

# A brief introduction to inflation

PRESENTATION BY THE CBS,  
May 4, 2007 Martijn Balkestein



# INTRODUCTION

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- What is the CPI?
  - Misconceptions about the CPI
  - How the CPI relates to you
  - The goods and services contained in the CPI Basket
  - The relative importance of commodities in the CPI Basket
  - Updating the CPI Basket
  - Collecting prices
  - Dealing with quality change
  - Calculating indexes
  - Calculating percentage changes
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# WHAT IS THE CPI?

- The Consumer Price Index (CPI) is a measure of the **rate of price change** for goods and services bought by Aruban consumers.
- Today, the CPI directly or indirectly affects nearly all Arubans:
  - Old age pensions
  - Rental agreements, spousal and child support payments
  - Cost-of living adjustment (COLA)
- The CPI is obtained by comparing, through time, the **cost of a fixed basket** of commodities purchased by Aruban consumers in a particular year.

# MISCONCEPTIONS ABOUT THE CPI

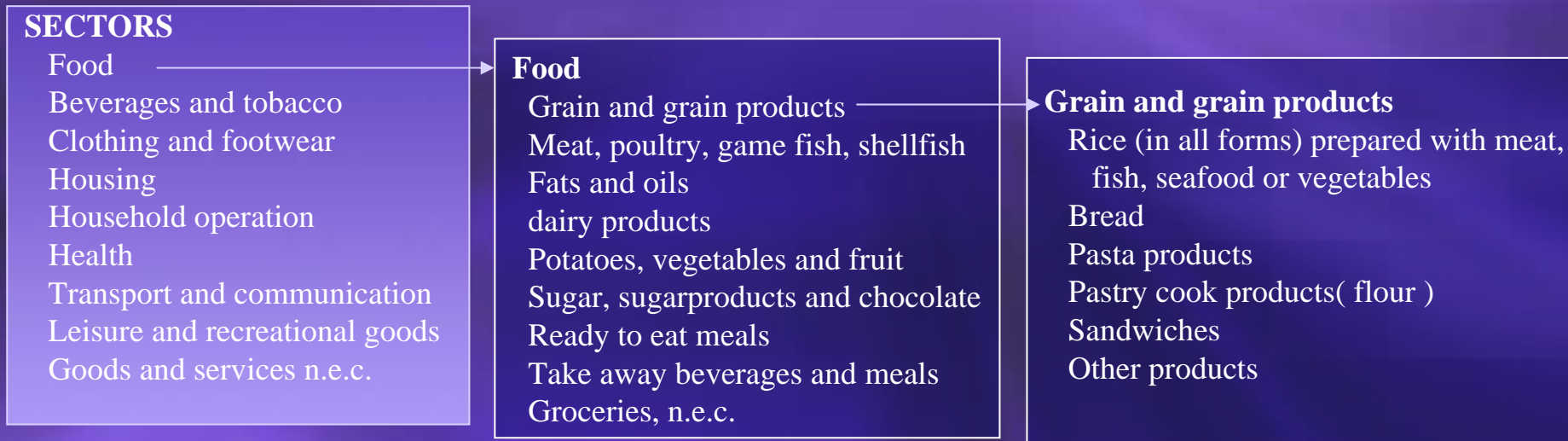
- The CPI is often perceived as the **only** measure of the rate of price change. The CPI is one of the many price change measures.
  - Producer Price Index
  - Tourism Price Index
  - Price Indexes of the National Accounts
  - Raw material Price Index
  - Industrial Product Price Index
- The CPI is not a measure of **price levels**. Price indexes show the rate of which prices change between periods. For example:
  - Oranges 2007: 100.5                      1995 = 100
  - Apples 2007: 117.9                      1995 = 100
- Comparison of CPI's of countries

# HOW THE CPI RELATES TO YOU

- CPI figures are reported every month in the newspapers. Personal experience does not always seem to match what is being reported. However, the CPI measures the **average** change in retail prices encountered by all consumers in Aruba.
- Information on the spending habits of Aruban Households is obtained periodically from family expenditure survey's.
  - Random set of households is asked to keep a detailed diary of expenditures over a **two-week period**
  - In another survey, the same households are asked to provide detailed information on what goods and services were purchased in the **previous calendar year** together with the money spent on these items.
- Combining the information from the households enables us to develop a broad picture of the spending pattern of the whole population.

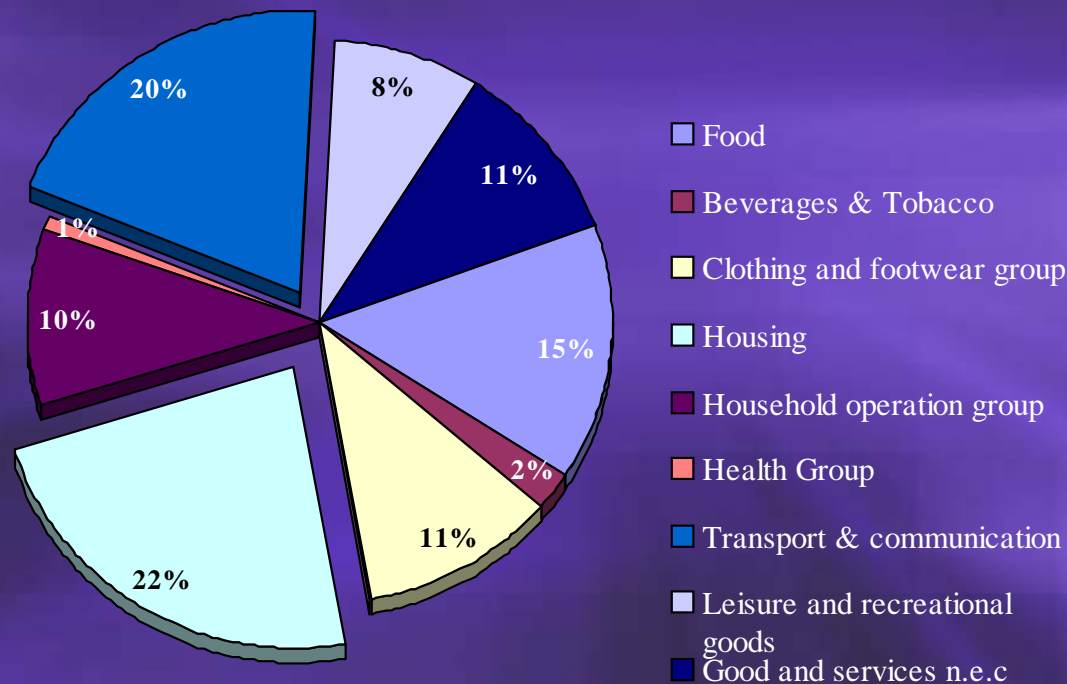
# THE GOODS AND SERVICES CONTAINED IN THE CPI BASKET

- The goods and services included in the CPI basket are those considered to be **consumer items**. They must be associated with a retail price.
- Examples of **excluded items** are income taxes, charitable donations, contributions made to pension plans, consumer savings and investments.
- Goods and services are organized according to a **classification system**. Products are grouped together with other items, either because they have a common end-use or because they are considered substitutes for each other.
- Indexes are computed for each of the basic classes.



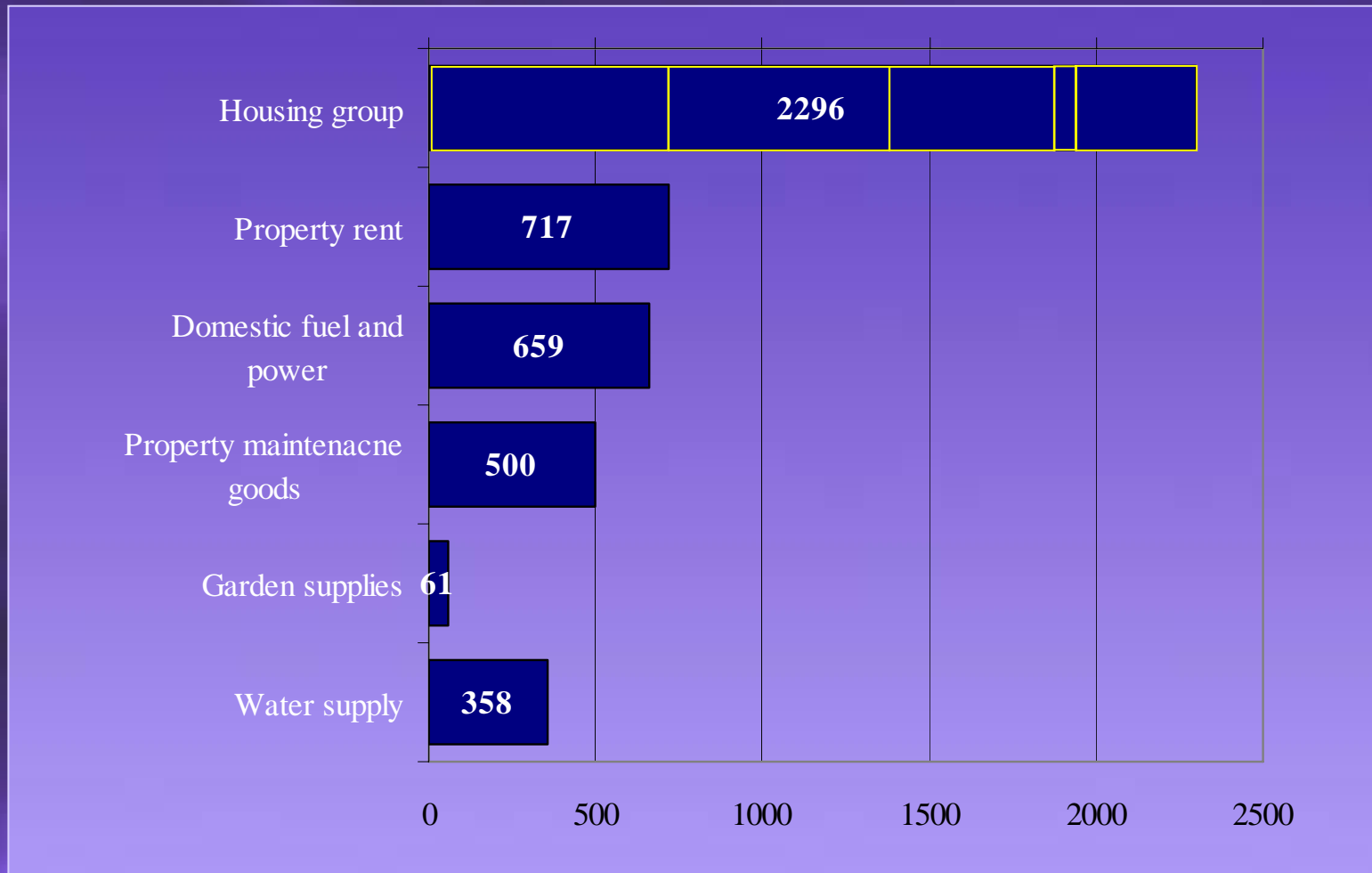
# THE RELATIVE IMPORTANCE OF COMMODITIES IN THE CPI BASKET

- The spending associated with each basic class in the CPI basket is compared to the total spending in Aruba. These proportions indicate the relative importance, or weight, of a commodity in the CPI basket.



- Weights determine the impact that a particular price change will have on the overall consumer budget.

# THE RELATIVE IMPORTANCE OF COMMODITIES IN THE CPI BASKET





# UPDATING THE CPI BASKET

- The content of the CPI basket is reviewed and updated periodically to ensure that it remains relevant. Major part of this review: replacing existing weights.

## Peso pa categoria di e total canasta familiar di Bienes y Servicionan\*

	Weight 1993	Weight 1998	Weight 2007
Food	16.3	14.7	
Beverages & Tobacco	2.5	2.2	
Clothing and footwear group	11.3	10.9	
Housing	17.9	23	
Household operation group	10.4	10	
Health Group	3.1	0.9	
Transport & communication	20.7	19.7	
Leisure and recreational goods	8.1	8	
Good and services n.e.c	9.8	10.7	
	<b>100</b>	<b>100</b>	

\* Pa evuala y analisa costo di bida (inflacion)

- Changes in spending patterns reflect changes in such factors as the composition and distribution of the population, the quality and availability of goods and services, personal incomes, wealth and consumer taste.

# COLLECTING PRICES

- Prices are collected for over 8000 separate goods and services. They range from beef to haircuts and fro spark plugs to sunglasses.
- Most commodities are priced once a **month**. Some items, such as haircuts and dry-cleaning service are priced each **quarter**. Tuition fees are monitored once a **year**. Generally, the more often prices change, the more often they are collected.
- They are collected by two price observers at all different kind of stores distributed over Aruba.
- Prices are collected according to a **standard items** list. To ensure that price movements reflect the experience of most of the population, the price observers follow the prices of the **brands** and varieties which sell in the greatest volume.

# DEALING WITH QUALITY CHANGE

- The objective of the Consumer Price Index is to measure **pure price change**. As a result, the quantity and quality of the goods and services included in the CPI basket have to be held constant.
- In the real world, however, the quality of goods is continually changing as new models and varieties replace earlier ones.
- Price increases that are due to an improvement in the quality of a product should not be treated as pure price changes. A common adjustment technique is to determine which feature of a product causes the quality to change, then stipulate a price for that feature. (not yet done in Aruba)

# CALCULATING INDEXES

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- Once price quotations are gathered, they undergo a careful screening.
  - The calculation of the monthly CPI-index starts with the measurement of the price change for a particular **product**. (f.e. milk)
  - Price indexes for products are combined to **product-group indexes** using the corresponding weights for the products. For instance, the price indexes for milk, butter, cheese, and other dairy products are combined to form an index for dairy products.
  - The group indexes are then further combined to come up with **major component indexes**, in this case, “Food”.
  - Finally, the major component indexes are combined to arrive at the **All-items index**.
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# CALCULATING INDEXES

## Consumer Price Index (September 2000 = 100)

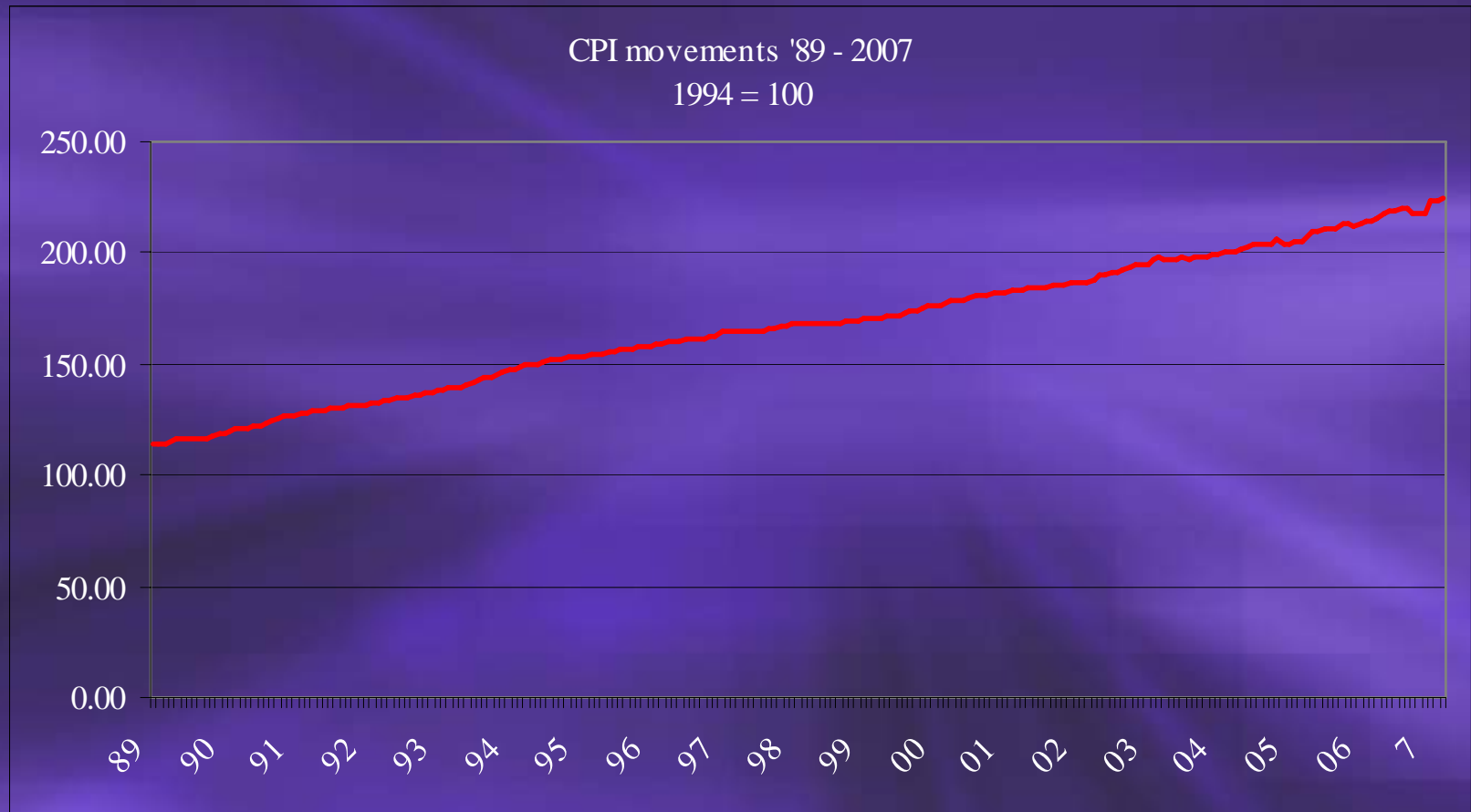
	Weight	Aug	Sep	% Change	Weighted Chang
<b>Food</b>	<b>1,469</b>	<b>123.9</b>	<b>124.7</b>	<b>0.7</b>	<b>0.10</b>
<b>Beverages and tobacco</b>	<b>219</b>	<b>110.0</b>	<b>110.8</b>	<b>0.8</b>	<b>0.02</b>
Beverages	192	107.8	108.8	0.9	0.02
Tobacco products	27	125.4	125.4	0.0	0.00
<b>Clothing and footwear</b>	<b>1,086</b>	<b>128.1</b>	<b>131.0</b>	<b>2.2</b>	<b>0.24</b>
clothing and accessories	881	131.1	131.1	0.0	0.00
Footwear	204	115.3	115.4	0.1	0.00
<b>Housing</b>	<b>2,296</b>	<b>134.1</b>	<b>135.0</b>	<b>0.7</b>	<b>0.15</b>
Property rent	717	131.9	132.2	0.3	0.02
Domestic fuel and power	659	141.5	141.4	0.0	0.00
Property maintenacne goods	500	117.8	117.8	0.0	0.00
Garden supplies	61	140.6	170.4	21.2	0.13
Water supply	358	147.0	147.0	0.0	0.00
<b>Household operation</b>	<b>1,002</b>	<b>117.2</b>	<b>117.2</b>	<b>0.0</b>	<b>0.00</b>
<b>Health</b>	<b>88</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>	<b>0.00</b>
<b>Transport and communication</b>	<b>1,967</b>	<b>112.8</b>	<b>111.1</b>	<b>-1.6</b>	<b>-0.3</b>
<b>Leisure and recreational goods</b>	<b>799</b>	<b>115.5</b>	<b>115.6</b>	<b>0.0</b>	<b>0.00</b>
<b>Goods and services n.e.c.</b>	<b>1,074</b>	<b>114.6</b>	<b>114.7</b>	<b>0.1</b>	<b>0.01</b>
<b>Total index</b>	<b>10,000</b>	<b>121.7</b>	<b>121.7</b>	<b>2.9</b>	<b>0.2</b>

# CALCULATING INDEXES

- The three most frequently requested percentage changes are those:
  - (a) between a given month and the preceding month;
  - (b) between a given month and the same month of the previous year; and
  - (c) between the annual average index of a given year and that of the previous year.
- Unweighted index change of “Food”:  $(\text{sept. } 124.7 - \text{aug. } 123.9) / \text{aug. } 123.9 = 0.7$
- Weighted of category Food x change:  $(1,469 * 0.7) / 10,000 = 0.10$   
(weighted change)

# CALCULATING PERCENTAGE CHANGES

- Total index developments from 1998 till 2007



# CALCULATING PERCENTAGE CHANGES

Index developments by sector, march 2007 compared to February 2007

Monthly  $\Delta$  CPI for March 2007 with corresponding weights (budget 1998)

	<b>Sector</b>		<b>Feb. 2007</b>	<b>March 2007</b>	<b>% Change</b>	<b>Weighted</b>
1	Food	1469	133.4	133.8	0.3	0.1
2	Beverage & Tobacco	219	125.5	126.7	0.9	0.0
3	Clothing & Footwear	1086	136.7	137.1	0.3	0.0
4	Housing	2296	128.9	129.3	0.3	0.1
5	Household Operation	1002	120.8	121.5	0.6	0.1
6	Health	88	100.1	100.1	0.0	0.0
7	Transport & Communication	1967	111.2	113.5	2.1	0.4
8	Leisure & Recreational	799	118.8	119.0	0.2	0.0
9	Goods & Services n.e.c.	1074	116.6	117.2	0.6	0.1
	<b>Total Index</b>	<b>10000</b>	<b>123.6</b>	<b>124.5</b>		<b>0.7</b>

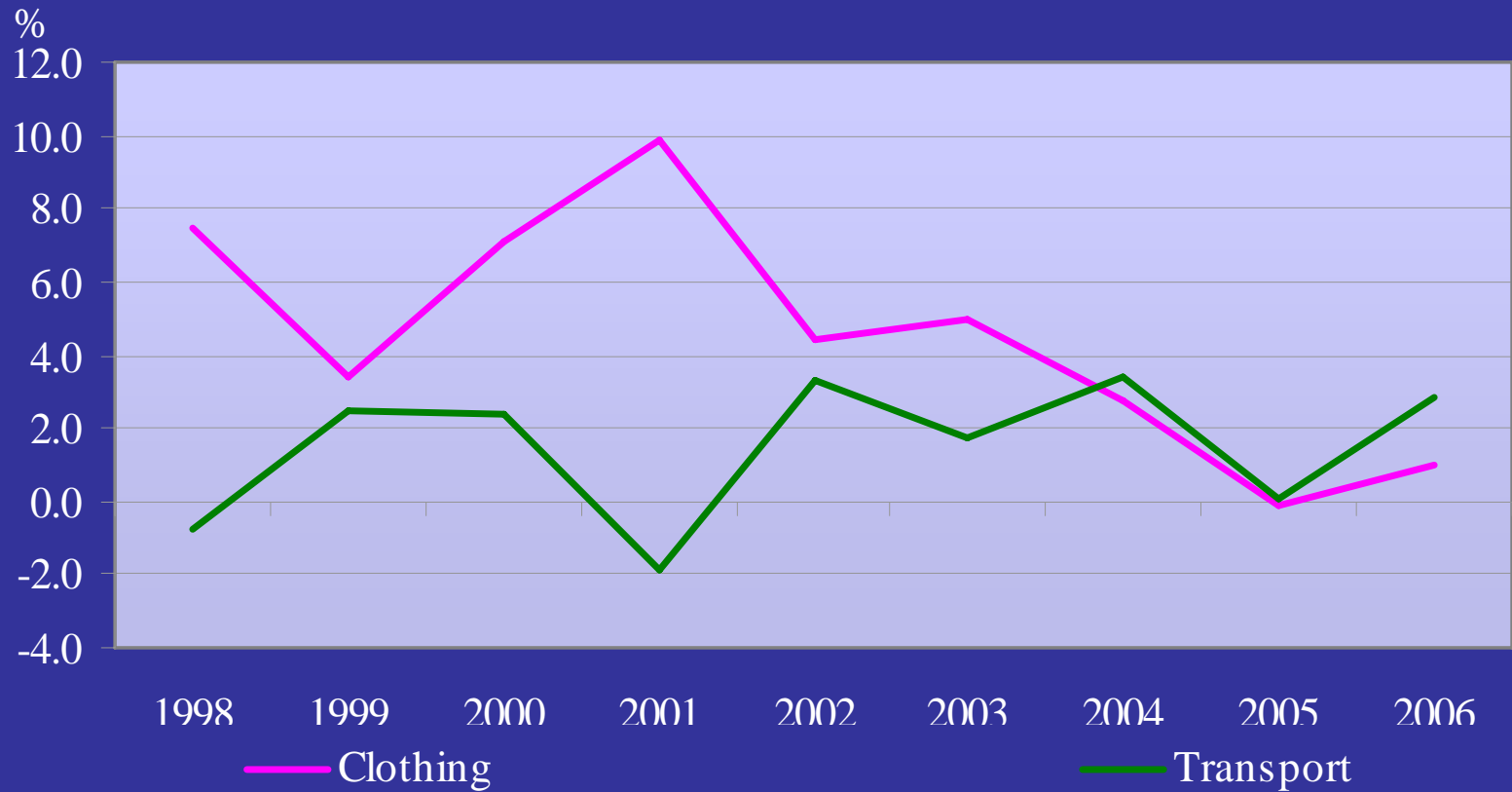
Source: Central Bureau of Statistics Aruba

$$(133.8 - 133.4) / (133.4) * 100 = 0.3$$



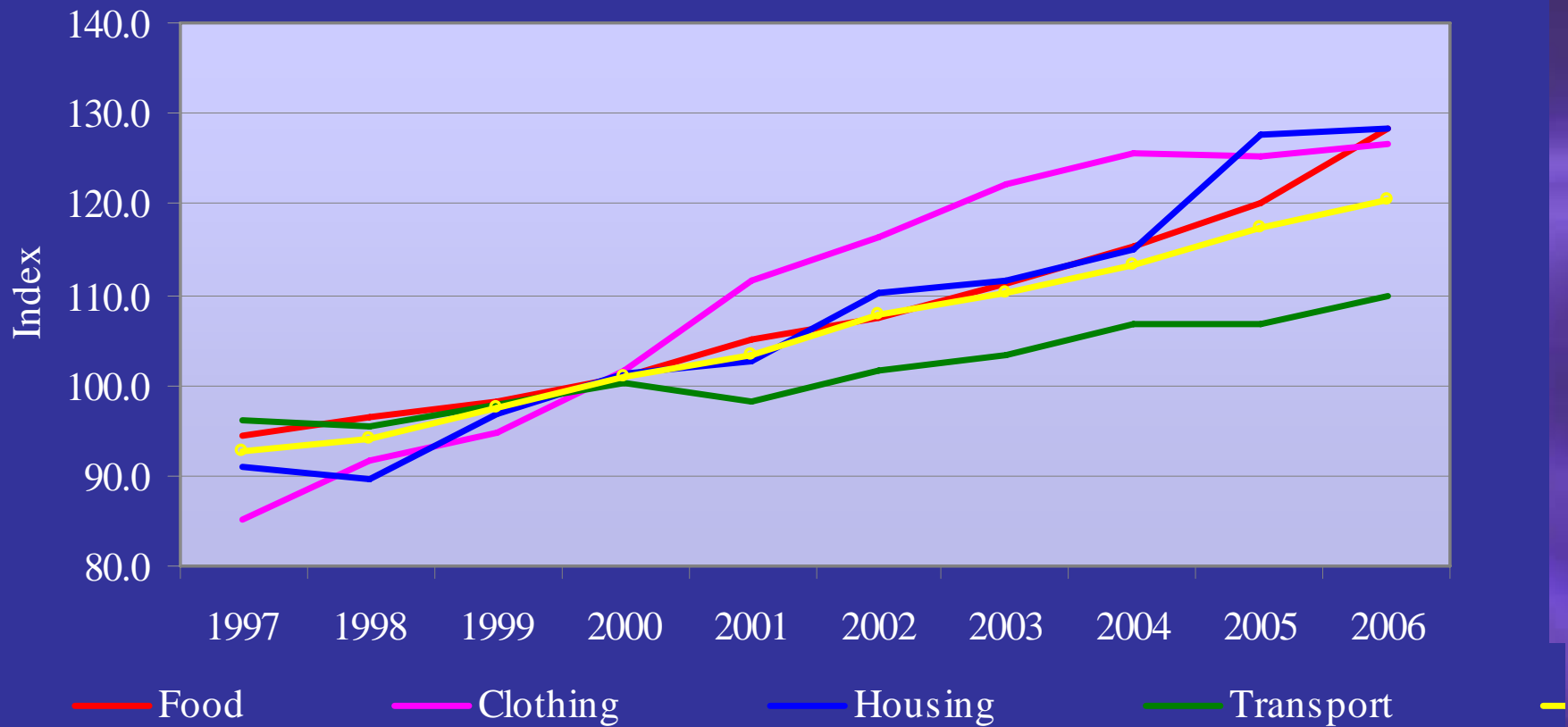
# INDEX DEVELOPMENTS FOR DIFFERENT SECTORS

Changes in two major sectors and CPI



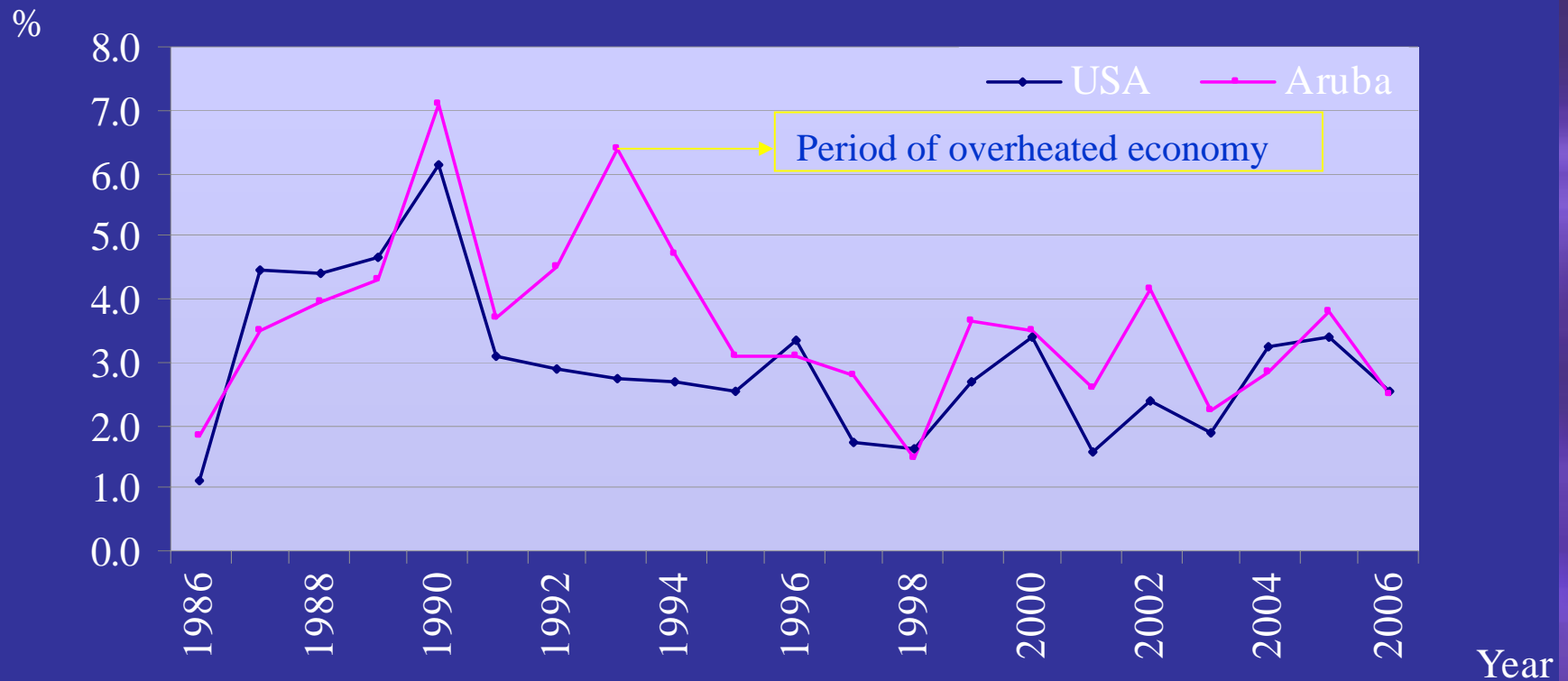
# INDEX DEVELOPMENTS FOR DIFFERENT SECTORS, 1997 - 2006

Figure 1: Indexes four major sectors and CPI 1997-2007



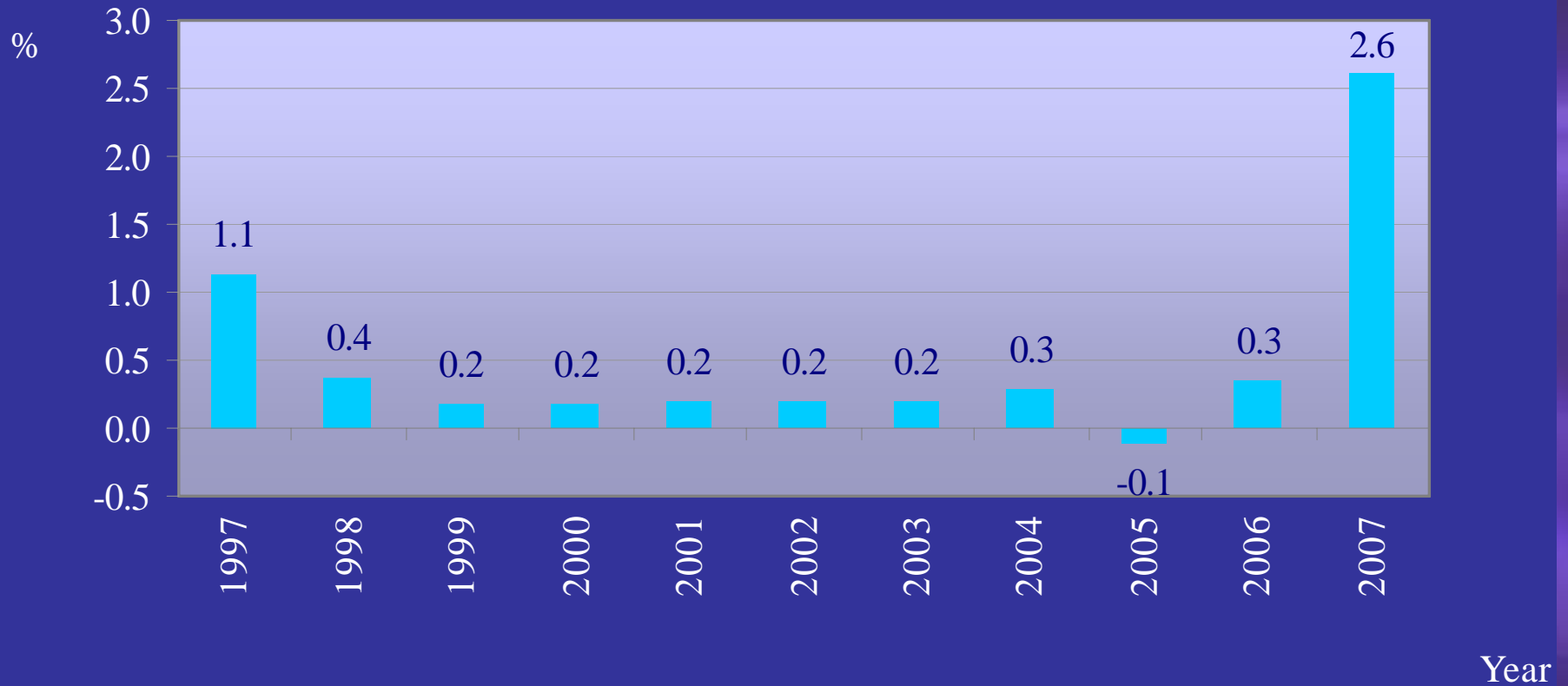
# IMPORTANCE OF “IMPORTED” INFLATION

Figure 4: End of Period % Change USA-Aruba 1986-2006



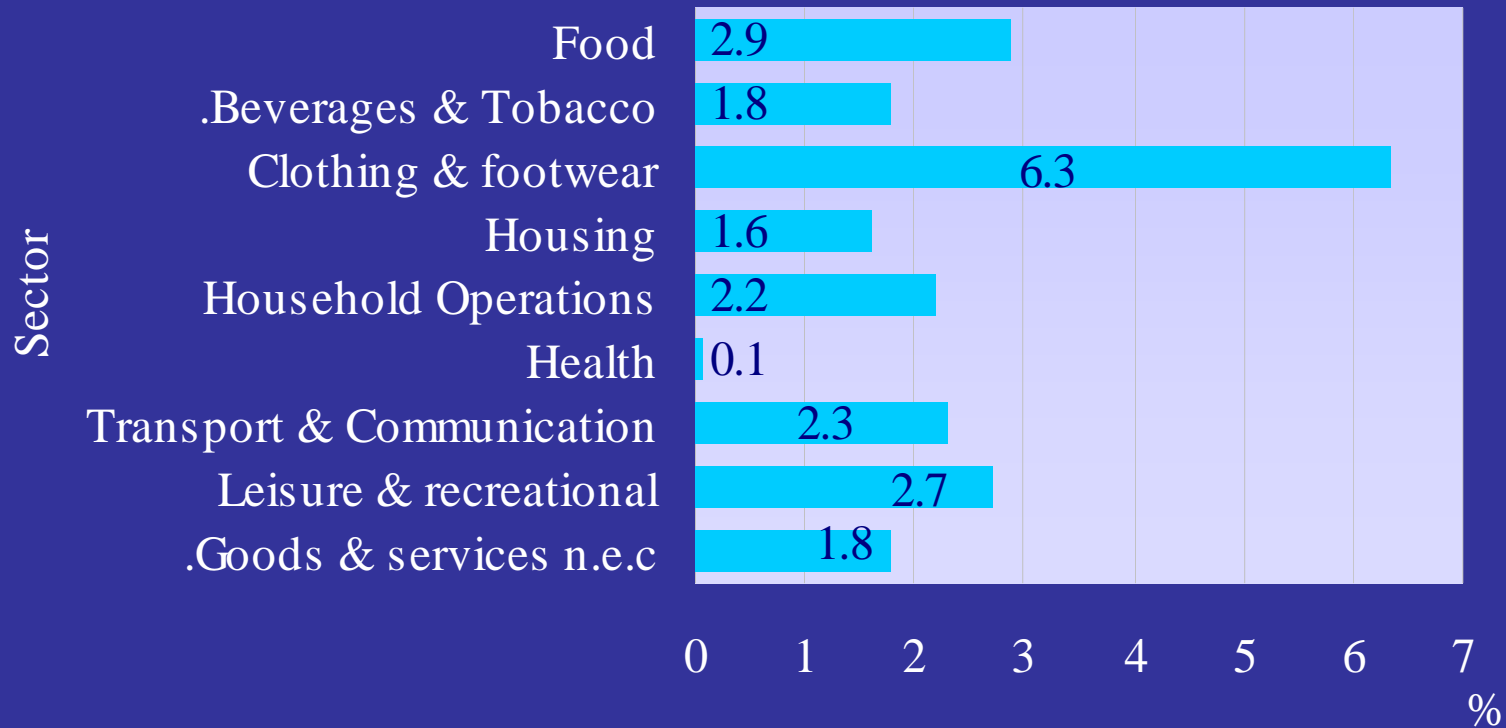
# MONTHLY CHANGES JANUARY 2007

Figure 1: Monthly  $\Delta$  CPI for January 1997-2007

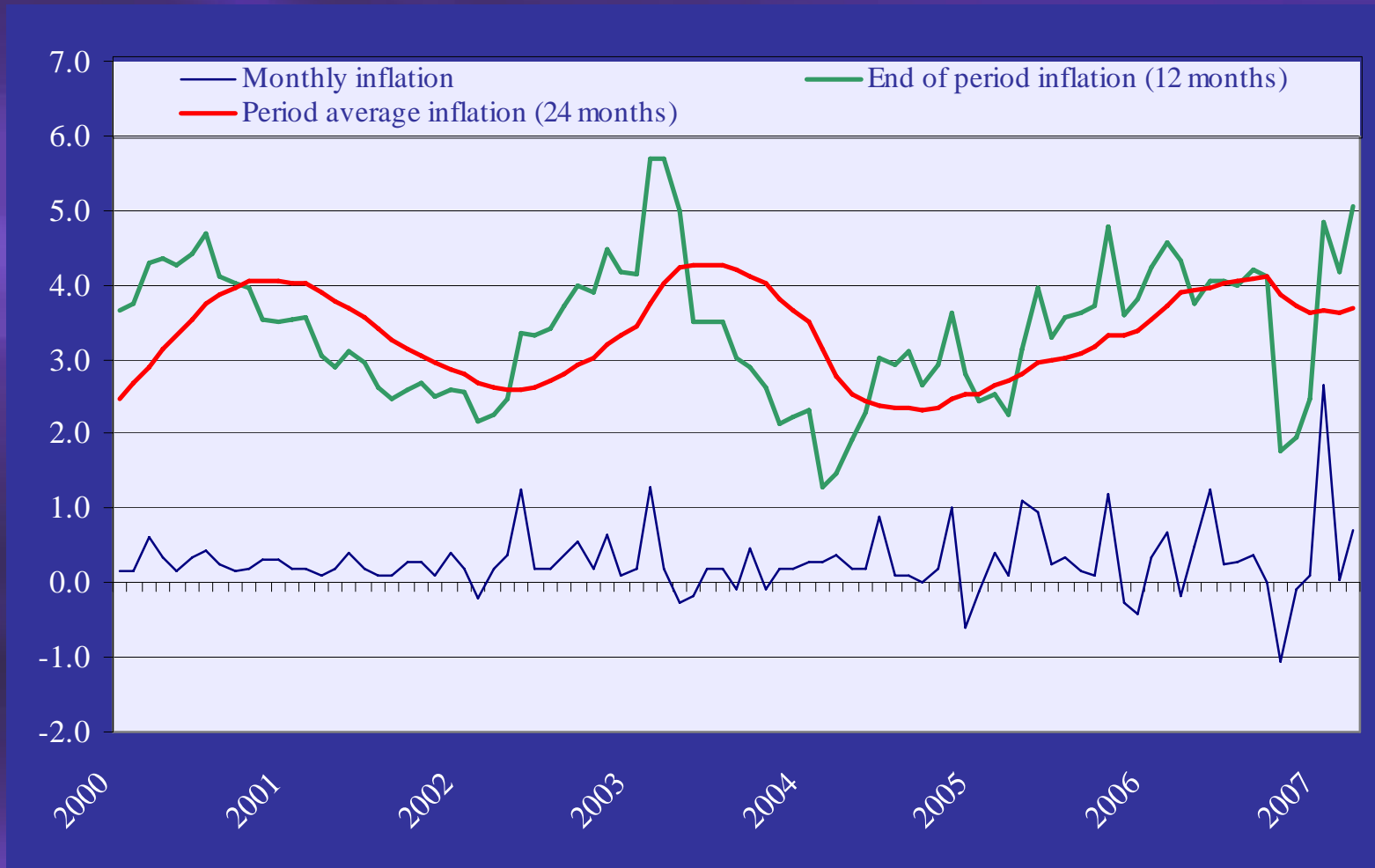


# MONTHLY CHANGES JANUARY 2007

Percentage Change per Sector January 2007



# INFLATION INDEXES (2000 – 2007)



# CAUSES OF INFLATION

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- Increasing production-, and/or service-cost
- Raise of cost either exterior or interior
- Exterior: monitor trade partners (exchange-rate Euro, change of import regulations)
- Interior: profit gain or increasing cost (labor-cost; rental-cost for buildings; cost of electricity, water, etc.)
- Push and pull-inflation

# TOOLS TO SUPPRESS INFLATION

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- Alternative products for those products with a high inflation-rate
- (More) products under the regulations of a maximum price
- Intensify the control of maximum-price products
- Stimulate competition in the private sector
- Reduce production cost (increase productivity, decrease import tax and excise duty, *gradually* increase salary)



# CPI Report

- Monthly
- Quarterly
- Yearly
- Comparison with other countries
- Report is also composed for the subscribed parties



## Consumer Price Index Aruba Monthly November 2006

### CPI and Inflation

The consumer price index (CPI)<sup>1</sup> of the total population for the month of November 2006 is 120.3. This is 0.04 % lower compared with the CPI of October 2006. An overview of the percentage change of CPI ( $\Delta$  CPI) for different periods during 2005 and 2006 are shown in Table 1.

Table 1 Overview in  $\Delta$  CPI

Period	2006	2005	
Current Month	Oct-Nov	-0.04	-0.3
Last 12 Months	Nov-Nov	1.9	3.6 <sup>2</sup>
Year to date	Jan-Nov	2.4	4.2

Source: Central Bureau of Statistics Aruba

Figure 1 depicts the monthly  $\Delta$  CPI over a period of one year starting from November 2005, whereas the  $\Delta$  CPI for the month November for the years 1997 through 2006 is illustrated in Figure 2. Compared with October a consumer price deflation<sup>3</sup> of 0.04 % is observed in November 2006 in contrast with the consumer price deflation of 0.3 % observed in 2005.

### Changes in Sector

In November 2006 the indices for the sectors "Beverages & Tobacco products", "Housing Group", "Household et al", and "Leisure and recreational goods" increased by 0.59 %, 0.23 %, 0.15 % and 0.11% respectively compared to October 2006 (see Figure 3). In the "Beverages & Tobacco products" an increase of 1.5 % is observed for the subcategory juices which led to an increase of 0.68 % in the category "Beverages". In the "Housing sector" an increase of 0.68 % in the category "Property maintenance goods" influenced mainly the percentage change in this sector. When analyzing the tables take good notice of the assigned weight per sector and per category.

Furthermore, a decrease of 0.54 % and 0.40 % are observed for the sectors "Clothing and Footwear Group" and "Transport and Communication Group" respectively. No changes are observed for sectors "Food" and "Health Group". However, within the sector "Food" changes are observed per category. The largest increase as shown in table 7 is 1.62 % for "Sugar et al". On the other hand the largest decrease is -0.75 % for "Fats and Oils". Regardless of the changes within the sector "Food" the changes per category together with corresponding weights cancelled each other.

Moreover, gasoline prices had a negative contribution of 0.06 % on the CPI calculation. Reference is made further to table 7 in Appendix 1 Indexes November. This table provides an overview of the indices and the percentage change per sector and per category together with corresponding weight for the months June up to and including November 2006.

<sup>1</sup> CPI measures changes in prices of consumer goods and services purchased by households. Consumer Price Indices can be intended to measure either the rate of price inflation as perceived by households, or changes in their cost of living (that is, changes in the amount that the households need to spend in order to maintain their standard of living). (Source: Consumer Price Index Manual theory and practice).

<sup>2</sup> The % change is calculated by comparing current month of previous year to current month of concerning year.

<sup>3</sup> Price deflation is the % decrease in the price of basket of products over a specific period of time.

Figure 1:  $\Delta$  CPI per Month of 2005-2006

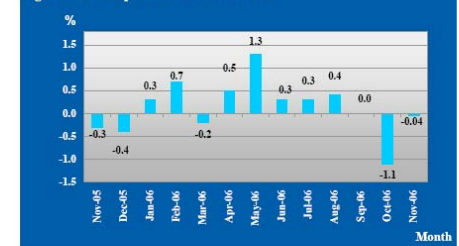


Figure 2: Monthly  $\Delta$  CPI for November 1997-2006

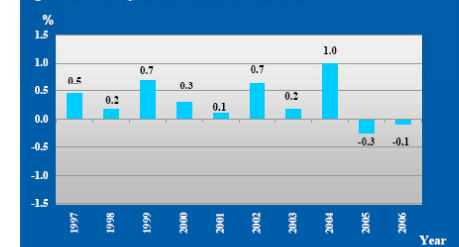


Figure 3: Percentage Change per Sector November 2006

