)$  with transformation log  
Moving average of order 2 and seasonal moving average of order 1 and both at first regular and seasonal differencing with transformation log.
- Moving Average for Seasonal (MAVS) - 3 x 5 Moving Average
- Moving Average for Trend Cycle (MAVTC) - 9-term Moving Average

Seasonal components in non-food index were exhibited high in February and both low at the same level in October and November.

Taking out the seasonal components in the series, the monthly growths of the series resulted to:

1. The rate in January 1992 of the seasonally adjusted index remained stable at 0.2 percent growth from December 1991.
2. Highest monthly rate was noted in April at 1.3 percent.
3. A negative monthly rate of 0.1 percent was noted in December 1992.

Generally, inflation rates in the seasonally adjusted CPI in all groups were registered at the same level from its original series except for some insignificant difference of 0.1 percentage point in some months.

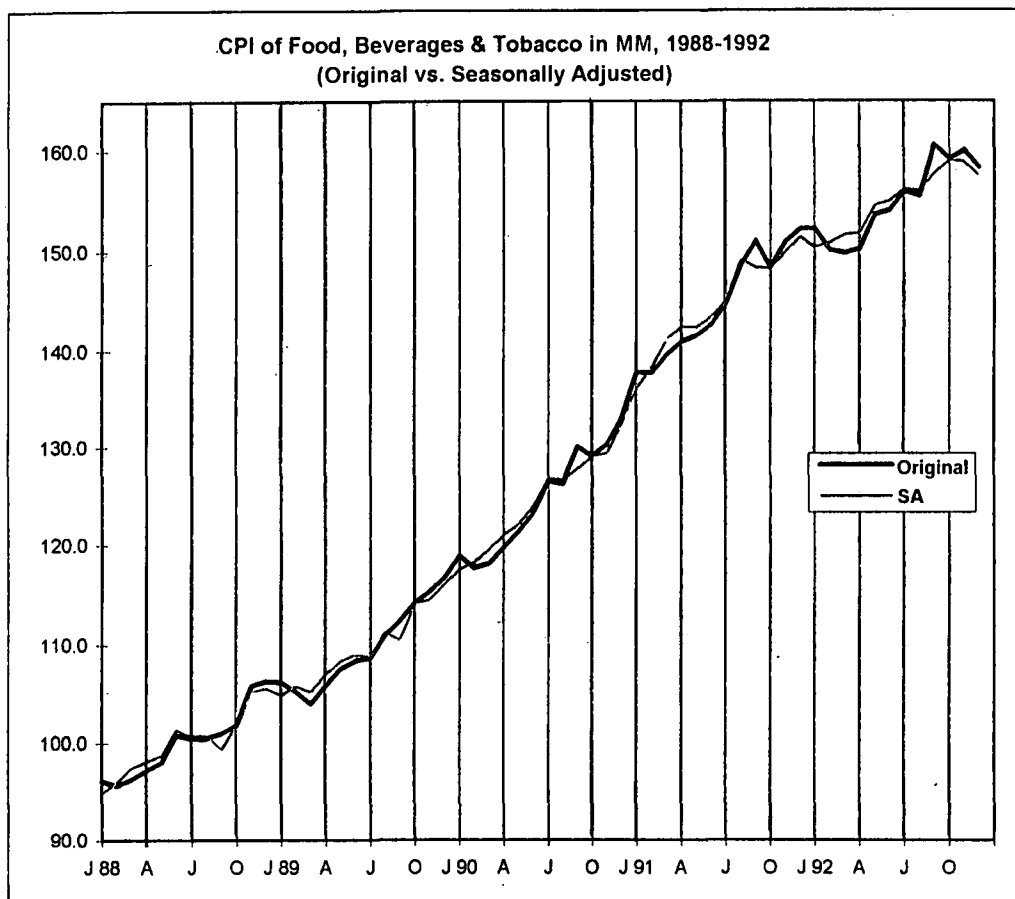
**Table 1.1 Consumer Price Index of Food, Beverages & Tobacco in Metro Manila, 1988 - 1992 (1988 = 100)**

Year/Month	Original Data	Seasonal Factors	Seasonally Adjusted	Trend-Cycle Component	Irregular Component
<b>1988</b>					
January	96.1	101.3	94.8	95.1	99.7
February	95.6	99.6	95.9	96.1	99.9
March	96.3	98.9	97.4	97.1	100.3
April	97.2	99.1	98.1	98.1	100.1
May	98.0	99.3	98.7	98.9	99.7
June	100.8	99.5	101.4	99.7	101.7
July	100.4	99.8	100.6	100.3	100.2
August	100.5	99.7	100.8	100.9	99.9
September	101.0	101.7	99.3	101.5	97.8
October	101.9	100.0	101.9	102.3	99.6
November	105.9	100.6	105.3	103.4	101.8
December	106.4	100.6	105.7	104.3	101.3
<b>1989</b>					
January	106.3	101.2	105.0	105.0	100.0
February	105.4	99.6	105.9	105.5	100.3
March	104.1	98.8	105.3	106.1	99.2
April	106.0	99.0	107.1	107.0	100.1
May	107.6	99.4	108.3	107.9	100.4
June	108.4	99.4	109.0	108.7	100.3
July	108.7	99.9	108.8	109.7	99.2
August	110.9	99.7	111.3	110.8	100.4
September	112.5	101.8	110.5	112.1	98.6
October	114.2	100.1	114.1	113.6	100.5
November	115.3	100.7	114.5	114.9	99.7
December	116.7	100.5	116.1	116.1	100.0
<b>1990</b>					
January	118.9	101.2	117.5	117.2	100.2
February	117.7	99.6	118.2	118.4	99.9
March	118.1	98.8	119.5	119.5	100.0
April	119.7	99.0	121.0	120.8	100.1
May	121.3	99.4	122.0	122.4	99.7
June	123.2	99.4	123.9	124.0	99.9
July	126.5	99.9	126.7	125.5	101.0
August	126.2	99.7	126.6	126.7	99.9
September	130.0	101.8	127.7	127.7	100.0
October	129.0	100.1	128.9	128.9	100.0
November	130.2	100.7	129.3	130.6	99.1
December	133.1	100.5	132.4	132.9	99.7
<b>1991</b>					
January	137.7	101.2	136.0	135.6	100.3
February	137.6	99.6	138.2	138.3	99.9
March	139.5	98.8	141.1	140.5	100.5
April	140.8	99.0	142.3	141.8	100.3
May	141.4	99.4	142.3	142.7	99.7
June	142.5	99.4	143.3	13.7	99.8
July	144.6	99.9	144.8	144.9	99.9
August	148.5	99.7	149.0	146.3	101.8
September	150.9	101.8	148.3	147.7	100.4
October	148.3	100.1	148.1	148.9	99.5
November	150.8	100.7	149.8	149.8	100.0
December	152.1	100.5	151.3	150.4	100.6

**Table 1.1 Consumer Price Index of Food, Beverages & Tobacco in Metro Manila, 1988 - 1992 (1988 = 100)**

Year/Month	Original Data	Seasonal Factors	Seasonally Adjusted	Trend-Cycle Component	Irregular Component
<b>1992</b>					
January	152.1	101.2	150.3	150.7	99.7
February	150.0	99.6	150.7	150.9	99.9
March	149.7	98.8	151.5	151.4	100.1
April	150.1	99.0	151.7	152.4	99.5
May	153.5	99.4	154.4	153.7	100.5
June	153.9	99.4	154.8	154.8	100.0
July	155.8	99.9	156.0	155.7	100.2
August	155.3	99.7	155.8	156.7	99.5
September	160.4	101.8	157.6	157.5	100.0
October	159.1	100.1	158.9	158.2	100.5
November	159.9	100.7	158.8	158.3	100.3
December	158.2	100.5	157.4	158.3	99.4

Source: National Statistics Office



**Table 1.2 Consumer Price Index of Food, Beverages & Tobacco in AOMM,  
1988 - 1992 (1988 = 100)**

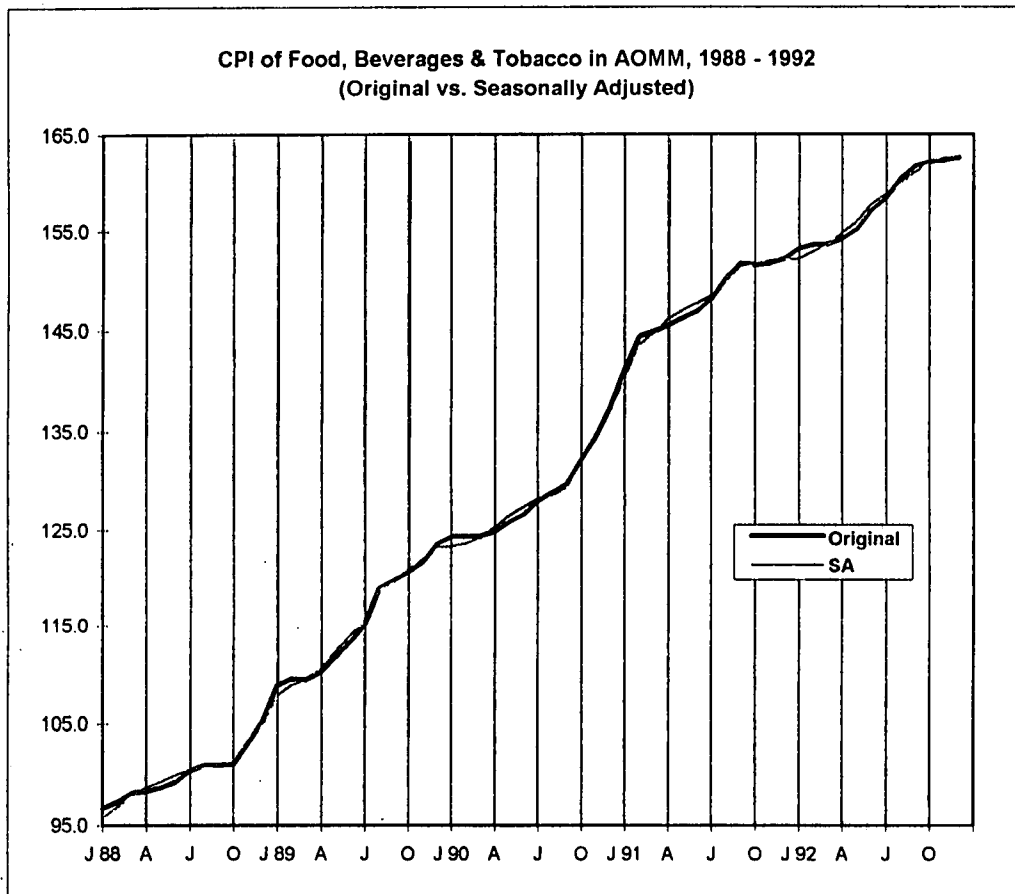
Year/Month	Original Data	Seasonal Factors	Seasonally Adjusted	Trend-Cycle Component	Irregular Component
<b>1988</b>					
January	96.7	100.9	95.8	96.0	99.8
February	97.3	100.6	96.8	96.9	99.9
March	98.1	100.2	97.9	97.7	100.1
April	98.3	99.6	98.7	98.6	100.1
May	98.7	99.5	99.2	99.3	99.9
June	99.2	99.3	99.9	99.8	100.0
July	100.3	99.9	100.4	100.3	100.2
August	100.9	100.2	100.7	100.7	100.0
September	100.9	100.0	100.9	101.3	99.6
October	101.0	99.8	101.2	102.2	99.0
November	103.1	99.7	103.4	103.5	99.9
December	105.3	100.3	105.0	104.8	100.1
<b>1989</b>					
January	108.7	100.9	107.7	106.3	101.4
February	109.4	100.5	108.8	107.7	101.1
March	109.3	100.2	109.1	109.1	100.0
April	110.1	99.6	110.5	110.6	99.9
May	111.7	99.5	112.3	112.3	100.0
June	113.3	99.4	114.0	114.2	99.8
July	115.1	99.9	115.3	116.3	99.2
August	118.9	100.2	118.7	118.1	100.5
September	119.7	100.1	119.6	119.7	99.9
October	120.6	99.8	120.8	120.9	99.9
November	121.6	99.8	121.9	121.9	100.0
December	123.5	100.3	123.2	122.7	100.4
<b>1990</b>					
January	124.3	100.8	123.3	123.2	100.0
February	124.3	100.5	123.6	123.7	99.9
March	124.4	100.2	124.2	124.4	99.8
April	124.8	99.6	125.3	125.3	100.0
May	125.8	99.5	126.5	126.3	100.1
June	126.6	99.4	127.4	127.2	100.1
July	128.0	99.8	128.2	128.1	100.1
August	128.9	100.2	128.6	129.1	99.6
September	129.7	100.2	129.4	130.5	99.2
October	132.2	99.9	132.3	132.4	100.0
November	134.4	99.8	134.7	134.7	100.0
December	137.5	100.2	137.3	137.4	99.9
<b>1991</b>					
January	141.3	100.7	140.3	140.1	100.1
February	144.4	100.5	143.7	142.5	100.8
March	144.9	100.1	144.7	144.5	100.2
April	145.5	99.6	146.1	146.0	100.1
May	146.2	99.5	147	147.0	100.0
June	146.9	99.5	147.7	147.8	99.9
July	148.2	99.8	148.5	148.8	99.8
August	150.2	100.2	149.9	149.9	100.0
September	151.7	100.3	151.2	150.9	100.2
October	151.5	100.0	151.6	151.6	100.0
November	151.7	99.8	152.0	151.9	100.0
December	152.2	100.1	152.1	152.1	100.0



**Table 1.2 Consumer Price Index of Food, Beverages & Tobacco in AOMM, 1988 - 1992 (1988 = 100)**

Year/Month	Original Data	Seasonal Factors	Seasonally Adjusted	Trend-Cycle Component	Irregular Component
<b>1992</b>					
January	153.2	100.7	152.2	152.4	99.9
February	153.6	100.5	152.9	152.8	100.0
March	153.7	100.1	153.6	153.7	100.0
April	154.2	99.6	154.8	154.8	100.0
May	155.2	99.5	156.0	156.2	99.9
June	157.1	99.5	157.8	157.5	100.2
July	158.4	99.8	158.8	158.9	99.9
August	160.4	100.2	160.0	160.1	100.0
September	161.7	100.4	161.1	161.1	100.0
October	162.1	100.0	162.1	161.9	100.1
November	162.3	99.8	162.6	162.5	100.0
December	162.6	100.0	162.6	163.2	99.7

Source: National Statistics Office



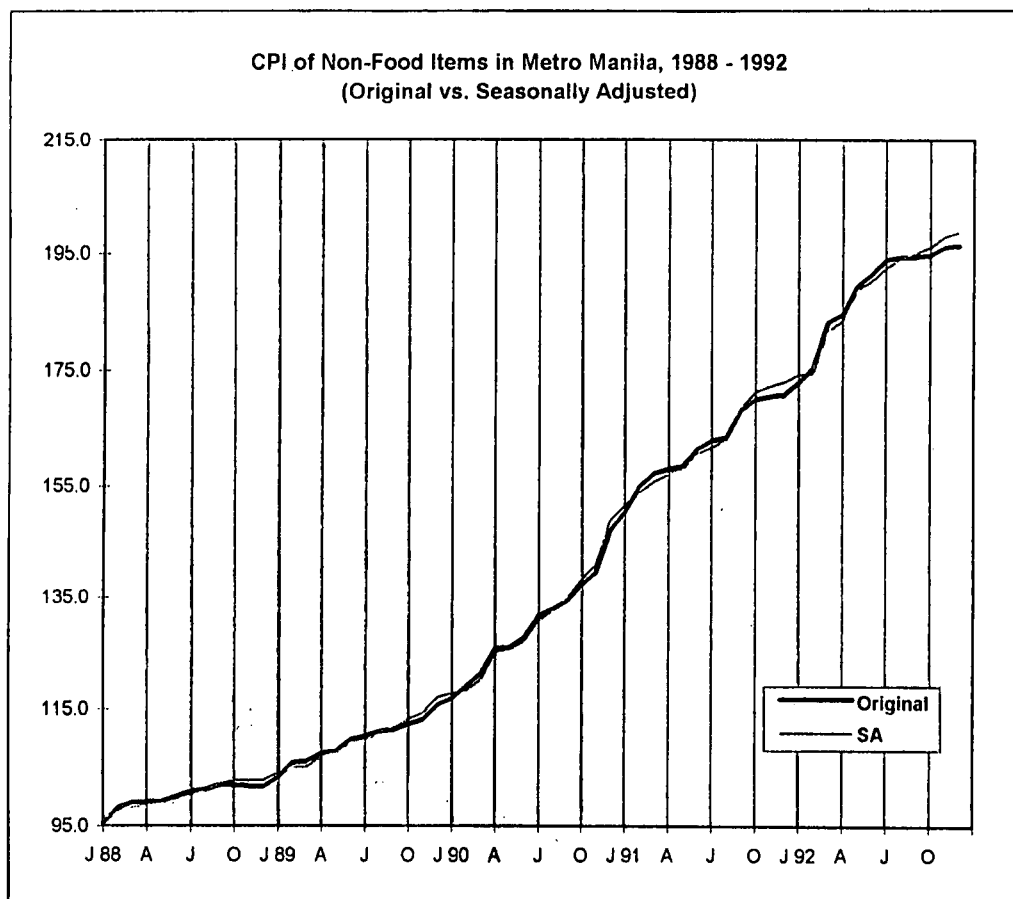
**Table 1.3 Consumer Price Index of Non-Food Items in Metro Manila, 1988 - 1992  
(1988 = 100)**

Year/Month	Original Data	Seasonal Factors	Seasonally Adjusted	Trend-Cycle Component	Irregular Component
<b>1988</b>					
January	95.5	99.4	96.1	96.5	99.6
February	98.1	100.7	97.4	97.3	100.1
March	99.0	100.8	98.2	98.0	100.2
April	99.1	100.6	98.5	98.5	100.0
May	99.2	100.3	98.9	99.0	99.9
June	100.0	100.5	99.5	99.5	99.9
July	100.8	100.6	100.2	100.2	99.9
August	101.1	100.2	100.9	101.1	99.8
September	101.9	99.7	102.2	101.9	100.3
October	102.0	99.3	102.7	102.4	100.3
November	101.7	99.1	102.7	102.8	99.9
December	101.6	98.9	102.7	103.2	99.5
<b>1989</b>					
January	103.2	99.3	103.9	103.8	100.1
February	105.7	100.6	105.0	104.6	100.4
March	106.0	100.9	105.1	105.5	99.6
April	107.3	100.6	106.7	106.5	100.2
May	107.7	100.3	107.3	107.5	99.8
June	109.6	100.6	109.0	108.6	100.3
July	110.2	100.7	109.5	109.7	99.8
August	111.1	100.2	110.9	110.7	100.2
September	111.4	99.8	111.7	111.8	99.9
October	112.3	99.3	113.1	113.2	99.9
November	113.2	99.0	114.3	114.7	99.7
December	115.7	98.8	117.1	116.1	100.8
<b>1990</b>					
January	116.9	99.3	117.7	117.5	100.2
February	119.1	100.6	118.3	118.9	99.6
March	121.2	100.9	120.2	120.5	99.7
April	125.7	100.6	125.0	122.7	101.9
May	126.0	100.3	125.6	125.2	100.3
June	127.8	100.6	127.1	127.8	99.4
July	131.8	100.7	130.9	130.1	100.6
August	132.9	100.2	132.7	132.5	100.1
September	134.3	99.8	134.6	135.2	99.6
October	137.2	99.3	138.1	138.6	99.6
November	139.5	99.0	140.9	142.7	98.7
December	147.1	98.8	148.9	147.1	101.2
<b>1991</b>					
January	150.3	99.3	151.4	151.0	100.3
February	154.9	100.6	153.9	153.8	100.1
March	157.2	100.9	155.8	155.7	100.1
April	158.0	100.6	157.1	157.1	100.0
May	158.5	100.3	158	158.4	99.7
June	161.4	100.6	160.5	160.1	100.2
July	162.8	100.7	161.7	162.4	99.6
August	163.3	100.2	163.0	165.2	98.7
September	168.1	99.8	168.5	168.0	100.3
October	170.1	99.3	171.3	170.3	100.6
November	170.6	99.0	172.3	171.9	100.3
December	170.9	98.8	173.0	173.2	99.9

**Table 1.3 Consumer Price Index of Non-Food Items in Metro Manila, 1988 - 1992  
(1988 = 100)**

Year/Month	Original Data	Seasonal Factors	Seasonally Adjusted	Trend-Cycle Component	Irregular Component
<b>1992</b>					
January	173.0	99.3	174.2	175.0	99.6
February	175.5	100.6	174.4	177.5	98.2
March	183.1	100.9	181.5	180.7	100.4
April	184.4	100.6	183.4	184.2	99.6
May	189.2	100.3	188.6	187.4	100.6
June	191.2	100.6	190.1	190.1	100.0
July	193.7	100.7	192.4	192.2	100.1
August	194.2	100.2	193.9	193.8	100.1
September	194.3	99.8	194.8	195.0	99.9
October	194.6	99.3	195.9	196.2	99.9
November	195.9	99.0	197.8	197.4	100.2
December	196.2	98.8	198.6	198.8	99.9

Source: National Statistics Office



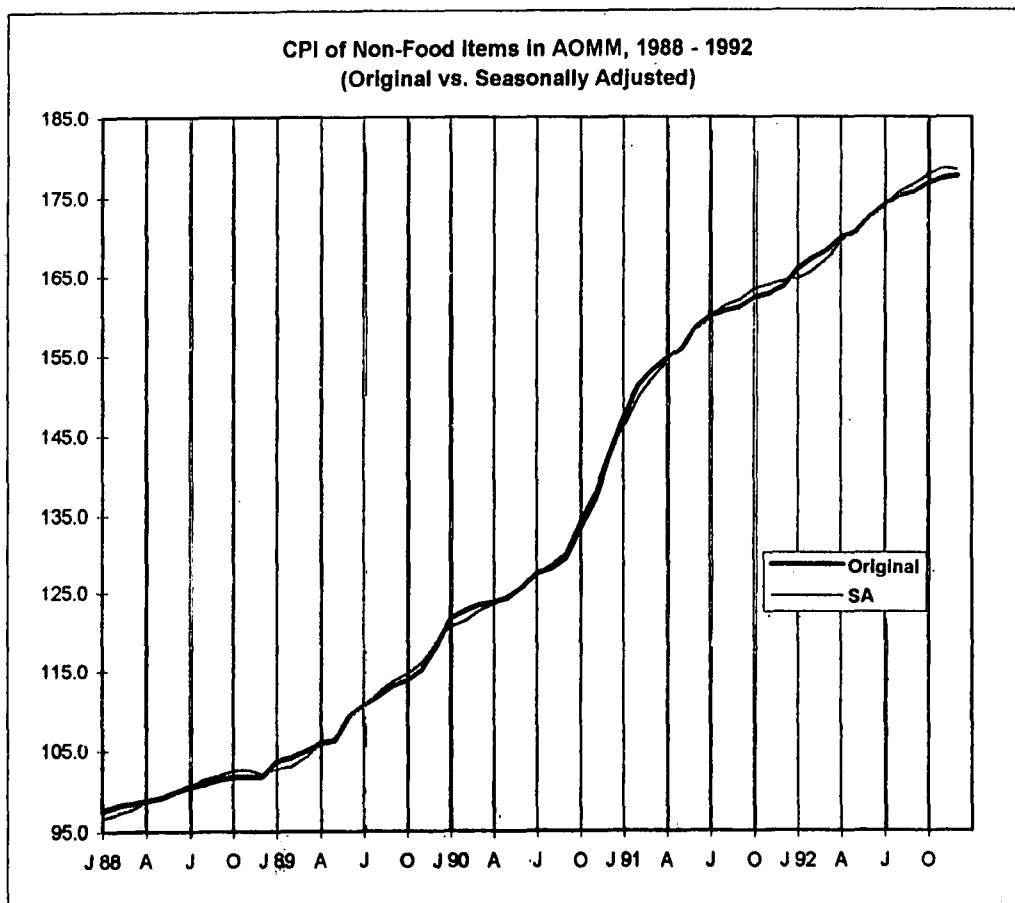
**Table 1.4 Consumer Price Index of Non-Food Items in AOMM, 1988 - 1992  
(1988 = 100)**

Year/Month	Original Data	Seasonal Factors	Seasonally Adjusted	Trend-Cycle Component	Irregular Component
<b>1988</b>					
January	97.6	101.0	96.6	96.6	100.1
February	98.2	101.1	97.2	97.2	100.0
March	98.5	100.7	97.8	97.9	99.9
April	98.8	100.2	98.6	98.6	100.0
May	99.2	99.8	99.4	99.3	100.2
June	99.9	100.1	99.8	100.0	99.9
July	100.6	100.0	100.6	100.7	99.9
August	100.9	99.5	101.4	101.4	100.0
September	101.4	99.5	101.9	101.9	100.0
October	101.7	99.3	102.5	102.3	100.2
November	101.8	99.3	102.6	102.4	100.2
December	101.7	99.7	102.0	102.4	99.7
<b>1989</b>					
January	103.7	101.0	102.7	102.6	100.1
February	104.1	101.0	103.0	103.2	99.9
March	104.9	100.7	104.2	104.2	100.0
April	105.8	100.2	105.6	105.6	100.0
May	106.3	99.8	106.6	107.2	99.4
June	109.2	100.1	109.1	108.9	100.2
July	110.5	100.1	110.4	110.6	99.9
August	111.7	99.6	112.2	112.1	100.1
September	113.1	99.5	113.7	113.6	100.1
October	113.8	99.3	114.6	115.2	99.5
November	115.1	99.3	116.0	116.7	99.3
December	118.1	99.6	118.5	118.3	100.2
<b>1990</b>					
January	121.7	100.9	120.6	119.9	100.6
February	122.6	101.0	121.4	121.3	100.1
March	123.4	100.7	122.6	122.4	100.1
April	123.7	100.3	123.4	123.5	99.9
May	124.3	99.8	124.6	124.5	100.1
June	125.7	100.1	125.5	125.7	99.9
July	127.5	100.1	127.4	127.2	100.2
August	128.1	99.6	128.6	129.0	99.7
September	129.4	99.5	130.1	131.4	99.0
October	133.3	99.3	134.2	134.4	99.8
November	136.7	99.3	137.7	138.1	99.8
December	142.3	99.6	142.8	142.0	100.6
<b>1991</b>					
January	147.2	100.8	146.0	145.8	100.1
February	151.1	100.9	149.7	149.2	100.4
March	153.0	100.7	152.0	151.9	100.1
April	154.5	100.3	154.1	154.2	99.9
May	155.7	99.8	156	156.2	99.9
June	158.4	100.2	158.1	158.0	100.1
July	159.8	100.1	159.6	159.6	100.0
August	160.4	99.7	161.0	160.9	100.0
September	160.9	99.4	161.8	162.1	99.8
October	162.1	99.3	163.2	163.0	100.1
November	162.6	99.3	163.8	163.7	100.1
December	163.5	99.6	164.2	164.2	100.0

**Table 1.4 Consumer Price Index of Non-Food Items in AOMM, 1988 - 1992  
(1988 = 100)**

Year/Month	Original Data	Seasonal Factors	Seasonally Adjusted	Trend-Cycle Component	Irregular Component
<b>1992</b>					
January	165.7	100.7	164.5	164.7	99.9
February	167.0	100.9	165.5	165.7	99.9
March	168.0	100.6	166.9	167.1	99.9
April	169.6	100.3	169.1	168.8	100.2
May	170.3	99.8	170.6	170.5	100.0
June	172.4	100.2	172.1	172.2	99.9
July	173.9	100.2	173.6	173.8	99.9
August	175.0	99.7	175.5	175.3	100.1
September	175.5	99.4	176.5	176.6	100.0
October	176.6	99.4	177.7	177.6	100.1
November	177.2	99.3	178.5	178.3	100.1
December	177.5	99.5	178.3	178.9	99.7

Source: National Statistics Office



**Table 2** Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
FBTMM	CPI OF FOOD, BEVERAGES AND TOBACCO IN METRO MANILA	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 5.732  MAVS - 3x9 MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.60  check M6	
NFTMM	CPI OF NON FOOD ITEMS IN METRO MANILA	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 7.150  MAVS - 3x9 MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.39  check M6	
CPIMM	CPI IN METRO MANILA	1988 - 1992	Multiplicative Direct Seasonally Adj.  Model: (0,1,1) (0,1,1) log F values: 0.938  MAVS - 3x5 MOVING AVE  MAVTC - 9-TERM  Indirect Seasonally Adj.	accepted at the level .... 0.99  check M7  accepted at the level .... 0.99  check M6, M7	no evidence of moving and stable seasonality  Indirect Seasonally Adjusted composite is smoother than the Direct Seasonally Adjusted composite

Table 2 Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
FBIACM	CPI OF FOOD, BEVERAGES AND TOBACCO IN AREAS OUTSIDE METRO MANILA (ADM)	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 8.051 MAVS - 3YS MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.50	moving seasonality present at the level 0.05 F = 2.921
NFIACM	CPI OF NON FOOD ITEMS IN AREAS OUTSIDE METRO MANILA (ADM)	1988 - 1992	Multiplicative: Model: (0,1,2) (0,1,1) log F values: 21.638 MAVS - 3YS MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.25	moving seasonality present F = 3.004
OPIACM	CPI IN AREAS OUTSIDE METRO MANILA (ADM)	1988 - 1992	Multiplicative Direct Seasonally Adj. Model: (0,1,2) (0,1,1) log F values: 14.679 MAVS - 3YS MOVING AVE MAVTC - 9-TERM Indirect Seasonally Adj.	accepted at the level .... 0.30 accepted at the level .... 0.47	moving seasonality present F = 3.129 Indirect Seasonally Adjusted composite is smoother than the Direct Seasonally Adjusted composite check M4, M6 moving seasonality present F = 3.664

**Table 2** Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
FBTPHL	CPI OF FOOD, BEVERAGES AND TOBACCO IN THE PHILS	1988 - 1992	Multiplicative		
			Direct Seasonally Adj.	accepted at the level .... 0.48	
			Model: (0,1,1) (0,1,1) log		Indirect Seasonally Adjusted composite
			F values: 7.868		is smoother than the
NFPHL	CPI OF NON-FOOD ITEMS IN THE PHILS	1988 - 1992	Indirect Seasonally Adj.	accepted at the level .... 0.60	Direct Seasonally Adjusted composite
			F values: 5.724	check M6, M7	
			Multiplicative		
			Direct Seasonally Adj.	accepted at the level .... 0.28	
			Model: (0,1,1) (0,1,1) log	check M6	Indirect Seasonally Adjusted composite
			F values: 15.311		is smoother than the
			Indirect Seasonally Adj	accepted at the level .... 0.35	Direct Seasonally Adjusted composite
			F values: 12.979	check M6	



Table 2 Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
NFCAR	CPI OF NON-FOOD ITEMS IN CAR	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 4.923 MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.57 check M6	no evidence of moving seasonality
NFR1	CPI OF NON-FOOD ITEMS IN REGION I	1988 - 1992	Multiplicative: Model: (0,1,2) (0,1,1) log F values: 12.750 MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.43	moving seasonality present F = 3.408
NFR2	CPI OF NON-FOOD ITEMS IN REGION II	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 4.393 MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.55 check M7	no evidence of moving seasonality
NFR3	CPI OF NON-FOOD ITEMS IN REGION III	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 6.764 MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.56 check M6 ; M7	no evidence of moving seasonality

**Table 2** Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
NFR4	CPI OF NON-FOOD ITEMS IN REGION IV	1988 - 1992	Multiplicative: All models failed  F values: 39.084  MAVS - 30S MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.25	no evidence of moving seasonality
NFR5	CPI OF NON-FOOD ITEMS IN REGION V	1988 - 1992	Multiplicative: Model: (2,1,0) (0,1,1) log F values: 17.102  MAVS - 30S MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.35	moving seasonality present F = 4.838
NFR6	CPI OF NON-FOOD ITEMS IN REGION VI	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 6.263  MAVS - 30S MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.56  check M6 ; M7	moving seasonality present F = 5.923
NFR7	CPI OF NON-FOOD ITEMS IN REGION VII	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 8.039  MAVS - 30S MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.73  check M7	presence of moving seasonality F = 12.700

Table 2 Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
NFR8	CPI OF NON-FOOD ITEMS IN REGION VIII	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 10.870 MAVS - 3x5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.44	no evidence of moving seasonality
NFR9	CPI OF NON-FOOD ITEMS IN REGION IX	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 9.993 MAVS - 3x5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.38	no evidence of moving seasonality
NFR10	CPI OF NON-FOOD ITEMS IN REGION X	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log no evidence of stable seasonality F values: 2.264 MAVS - 3x5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.67 check M7	no evidence of moving seasonality
NFR11	CPI OF NON-FOOD ITEMS IN REGION XI	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 6.979 MAVS - 3x5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.55 check M7	moving seasonality present F = 3.954

**Table 2** Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
NFR12	CPI OF NON-FOOD ITEMS IN REGION XII	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 3.603  MAVS - 3X5 MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.57  check M7	no evidence of moving seasonality
NFAOM	CPI OF NON-FOOD ITEMS IN A O M M	1988 - 1992	Direct Method  Multiplicative: Model: (0,1,2) (0,1,1) log F values: 23.218  MAVS - 3X5 MOVING AVE  MAVTC - 9 - TERM  Indirect Method  F values = 19.366  MAVS - 3X5 MOVING AVE  MAVTC - 13 - TERM	accepted at the level .... 0.23  check M6  accepted at the level .... 0.23  check M6	presence of moving seasonality F = 2.989  presence of moving seasonality F = 3.036  Indirect Seasonally Adjusted composite is smoother than the Direct seasonally Adjusted composite

Table 2 Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
FBTCAR	CPI OF FOOD, BEV. & TOBACCO IN CAR	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 7.419  MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.51	no evidence of moving seasonality
FBTRI	CPI OF FOOD, BEV. & TOBACCO IN REGION I	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 12.958  MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.45	no evidence of moving seasonality
FBTRI2	CPI OF FOOD, BEV. & TOBACCO IN REGION II	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 18.666  MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level ..... 0.38	no evidence of moving seasonality
FBTRI3	CPI OF FOOD, BEV. & TOBACCO IN REGION III	1988 - 1992	Multiplicative: Model: (0,1,2) (0,1,1) log F values: 6.053  MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.52	no evidence of moving seasonality
FBTRI4	CPI OF FOOD, BEV. & TOBACCO IN REGION IV	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 8.682  MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.58 check M7	moving seasonality present F = 8.197

**Table 2** Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
FBTR5	CPI OF FOOD, BEV. & TOBACCO IN REGION V	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 12.071 MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.40	moving seasonality present F = 3.263
FBTR6	CPI OF FOOD, BEV. & TOBACCO IN REGION VI	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 7.095 MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.52 check N6	no evidence of moving seasonality
FBTR7	CPI OF FOOD, BEV. & TOBACCO IN REGION VII	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 4.312 MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.69 check N7	moving seasonality present F = 2.920
FBTR8	CPI OF FOOD, BEV. & TOBACCO IN REGION VIII	1988 - 1992	Multiplicative: Model: (0,1,2) (0,1,1) log F values: 10.009 MAVS - 3X5 MOVING AVE MAVTC - 9-TERM	accepted at the level .... 0.47	no evidence of moving seasonality

Table 2 Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
FBTR9	CPI OF FOOD, BEV. & TOBACCO IN REGION IX	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 4.088  MAVS - 3x5 MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.62  check M7	no evidence of moving seasonality
FBTR10	CPI OF FOOD, BEV. & TOBACCO IN REGION X	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 4.021  MAVS - 3x9 MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.59  check M6	no evidence of moving seasonality
FBTR11	CPI OF FOOD, BEV. & TOBACCO IN REGION XI	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 10.114  MAVS - 3x5 MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.45	no evidence of moving seasonality

**Table 2** Summary Measures in the Seasonal Adjustment of Time Series  
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SERIES	DESCRIPTION	PERIOD COVERED	OPTIONS	SUMMARY MEASURES	REMARKS
FBTR12	CPI OF FOOD, BEV. & TOBACCO IN REGION XII	1988 - 1992	Multiplicative: Model: (0,1,1) (0,1,1) log F values: 5.462  MAVS - 3X5 MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.44	no evidence of moving seasonality
FBTAOM	CPI OF FOOD, BEV. & TOBACCO IN A O M M	1988 - 1992	Direct Method  Multiplicative: Model: (0,1,2) (0,1,1) log F values: 8.156  Indirect Method  F values: 6.881  MAVS - 3X5 MOVING AVE  MAVTC - 9-TERM	accepted at the level .... 0.46    accepted at the level .... 0.55	no evidence of moving seasonality   Indirect Seasonally Indirect Seasonally Adjusted composite is smoother than the Direct Seasonally