

Characteristics of Price Changes in Belize

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Inflation Dynamics in the Caribbean
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Overview

- ▶ Inflationary trends in Belize
- ▶ Data Used
- ▶ Frequency of price change
- ▶ Average Duration and Median
- ▶ Average Size of Price Change
- ▶ Price Volatility
- ▶ Inflation Persistence
- ▶ Summary
- ▶ Conclusion

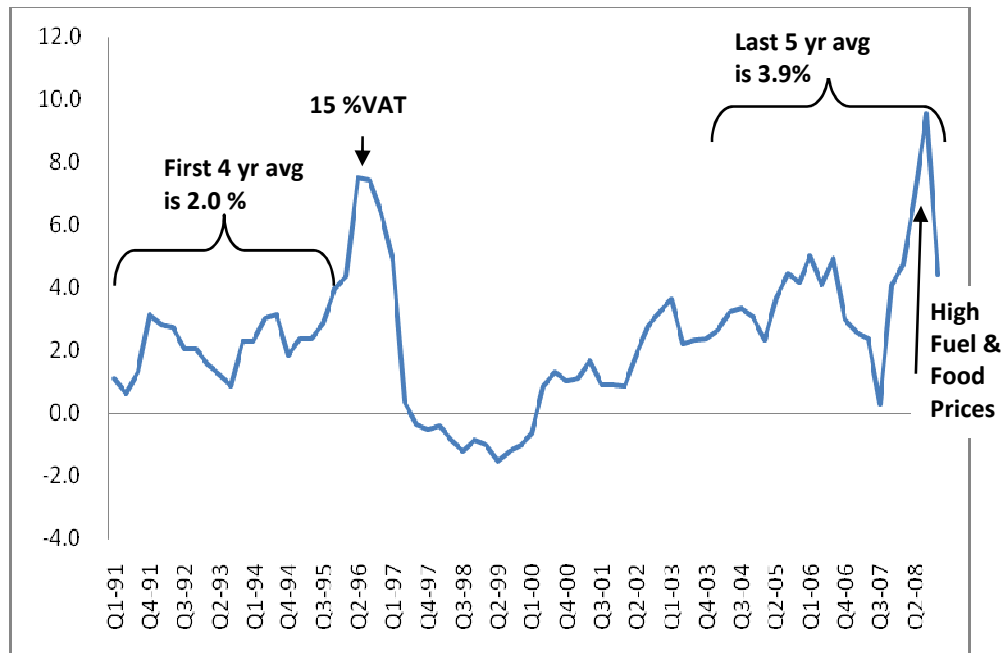
Back Drop

- ▶ Belize has a fixed exchange regime with its currency pegged to the US at a ratio of 2 \$BZ: 1 \$US since May 1976.
- ▶ The Central Bank's main monetary policy objectives are to protect of the fixed exchange rate and to promote credit conditions conducive to growth.
- ▶ Belize has a small, open economy
 - In 2008, the population was 322K, GDP = US\$1.4bn
 - Main exports consists of traditional agricultural and aquaculture commodities (sugar, citrus, banana, papaya, farm shrimp, fish) as well as a nascent oil industry
 - Net oil importing country, largest trading partner (imports & exports) is the US

Data Used

- ▶ Quarterly CPI data from February 1991 to November 2008
 - The quarters run from February to April (Q1), May to July (Q2), August to October (Q3) and November to January (Q4)
- ▶ CPI is disaggregated into 8 main categories
 - FOOD, BEVERAGES & TOBACCO
 - CLOTHING & FOOTWEAR
 - RENT, WATER, FUEL & POWER
 - HOUSEHOLD GOODS & MAINTENANCE
 - MEDICAL CARE
 - TRANSPORTATION & COMMUNICATION
 - RECREATION, EDUCATION & CULTURE
 - PERSONAL CARE
- ▶ The basket is comprised of 277 items, but analysis was concentrated on 8 categories plus 31 subcategories.

Inflationary Trends In Belize



Basic facts on quarterly π	
Mean	2.3
Median	2.3
Maximum	9.55
Minimum	-1.56
Std. Deviation	2.2

- February 1991 to November 1995 inflation averaged 2.0%
- April 1996, a 15% VAT was instituted to replace a Gross Receipt Tax leading to a sharp \uparrow in inf.
- Added zero rated items to lower impact of tax on basic items
- In 1999, VAT was replaced with 12% sales tax on alc., cig. & fuel and 8% on all other items
- Largest quarterly decline (-1.56%) in May 99, thereafter prices climbed \uparrow until it exceeded 2.3% mean in Nov. 2003 then averaged 3.9% in the next 5 year period, incl. largest qtr. \uparrow of 9.55%

Frequency of Price Change

CATEGORY OF CPI	FREQUENCY OF PRICE CHANGE
FOOD,BEVERAGES & TOBACCO	1.000
CLOTHING & FOOTWEAR	1.000
RENT,WATER,FUEL & POWER	1.000
HOUSEHOLD GOODS & MAINTENANCE	1.000
MEDICAL CARE	0.986
TRANSPORTATION & COMMUNICATION	1.000
RECREATION,EDUCATION & CULTURE	0.972
PERSONAL CARE	1.000
AVERAGE	0.995

- Prices changed virtually every quarter across major CPI categories.

Frequency of Price Change

GOODS	Frequency of Price Change
BREADS AND CEREALS	1.00
MEAT,POULTRY,FISH	1.00
DAIRY PRODUCTS AND EGGS	1.00
DAIRY PRODUCTS	1.00
OILS AND FATS	1.00
FRUIT,VEGETABLES,TUBERS	1.00
BEVERAGES	1.00
FOOTWEAR	1.00
HOUSEHOLD TEXTILES AND REPAIRS	1.00
GLASSWARE,TABLEWARE,UTENSILS & REPAIR	1.00
SCHOOL BOOKS AND SUPPLIES	1.00
PERSONAL CARE ITEMS	1.00
SUGAR,SWEETS,COFFEE,TEA,CONDIMENTS	0.99
TOBACCO	0.99
CLOTHING	0.99
FUEL AND POWER	0.99
MAJOR HOUSEHOLD APPLIANCES & REPAIRS	0.99

SERVICES	Frequency of Price Change
EDUCATION	1.00
HOUSEHOLD OPERATIONS	0.99
PHARMACEUTICAL PRODUCTS AND MEDICAL SUPPLIES	0.99
MEDICAL SERVICES OUTSIDE HOSPITAL	0.99
RECREATION	0.99
TRANSPORTATION	0.97
HOTELS, TOURS, ETC.	0.97
WEDDINGS, FUNERALS, CELEBRATIONS	0.97
GROSS RENT AND WATER CHARGES	0.96
SURGERY AND HOSPITAL CARE	0.96
PERSONAL CARE SERVICES	0.96
EDUCATION FEES	0.93
DOMESTIC SERVICES AND DAYCARE	0.90
COMMUNICATION	0.65

- Service prices changed less frequently thus a bit more rigid than goods.
- Domestic food produce as well as imported food items and other imported goods exhibited very high frequency of price change
- Communication services had the lowest frequency of price change

Frequency Comparison

	Price Increase	Price Decrease
BREADS AND CEREALS	0.71	0.29
MEAT,POULTRY,FISH	0.71	0.29
DAIRY PRODUCTS AND EGGS	0.67	0.33
FRUIT,VEGETABLES,TUBERS	0.60	0.40
BEVERAGES	0.58	0.42
TOBACCO	0.69	0.29
CLOTHING	0.44	0.54
FOOTWEAR	0.38	0.63
GROSS RENT AND WATER CHARGES	0.75	0.21
FUEL AND POWER	0.65	0.33
MAJOR HOUSEHOLD APPLIANCES & REPAIRS	0.57	0.42
TRANSPORTATION	0.74	0.24
COMMUNICATION	0.43	0.22
EDUCATION	0.71	0.29

- Price increases were more common than decreases
 - On average, when prices change they increased twice as often as they decreased
- Clothing and footwear were the only categories that exhibited a higher ratio of price decrease vis-à-vis price increase

Size of Price Change

- ▶ Size of price change was small
 - The range of average price increases was between 2.7% and 0.7%
 - The range of average price decreases was between -2.3% and -0.4%
- ▶ Price increases were on average 50% larger than decreases (1.025% vs 0.719%)
- ▶ Except for transportation, all other items had a larger size of price increase vis-à-vis price decrease (1.5% vs. -1.7%)

Size of Price Increase

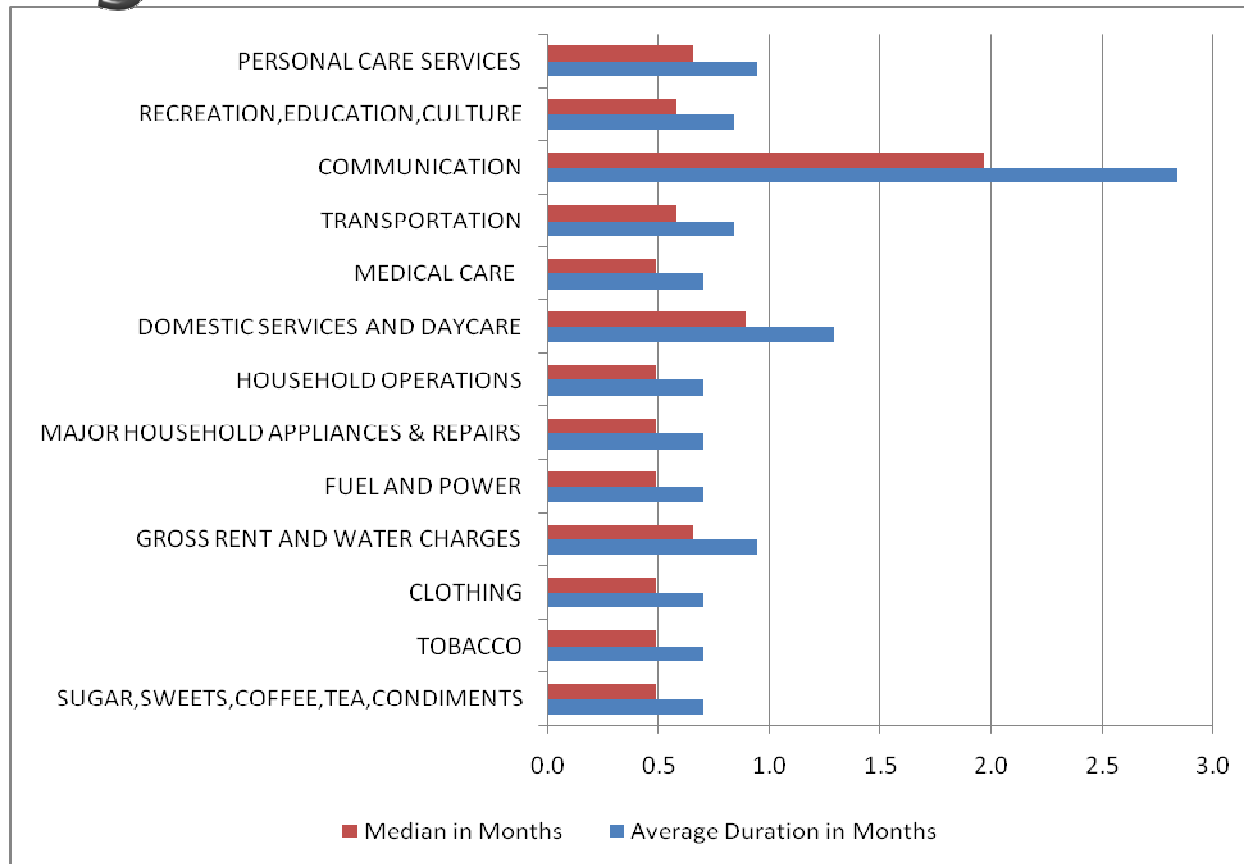
ITEM	Price Increase
FRUIT,VEGETABLES,TUBERS	2.7
TOBACCO	2.5
FUEL AND POWER	2.0
DAIRY PRODUCTS AND EGGS	1.8
OILS AND FATS	1.7
HOTELS, TOURS, ETC.	1.7
BEVERAGES	1.7
BREADS AND CEREALS	1.6
TRANSPORTATION	1.5
PHARMACEUTICAL PRODUCTS AND MEDICAL SUPPLIES	1.4
PERSONAL CARE SERVICES	1.3
WEDDINGS, FUNERALS, CELEBRATIONS	1.3
EDUCATION FEES	1.3

ITEM	Price Increase
RECREATION	1.2
MEDICAL SERVICES OUTSIDE HOSPITAL	1.2
MEAT,POULTRY,FISH	1.2
SCHOOL BOOKS AND SUPPLIES	1.2
GROSS RENT AND WATER CHARGES	1.1
EDUCATION	1.1
HOUSEHOLD OPERATIONS	1.0
HOUSEHOLD TEXTILES AND REPAIRS	1.0
COMMUNICATION	0.9
SURGERY AND HOSPITAL CARE	0.9
SUGAR,SWEETS,COFFEE,TEA,CONDIMENTS	0.9
FOOTWEAR	0.8
GLASSWARE,TABLEWARE,UTENSILS & REPAIR	0.8
PERSONAL CARE ITEMS	0.8
DOMESTIC SERVICES AND DAYCARE	0.8
CLOTHING	0.7
MAJOR HOUSEHOLD APPLIANCES & REPAIRS	0.7

Size of Price Decrease

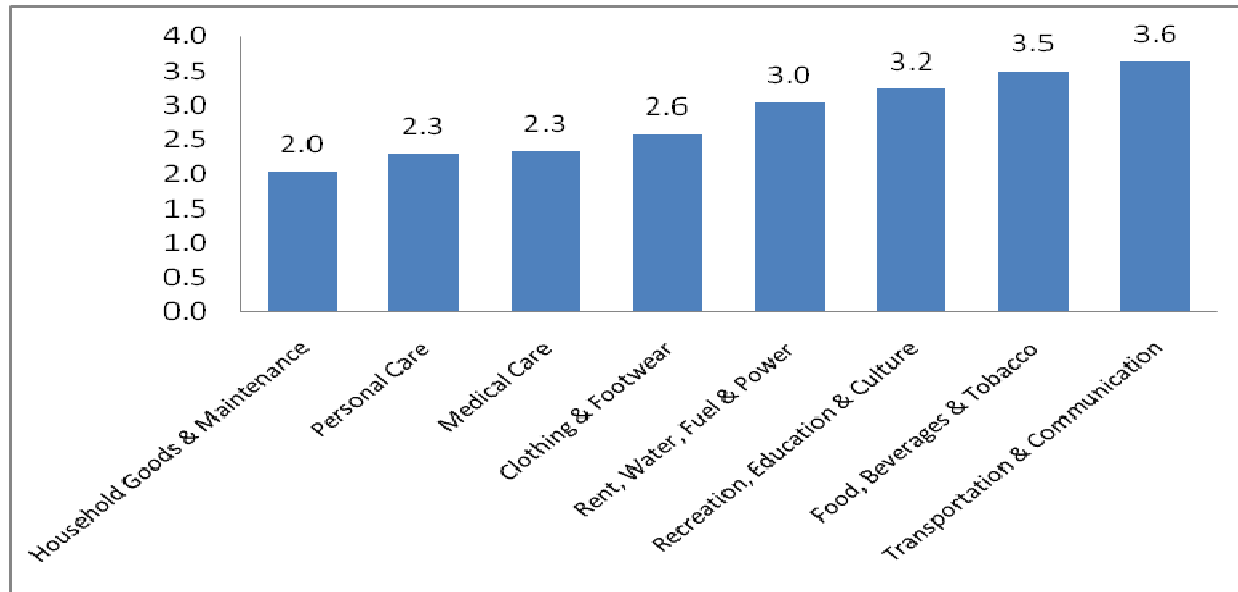
ITEM	Price Decrease
FRUIT,VEGETABLES,TUBERS	-2.3
COMMUNICATION	-1.7
TRANSPORTATION	-1.7
FUEL AND POWER	-1.6
FOOTWEAR	-1.4
HOTELS, TOURS, ETC.	-1.3
RECREATION	-1.0
SURGERY AND HOSPITAL CARE	-1.0
TOBACCO	-0.9
HOUSEHOLD TEXTILES AND REPAIRS	-0.9
MEDICAL SERVICES OUTSIDE HOSPITAL	-0.8
BEVERAGES	-0.8
OILS AND FATS	-0.7
EDUCATION FEES	-0.7
DAIRY PRODUCTS AND EGGS	-0.7
CLOTHING	-0.7
WEDDINGS, FUNERALS, CELEBRATIONS	-0.7
PERSONAL CARE SERVICES	-0.7
PHARMACEUTICAL PRODUCTS AND MEDICAL SUPPLIES	-0.6
EDUCATION	-0.6
SCHOOL BOOKS AND SUPPLIES	-0.6
MAJOR HOUSEHOLD APPLIANCES & REPAIRS	-0.6
DOMESTIC SERVICES AND DAYCARE	-0.6
PERSONAL CARE ITEMS	-0.6
MEAT,POULTRY,FISH	-0.6
GLASSWARE,TABLEWARE,UTENSILS & REPAIR	-0.5
GROSS RENT AND WATER CHARGES	-0.5
HOUSEHOLD OPERATIONS	-0.5
BREADS AND CEREALS	-0.5
SUGAR,SWEETS,COFFEE,TEA,CONDIMENTS	-0.4

Average Duration and Median



- Average duration slightly less than one month
- Median slightly more than 1/2 month
- Communication group had the largest median and duration

Price Volatility

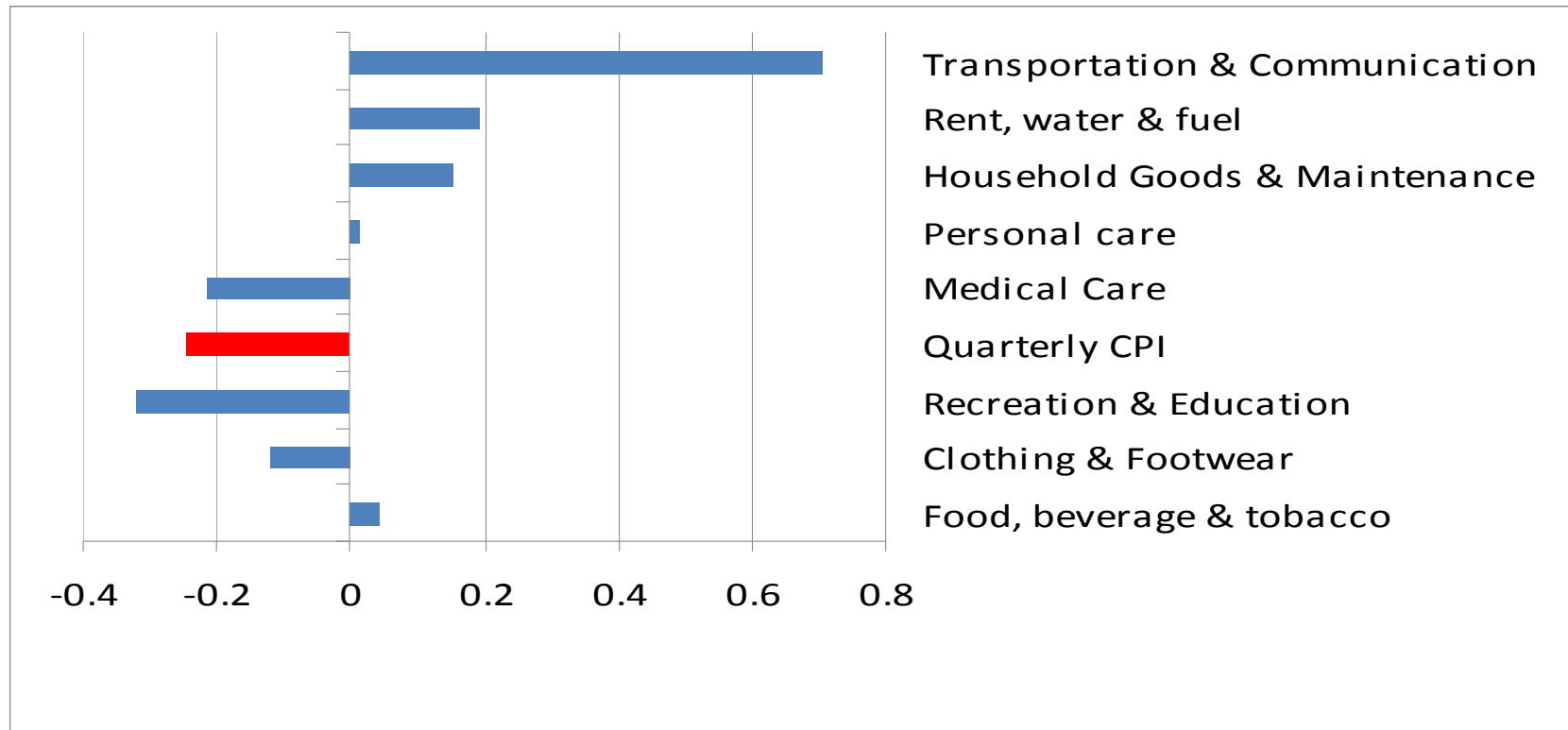


- Price volatility across the major categories was moderate
 - Transport & communication plus food, beverages & tobacco were the most volatile groups
 - Household goods & maintenance and personal and medical care on lower end
- Volatility among subcategories was higher
 - Tobacco led this group with a std. of 9.44 (tax hikes) followed by transportation at 4.17 and food items

Volatility of Select Items

Volatility of Price Change by Product Group	
TOBACCO	9.44
TRANSPORTATION	4.17
BREADS AND CEREALS	3.93
FRUIT,VEGETABLES,TUBERS	3.81
BEVERAGES	3.43
FUEL AND POWER	3.41
DAIRY PRODUCTS AND EGGS	3.18
COMMUNICATION	2.42
MEDICAL SERVICES OUTSIDE HOSPITAL	2.22
EDUCATION	2.01
PHARMACEUTICAL PRODUCTS AND MEDICAL SUPPLIES	2.00
SCHOOL BOOKS AND SUPPLIES	1.99
RENT,WATER,FUEL, AND POWER	1.81
FOOD,BEVERAGES,TOBACCO	1.81
PERSONAL CARE SERVICES	1.79
GROSS RENT AND WATER CHARGES	1.79
CLOTHING	1.07
DOMESTIC SERVICES AND DAYCARE	1.03
MAJOR HOUSEHOLD APPLIANCES & REPAIRS	0.93

Inflation Persistence



- At -0.25, inflation persistence for the quarterly CPI series was low
- For 7 categories the range of measure for IP was between -0.3 and 0.2
- For transport & communication, IP was high

Summary

With a quarterly mean and median of 2.3%, the rigidity indicators conducted in this study revealed:

Rigidity Indicators	Results
Frequency of price change	Very high but on quarterly basis
Freq. of increase : Freq. of decrease	2:1
Size of increase vs. size of decrease	1.025% vs. -0.719%
Average duration	1 month (approx.)
Average median	0.6 month (approx.)
Volatility	low (?)
Inflation persistence	low

Conclusion

- ▶ Price changes in Belize has a high frequency, mostly positive, small in size, with relatively low average implied duration and median and exhibits low evidence of volatility and correlation.
- ▶ Why is the frequency so high?
- ▶ This study has to be further extended to answer this question and to examine determinants of inflation.

Thank You!