REPUBLIC OF THE MARSHALL ISLANDS

EBEYE CONSUMER PRICE INDEX

Economic Policy, Planning and Statistics Office
Office of the President

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1st Quarter
Majuro, RMI

Introduction

The following document details the work undertaken by Chris Ryan (SPC) and John Henry (Economic Policy, Planning and Statistics Office - EPPSO) in November 2006 to enhance the CPI calculations in Ebeye.

The project itself will take a few months to complete given prices over two quarters will need to be collected for any new items added to the current list of items being priced in Ebeye.

This document therefore only contains information of the initial work undertaken, of which the main component was producing broad level weights for Ebeye, for the nine key groups currently adopted in the RMI CPI calculation. A proposed set of items to be priced within each group is also provided in the document, although this won't be finalized until a visit to Ebeye has taken place to confirm the appropriateness of the new list.

Guidelines on what future work still needs to be undertaken, as well as some observations and recommendations for future HIES/CPI work are also provided.

2. Initial data interrogation

As a starting point for the work, SPC tried to reproduce the results generated by the staff from OPS (now known as EPPSO) who were assisted by the US Department of the Interior's Office of Insular Affairs. As part of this process SPC worked through the documentation and files used for their work, as well as contacting Brian Hannon (a consultant assisting with the work) to further clarify issues.

Although SPC couldn't reproduce exactly the weights generated in the past for the 4 islands combined, the results SPC achieved were extremely close. Any differences noted would not impact on the work I was planning to undertake for Ebeye.

Upon examination of the survey questionnaires, and the manner in which the data was stored in CSPro, it was decided to split the data into three main sources:

Information from the "Housing Questions" section in the Questionnaire
Information from the "Major Annual Expenditures" section in the Questionnaire
Information from the Diary

Each source contained the following expenditures items:

Housing Questions

Fire, Hazard and Flood Insurance	Water Bills
Mortgage Repayments	Cable TV
Household Rent	Telephone Bills
Electricity Bills	Cellular Phone Costs
Car Registration	Kerosene/Propane Costs
Driver's Licenses	Internet Costs

Major Annual Expenditure

Membership Fees	Health & Insurance
Church Contributions	Construction & Repairs
Weddings/Funerals/Traditions	Vehicle Expenses
Remittances	Off-Island Travel
Education	Loans & Credit Cards
Household Equipment	Other Major Expenses
Household Furniture	

Diary

All expenses the household incurred over the 2-week diary-keeping period, regardless of whether they were collected in the Questionnaire

3. Removing items from the CPI weights calculations

Determining which items to include in calculating the CPI weights can be a contentious issue. Some examples of the issues which need to be addressed for some of these difficult items are discussed below.

"Children's Allowance": This item should be dropped in the hope that the expenditures of the children would be reported in the diary. Whilst this often won't happen, it's very difficult to know for sure. If it is known that the children's expenditures haven't been added to the diary, this item should be included in the weight for "miscellaneous expenditures", although it would be impossible to price.

"Donations to the Church", "Remittances", etc: It makes sense that these items are omitted, as they are optional expenses where the household can dictate if they wish to make such payments. They can also not be priced.

"Loan Repayments": Given the design of most HIES questionnaires; the capital component of any repayments should also be suitably covered in the question for that expenditure item. For the interest component on the other hand, this should be included in the weights calculations, although it can often be difficult separating out the two based on the information collected. Pricing the interest component would then be based on monitoring interest rates, for a typical size loan.

"Weddings", "Funerals" and "Other Traditional Activities": These items become a little tricky especially when dealing with the hosts. Whilst the broad expenditure (eg, total cost of the wedding) might be picked up in the questionnaire, there is every chance that many of these individual expenditures will also be picked up in the diary. Such a scenario can result in double counting of expenses associated with these functions. Whilst the RMI diary asks if any unusual events took place during the diary-keeping period, it is unclear as to how reliably this information was collected and used.

"Purchase/Construction/Extensions to a House": Although it can be argued that such large capital purchases be excluded from the CPI as they can be viewed as investments, I would still be inclined to include such items. The basis of this decision is that if the cost of buying, building or extending a house increases, then so does the cost of living for that population. Whilst pricing such items in a broad sense is difficult, simply having them contribute to the most appropriate group, and price items (eg, labour costs, costs of materials such as paint, timber), which would reflect the nature of change for these items, should suffice.

"Raffles", "Bingo", "Lotto", etc: Given these expenditures are purely optional, and can be viewed as investments for which a return is possible, these items should be omitted.

"Life Insurance" & "Health Insurance": Given these payments are optional for a household, and claims can be made against such 'investments', these items should be omitted.

"Education Overseas": Given this expenditure does not reflect the cost of living in the country in question, it should be excluded from the CPI calculation.

The calculation of the weights for the Ebeye CPI removed the following items:

- Children's allowances
- Alimony
- Church-related activities
- Weddings
- Funerals
- Traditional titles and activities
- Remittances overseas
- Cash given away (allowances to relatives)
- Mortgage payments
- Loan payments for vehicles/boats
- Loan payments for all other loans
- Life Insurance
- Health Insurance
- Education Overseas

Any reader of this document is more than welcome to challenge any of the exclusions/inclusions undertaken for the Ebeye CPI revision, via the e-mail address on the front cover.

4. Modifying and Merging the Data

The first task involved creating a uniform reference period for each item collected from all sources. Given the previous work undertaken used a monthly value, SPC also converted each expenditure to monthly. For the Questionnaire information, this involved converting annual figures to monthly by dividing by 12, and leaving the monthly figures as is. For the Diary information, if the household received two 1-week diaries SPC converted the figure to monthly by multiplying by 30/14. If the household received one 1-week diary SPC converted the figure to monthly by multiplying by 30/7. Although SPC would have preferred to use the figure of 365/12 as opposed to 30, I went with 30 to be consistent with the previous work undertaken.

The next stage involved adding a six-digit code to each commodity for each of the three data sources. This code was the same code applied previously. This stage was difficult for some of the more obscure items collected, particularly in the Diary. Given the

expenditure was minimal for these items, and thus they wouldn't be selected for pricing purposes down the track, it was not considered an issue if a proper code didn't exist for those items.

When merging the three data sources, the most important task was ensuring that double counting of items didn't take place (ie, the same item isn't coming from more than one source). This was most likely to occur between the Diary and Questionnaire. To ensure this, once the data for the three sources were merged within each group it was sorted by commodity code. A check was then made to determine if a commodity appeared from more than one source. If this was the case, a decision was made as to which source provided the most accurate information for that commodity, and the other was removed.

In all, a dataset containing 255 commodities from each of the nine main groups currently used in the RMI CPI was created.

5. Data checks undertaken

Time didn't permit any extensive checks to be undertaken on the data. However a quick scan of the summary results was performed to identify any noticeable problem areas. One area, which stood out considerably, was expenditure on "Wardrobes" coming from the questionnaire. For some unknown reason, approximately 75% of the 197 households sampled in Ebeye reported purchasing a wardrobe in the last year, with an average expenditure of over $700. I discussed this issue with staff from the EPPSO and they were in agreement that this was very unlikely. As a result, I have removed this item from the weights calculations until this has been further investigated. John Henry will be visiting Ebeye immediately following this trip, and will investigate this issue further as part of his responsibilities. A more informed decision could then be made on how to treat this problem.

The other concern with the HIES results was with the expected significant under reporting of expenditure on Alcohol and Tobacco. The current weights for alcohol and tobacco in the RMI CPI are:

Alcohol	1.68 (own group)
Tobacco	11.60 (part of the "Other Goods and Services Group")

Tobacco is possibly over-represented, due to the fact it is representing numerous other items within its group. Alcohol on the other hand is most likely significantly under-represented. Based on analysis of the HIES data for Ebeye, the weights for these two items are:

Alcohol	1.45
Tobacco	3.13

The HIES data for Ebeye is almost certainly under-representing the expenditure on these two items. Unfortunately, after discussions with EPPSO, it looks like it would be extremely difficult to determine the extent due to poorly kept customs records. Having said that, it would be desirable to undertake this task when the next HIES is undertaken in RMI.

6. Calculation of weights for the Ebeye CPI

Once the final dataset was created, the calculation of the weights could begin. All items remaining in the dataset were used for determining the broad weights for each group. The groups for Ebeye were kept the same as for the RMI CPI groupings. Summarizing the data for Ebeye, the broad level weights were derived to be:

Table 1: Ebeye CPI weights: Old v New

GROUP	Average Monthly Expenditure	Weight	
		New	Old
Food	774.3	46.7	73.4
Alcoholic Beverages	24.0	1.4	
Housing, Utilities and Major Appliances	263.2	15.9	0.1
Apparel	101.9	6.1	2.4
Transportation	204.4	12.3	9.0
Medical Care	14.7	0.9	
Recreation	36.6	2.2	
Education & Communication	73.3	4.4	
Other Goods & Services	167.2	10.1	15.1
TOTAL	1659.6	100.0	100.0

As can be seen from this table above, significant changes will occur to the weights for Ebeye. Most noticeably are the significant drops in the weight for "Food" (73.4 → 46.8), and the significant increase in the weight for "Housing, Utilities and Major Appliances" (0.1 → 15.9).

This is to be expected given the huge change in the number of items representing each group when the broad level weights were derived.
Comparing the weights for Ebeye with what is currently being used for RMI, yields the following results:

Table 2: CPI weights: RMI v Ebeye (new)

GROUP	Weight	
	Ebeye	RMI
Food	46.7	35.9
Alcoholic Beverages	1.4	1.7
Housing, Utilities and Major Appliances	15.9	17.1
Apparel	6.1	4.3
Transportation	12.3	13.7
Medical Care	0.9	2.2
Recreation	2.2	2.3
Education & Communication	4.4	6.6
Other Goods & Services	10.1	16.2
TOTAL	100.0	100.0

In order to produce weights for individual items within each group, it was first required to identify a subset of items from each group which would be appropriate to price. The basis for selection within each group was to target items, which contributed significantly to the weight of that group, whilst also being easy to price from one quarter to the next.

Given his experience in undertaking pricing in Ebeye for the CPI in the past, John Henry undertook the task of identifying a proposed list of items to price in each group. A tentative set of weights for these items has been calculated to provide an initial feel for how the new basket of items looks. The proposed list of items and weights can be found in the following table:

Group	Code	Description	Average Monthly Expenditure	Source	Weight
1	101001	Cereal	11.59	Diary	0.96
1	101002	Rice	62.49	Diary	5.17
1	101003	Flour	16.99	Diary	1.41
1	102001	Bread	20.77	Diary	1.72
1	102003	Donuts	13.33	Diary	1.10
1	103001	Steak/beef	16.34	Diary	1.35
1	103003	Canned corned beef	41.00	Diary	3.39
1	103004	Canned corned beef hash	2.97	Diary	0.25
1	105002	Canned luncheon meat	27.85	Diary	2.30
1	106001	Whole chicken	55.32	Diary	4.58
1	106002	Turkey/Turkey parts	27.22	Diary	2.25
1	106003	Chicken legs	36.08	Diary	2.98
1	107001	Canned mackeral	9.74	Diary	0.81
1	107002	Canned tuna	31.09	Diary	2.57
1	107008	Fresh reef fish	9.24	Diary	0.76
1	108001	Eggs	19.24	Diary	1.59
1	109002	Milk-evaporated	10.31	Diary	0.85
1	109004	Icecream	11.26	Diary	0.93
1	110003	Oranges	4.05	Diary	0.33
1	111003	Potatoes	5.00	Diary	0.41
1	113002	Coke	17.18	Diary	1.42
1	113003	Pepsi	12.86	Diary	1.06
1	113006	Coffee	13.95	Diary	1.15
1	113008	Bottled water	13.70	Diary	1.13
1	113011	Luau drink mix/cool aid	7.54	Diary	0.62
1	114002	Sugar	15.08	Diary	1.25
1	116007	Chips-potato/banana	9.19	Diary	0.76
1	101005	Ramen/other noodles	23.89	Diary	1.98
1	116008	Soy sauce	12.02	Diary	0.99
1	117002	Restaurant meals	6.64	Diary	0.55
2	201001	Beer	20.32	Diary	1.45
3	302001	Kerosene	21.39	Housing	1.74
3	303001	Water	23.13	Housing	1.88
3	303002	Electricity	125.82	Housing	10.21
3	306004	Refridgerator	7.30	Expend	0.59
3	306005	Freezer	6.64	Expend	0.54
3	308003	Fishing gear	11.09	Diary	0.90
4	401009	Other mens clothing(pair of jean)	14.33	Diary	1.01
4	402001	Shirts	11.19	Diary	0.79
4	402009	Other womens clothing	9.28	Diary	0.65
4	403001	Sandals	13.44	Diary	0.95
4	403002	Zorries	10.26	Diary	0.72
4	404002	Diapers (disposable)	28.54	Diary	2.01
5	502001	Gasoline	29.95	Diary	4.02
5	506001	Total travel expenditure	61.91	Expend	8.30

Ebeye CPI 1st Quarter 2007

Because this is the first quarter using the new approach to the Ebeye CPI, more detailed evaluation of the results in this 1st Quarter needs to be reserved until a second quarter of information is collected and analyzed.

Ebeye CPI	2006_Q1	2006_Q2	2006_Q3	2006_Q4	2007_Q1
All Group	**101.71**	**104.93**	**106.86**	**107.81**	**107.07**
Food	100.50	105.16	106.66	108.78	107.63
Housing, Utilities and Major Appliance	121.05	139.37	144.01	142.69	142.69
Apparel	95.83	95.83	87.08	86.49	86.53
Transportation	111.77	122.06	132.67	125.00	125.00
Other Goods and Service	99.92	88.76	88.76	89.70	90.48
% All Group	**-0.14**	**3.16**	**1.84**	**0.89**	**-0.69**
Food	0.89	4.64	1.43	1.99	-1.06
Housing, Utilities and Major Appliance	-2.09	15.14	3.33	-0.92	0.00
Apparel	-8.76	0.00	-9.13	-0.68	0.04
Transportation	-4.74	9.21	8.69	-5.78	0.00
Other Goods and Service	-0.21	-11.17	0.00	1.06	0.87

Majuro CPI 1st Qtr 2007

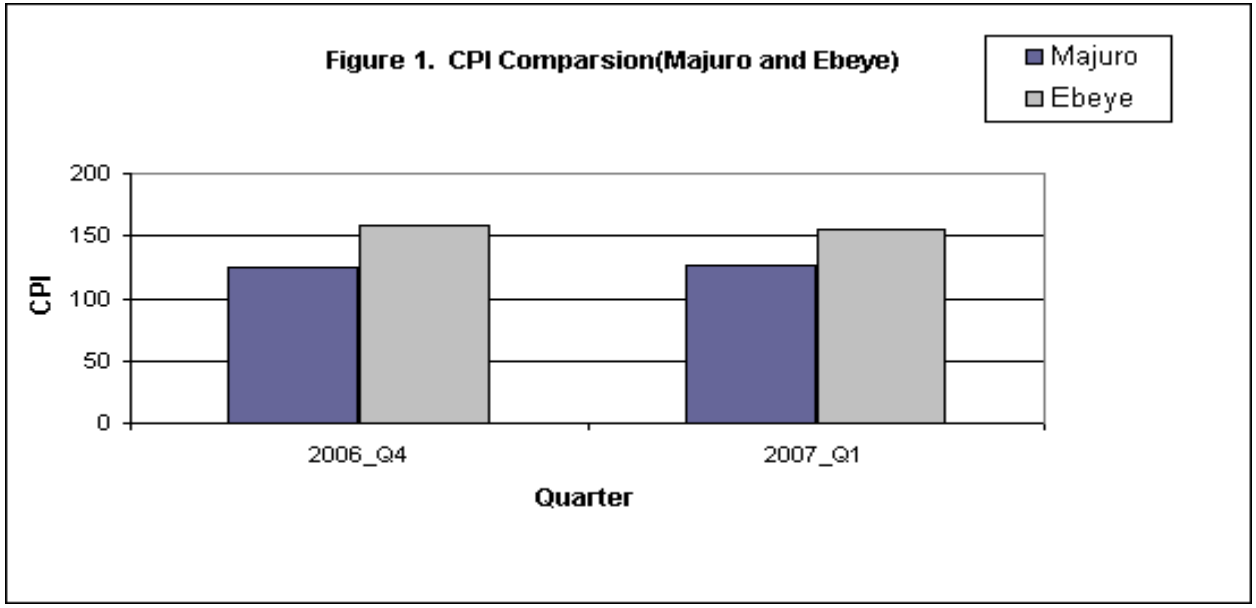
The Majuro CPI saw a slight decrease in the CPI over the first quarter of 2007. The CPI dropped from 113.69 to 113.22. This was the first decrease in the Majuro CPI for at least the last twelve quarters. A major reason for this has been the stabilization of prices for petroleum products and food items.

Consumer Price Index by Major Group, 2005_Q3 to 2007_Q1

	2005_Q3	2005_Q4	2006_Q1	2006_Q2	2006_Q3	2006_Q4	2007_Q1
All Group	**108.26**	**110.84**	**111.28**	**111.60**	**112.96**	**113.69**	**113.22**
Food	107.31	107.12	110.03	110.19	107.97	110.34	110.62
Alcoholic Beveraes	126.36	128.60	131.69	133.44	135.61	130.56	133.08
Housing, Utilities and Major Appliances	107.12	119.47	119.45	120.93	128.45	127.71	127.95
Apparel	103.81	103.49	104.04	109.95	106.05	104.26	105.82
Transporttation	118.44	121.74	121.29	123.11	131.25	131.74	126.30
Medical Care	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Recreation	94.47	90.25	91.34	89.97	83.73	84.91	85.56
Education and Comm.	113.84	115.90	115.90	115.90	115.90	115.90	115.90
Other Good and Services	103.07	103.28	99.29	96.25	96.42	96.94	96.94
Percent Change							
All Group	**1.49**	**2.39**	**0.40**	**0.29**	**1.21**	**0.65**	**-0.42**
Food	0.59	-0.18	2.72	0.15	-2.02	2.19	0.26
Alcoholic Beveraes	2.36	1.77	2.41	1.33	1.62	-3.72	1.93
Housing, Utilities and Major Appliances	1.14	11.53	-0.02	1.24	6.22	-0.58	0.19
Apparel	1.39	-0.31	0.53	5.68	-3.54	-1.69	1.50
Transporttation	6.98	2.79	-0.38	1.51	6.61	0.37	-4.13
Medical Care	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recreation	-0.77	-4.47	1.22	-1.51	-6.93	1.40	0.77
Education and Comm.	2.49	1.80	0.00	0.00	0.00	0.00	0.00
Other Good and Services	3.07	0.20	-3.86	-3.06	0.18	0.53	0.00

Majuro and Ebeye CPI basket Comparison Q1 2007

Over the last quarter there was a slight narrowing in the difference between Ebeye and Majuro prices amongst the most common consumer items. The cost of these 18 items on Majuro was $126.41 and on Ebeye the cost for the same 18 items was $157.65. This is a difference of 22.4%, compared to a 26.63% difference in the last quarter of 2006.

	Item				2006_Q1			2006_Q2			2006_Q3			2006_Q4			2007_Q1
No.	**Code**	**Group and Item Name**	Ebeye	Majuro	% Difference	Ebeye	Majuro	% Difference	Ebeye	Majuro	% Difference	Ebeye	Majuro	% Difference	Ebeye	Majuro	% Difference
1	01023	Rice	8.16	8.83	3.7	9.16	8.24	13.7	9.37	8.24	10.2	9.08	8.12	18.9	9.66	8.18	16.4
2	01024	Flour	13.48	10.36	30.1	13.48	10.49	33.8	14.03	11.62	16.1	13.49	11.79	15.4	13.60	12.13	17.4
3	03018	Canned corned beef	3.11	2.67	20.8	3.23	2.66	31.4	3.49	2.62	33.9	3.51	2.63	32.9	3.50	2.80	25.6
4	03019	*Canned corned beef hash**	3.39	2.42	37.9	3.34	2.92	18.1	3.45	2.92	22.9	3.59	2.29	55.0	3.55	2.29	55.0
5	03049	Canned luncheon meat (Spam, etc.)	4.14	2.99	36.1	4.07	3.06	39.9	4.28	3.30	31.2	4.33	3.38	25.1	4.23	3.38	21.4
6	03081	Canned mackerel	1.75	1.02	76.8	1.81	0.93	69.4	1.58	1.15	55.7	1.79	1.17	56.4	1.83	1.25	41.6
7	03082	Canned tuna	1.21	0.96	2.1	0.98	1.05	9.5	1.15	1.00	34.0	1.34	1.00	28.0	1.28	1.01	7.6
8	07061	Coffee (instant coffee)	7.92	4.22	65.8	6.99	5.34	26.2	6.74	4.42	40.3	6.20	3.87	114.7	8.30	4.70	19.7
9	08071	Sugar	2.61	2.09	28.0	2.67	2.11	37.4	2.90	2.11	49.1	3.15	2.07	47.2	3.05	2.10	18.7
10	10041	Ramen and other instant noodles	0.65	0.54	20.0	0.65	0.56	27.8	0.71	0.55	29.1	0.71	0.57	22.1	0.69	0.60	19.0
11	10071	Soy sauce	4.17	2.62	59.3	4.17	2.72	53.4	4.17	2.66	48.4	3.95	2.29	67.6	3.83	2.45	62.7
12	33083	*Kerosene stove**	56.66	42.98	41.9	61.00	56.48	8.0	61.00	56.48	13.7	64.24	56.48	16.2	65.65	56.48	16.2
13	33084	*Kerosene and other lamps**	14.95	13.30	16.6	15.50	8.45	89.9	16.05	8.45	86.1	15.72	8.45	86.0	15.72	8.45	86.0
14	43032	Zorries	6.97	4.43	43.5	6.35	4.61	11.3	5.13	4.18	38.5	5.78	4.36	31.7	5.74	4.89	17.4
15	51074	Gasoline	3.99	3.67	3.5	3.80	3.85	7.8	4.15	4.20	7.5	4.51	3.76	13.0	4.25	3.70	14.9
16	93007	Cigarettes	5.65	4.02	40.5	5.65	3.85	29.9	5.00	3.85	29.9	5.00	3.85	32.5	5.10	3.85	2.9
17	93016	*Mosquito coils**	4.50	4.45	-5.7	4.20	3.95	6.3	4.20	3.95	6.3	4.20	3.95	-21.9	3.08	3.95	6.3
18	93022	Kerosene	3.98	4.12	-6.5	3.85	4.50	0.0	4.50	4.59	1.2	4.65	4.48	2.7	4.60	4.20	9.5
			147.28	115.68	**30.43**	150.88	125.76	**20.78**	151.90	126.29	**22.93**	155.24	124.50	**26.63**	157.65	126.41	**22.40**

	2005_Q1	2005_Q2	2005 Q3	2005_Q4	2006_Q1	2006_Q2	2006_Q3	2006_Q4	2007_Q1
Majuro	113.62	120.4	117.05	113.14	115.68	125.76	126.29	124.5	126.41
Ebeye	141.25	144.48	146.34	147.28	150.88	151.99	155.24	157.65	154.72