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CONSTRUCTION OF CONSUMER  
PRICE INDEX FOR CAMBODIA

A Review of Current Practices and Suggestions  
for Improvement

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# CONSTRUCTION OF CONSUMER PRICE INDEX FOR CAMBODIA

## A REVIEW OF CURRENT PRACTICES AND SUGGESTIONS FOR IMPROVEMENT

### ABSTRACT

*This paper attempts an evaluation of the current practices in the construction of consumer price index in Cambodia and offers some suggestions for improvement. It finds that there are many organizations in Cambodia, both within and outside the Government, that are engaged in the collection of consumer price data while some of them construct and publish consumer price index. The paper finds that by far the most scientific system of collection and construction of consumer price index is that of the National Institute of Statistics which has only recently established its system for the purpose. However, the usefulness of consumer price index constructed and published regularly by the National Bank of Cambodia (and price data collected and disseminated by other institutions) during a difficult time of economic and political transition and prior to the establishment of a proper system at the NIS needs to be recognized. A major limitation of most of the consumer price indices, including that of the NIS, is that they are based on data from Phnom Penh only. An attempt has been made in this paper to construct consumer price indices for selected provinces based on data collected by the CDRI through a network of NGOs. Based on these indices, and as an illustration, a consumer price index for the country as a whole has been constructed for a limited period of time. The main recommendations here are: designation of the NIS as the sole official institution for the collection of price data and construction of an official CPI for Cambodia, extension of the NIS system to provinces, and timely dissemination of CPI as a step towards building confidence in the economy.*

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## LIST OF ABBREVIATIONS USED

ADB	Asian Development Bank
CDRI	Cambodia Development Resource Institute
CPI	Consumer Price Index
CPI (CAM)	Consumer Price Index for Cambodia
CPI (OPP)	Consumer Price Index for Other Than Phnom Penh
CPI (PP)	Consumer Price Index for Phnom Penh
FI	Food Index
FI (CAM)	Food Index for Cambodia
GRET	Groupe de Recherche et D Echange'Technique
MOC	Ministry of Commerce
MOF	Ministry of Economy and Finance
NBC	National Bank of Cambodia
NGO	Non-Governmental Organization
NIS	National Institute of Statistics
RI	Rice Index
SESC	Socio-Economic Survey of Cambodia
SPI	Simple Price Index
UNDP	United Nations Development Programme
UNTAC	United Nations Transitional Authority for Cambodia
WID	Women in Development

# Construction of Consumer Price Index for Cambodia

## A Review of Current Practices and Suggestions for Improvement

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### 1 Why Do We Need a Consumer Price Index?

Consumer Price Index (henceforth referred to as CPI) has become one of the common indicators in understanding the functioning of a modern economy. The most important characteristic of a CPI is its ability to measure changes in the prices of goods and services purchased by consumers from one period to another or over a period of time. Thus it is a measure of inflation as experienced by consumers in an economy. By this way, one can capture the rise (or fall) in the cost of living<sup>1</sup>. This measure of inflation, apart from its interest to consumers, firms and other private economic agents in general, also functions as a vital input into the economic management and policy-making decisions of central banks and ministries of finance and planning. In the Cambodian context, a reliable and representative CPI is required by the Ministry of Economy and Finance, for example, to establish appropriate interest rates in relation to the floating of treasury bonds (although these are increasingly becoming market-related), for preparing government's annual budgets and for measuring the real value of government revenue. For the National Bank of Cambodia, which is the central bank of the country, a reliable and representative CPI will (i) determine the nominal interest rate, (ii) indicate its effect on the level of money supply, and (iii) provide a measure of the inflationary pressure on the economy. The last one in the particular context of Cambodia is crucial to establish the credibility of, and confidence in, the domestic currency (Riel) and thus help 'dedollarize' the economy. Without this, the NBC will not be able to exercise effective control over the monetary management of the economy.

Understanding the change in cost of living through a CPI has also its practical applications affecting the standard of living of the people. One widely adopted application is the use of a CPI to determine monetary compensation to employees and workers for the increase, if any, in the cost of living. This is one way of assuring the employees/workers that

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<sup>1</sup> We should perhaps mention here that economy-wide inflation is also measured through changes in the Wholesale Price Index, i.e. a price index of all commodities sold within an economy through wholesale markets irrespective of whether they are consumer goods or producer goods.



their real earnings are fully protected<sup>2</sup>.

In many countries, more than one CPI is constructed in order to meet varying requirements. Thus, for example, a country-wide CPI could represent the change in cost of living for an average consumer; a CPI based on a representative basket of goods and services of workers could represent the change in cost of living of an average worker. CPI can also be constructed for urban and rural areas separately as well as for regions/provinces in a country.

## 2 How to Construct a CPI?

### 2.1 The Theory

The theory underlying the CPI is quite simple. It says that a CPI is an aggregate measure of the change in price of a basket of goods and services from one period to another. If we are dealing with only one commodity, then it is called a Simple Price Index (SPI)<sup>3</sup>. This can be constructed as follows:

$$SPI = P_n/P_o \times 100$$

where  $P_n$  = price of the commodity in period n, and

$P_o$  = price of the commodity in the base period.

When  $P_n/P_o$  is multiplied by 100, we can express the change in price in percentage terms.

In the real world, however, we have to deal with a number of commodities. Following the logic of the SPI, we may then proceed to calculate a CPI by measuring the average of the price relatives of individual commodities in a basket between the reference period and the base period. However, there is a serious drawback here and hence such an index is never used. This is because the simple average of price relatives means that all items are consumed/purchased in equal quantities. This is certainly not the case. Hence this is an unweighted price index.

What is therefore required is a weighted price index. The weights here should represent the quantity dimension of each item purchased by the consumer. This is usually

<sup>2</sup> When the monetary compensation is less than the increase in cost of living, it leads to a decline in the real earnings of wage/salary earners.

<sup>3</sup> Sometimes it is also referred to as a price relative.



found by obtaining the share of each item in the total expenditure of households. A Weighted Price Index<sup>4</sup> therefore captures the change in price of a given basket of commodities purchased by the consumers. This can be calculated as follows:

$$\text{CPI} = \frac{\sum_{i=1}^k P_{1i} Q_{0i}}{\sum_{i=1}^k P_{0i} Q_{0i}} \times 100$$

where  $P_{0i}$  and  $Q_{0i}$  represent the price and quantity purchased respectively of the  $i$ th item in the base period,

$P_{1i}$  represents the price of the  $i$ th item in current period, and

the number of items are depicted from 1 to  $k$ .

However simple the theory may be, there are a number of practical aspects that need to be carefully taken into account before constructing a CPI. These are discussed below.

## 2.2 The Steps Involved

From a practical point of view, it is useful to see what are the steps involved in constructing a CPI. This could also be an opportunity to find out the practical difficulties and the limitations inherent in the construction of a CPI.

**2.2.1 Selection of a basket of goods and services.** This is the first step. The number of items that need to be included would depend on the population for which the CPI is intended to be representative. If, for example, a CPI is intended to represent the whole population then all the items that are purchased by consumers should, ideally speaking, be selected. In practice, however, a number of items which account only for a small fraction of the consumer expenditure are omitted. In many countries, different CPIs are constructed for different segments of the population and for different regions. A CPI can be constructed for

<sup>4</sup> A weighted price index using base period weights is called the Laspeyres price index. Standard textbooks on statistics for economics will give the details on index numbers as one of the methods of time series analysis. E.g. see, Newbold (1991:Ch.17).



industrial workers wherein the basket would represent the items that are usually purchased by households of industrial workers. Similarly, CPIs can be constructed for urban and rural areas separately since the consumption patterns are likely to be different as between urban and rural areas. CPIs for different baskets of goods such as Food, Consumer Durable and/or Services can also be constructed. The underlying theory in all these is that the basket of goods and services selected should be representative in terms of the purpose for which a CPI is sought to be constructed.

**2.2.2 Collection of price data:** Once the number of items ( $k$ ) is decided, then the next step is the collection of price data for those items. Periodicity here is important depending on the nature of the functioning of the market for consumer goods. Daily changes are unlikely except in situations of hyperinflation. Again prices of certain items are susceptible to frequent changes, others not. Therefore, depending on the item the periodicity may be determined. For example, price of rice and many other food items may be collected on a weekly or fortnightly basis; clothes and medicines on a monthly basis and some other items on a quarterly basis. The next step is to decide the number of shops from which the price data should be collected in order to capture likely variations in prices as between shops. Then there is the question of how many markets to cover since prices might vary between markets as well. Therefore the price of a commodity in a given period (say a month) is the average of the prices obtained in different sub-periods in the shops and markets covered in a given region. For example, the price of rice collected by the CDRI in a given month in Phnom Penh is the average of twelve price observations spread over two time points in a month covering two shops in each of the three markets selected in Phnom Penh.

**2.2.3 Weights used:** An important set of data for the construction of a CPI is the availability of proper weights. They refer to the proportion of the total consumer expenditure on each of the items included in the basket of goods and services. These weights are secured through a consumer (household) expenditure survey. Since it is not practical to conduct annual surveys to find out the pattern of consumer expenditure, weights usually refer to a given year. These weights are used until a new survey is carried out. The need for a new survey arises when it is perceived that new consumer goods have started appearing significantly in the consumption basket or the consumer expenditure pattern is undergoing significant changes for reasons such as changes in income, quality of goods and tastes and preferences.

**2.2.4 Selection of a base year:** Usually a CPI is constructed using a fixed base year<sup>5</sup>. Changes in the prices of selected goods and services are represented with reference to a given

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<sup>5</sup> A chain base index can also be constructed but this can be calculated from a fixed base index.



year. While selecting a base year, it is important to ensure that it is a normal year with regard to the level of prices. It means that it should not be a year when prices changed radically, either in terms of a sharp rise or fall, due to scarcities or depression in the economy. For Cambodia, the National Institute of Statistics selected the third quarter of 1994, i.e. July-September. The National Bank of Cambodia selected a pre-reform base period of March 1988.

### 3 CPI for Cambodia: What is the Current Status?

Since the prices of a large number of commodities, especially essential items, were governed by administered prices either fully or partially, data on consumer prices of commodities relevant for the construction of a CPI of the type used in market economies are not available in Cambodia for the period 1969 to 1988. Since the early nineties, however, markets for consumer goods have been by and large free of significant government interventions. However, the collection and processing of price data for purposes of constructing a CPI has been systematically organised only recently by the National Institute of Statistics. Therefore, a number of organisations, both public and private, have been collecting price data primarily for their own use. The most important of them are the National Bank of Cambodia (NBC), Ministry of Economy and Finance (MOF), Ministry of Commerce, National Institute of Statistics of the Ministry of Planning (NIS) and the Cambodia Development Resource Institute (CDRI). In addition, GRET, an international NGO working in Prey Veng, has been constructing a CPI and publishing the same for Prey Veng Province. We discuss below the current status of these price data and the CPIs published by some of them. We apply a Reliability Test to these data in order to enable us to make an assessment of the relevance and usefulness of these consumer price data and index. Our Reliability Test takes into account the following criteria:

- a) representative nature of items included in the basket of goods;
- b) scientific basis of the method of collection of price data;
- c) the basis of the weights used;
- d) the selection of the base year; and
- e) representativeness of the CPI for all-Cambodia.



### 3.1 National Bank of Cambodia

The National Bank of Cambodia publishes, in its monthly bulletin *Economic and Monetary Statistics Review*, a Consumer Price Index calculated on a monthly basis. Although it does not specify, it is presumed that the CPI could represent Cambodia as a whole. This index is the one used by a number of organisations including the multilateral financial institutions in their studies and reports. The index covers fifty-eight goods and services sub-grouped into Food (31), Clothes (6), Services (6) and Daily Items (15). Three markets are currently covered with more than one seller canvassed in each market.<sup>6</sup> The price data is collected on once-a-month basis. The weights used are not on the basis of a consumer expenditure survey in Cambodia. These weights are taken from the consumer expenditure survey of Vientianne, Laos since no consumer expenditure survey had been conducted in Cambodia when the NBC started its work on the construction of a CPI. It was therefore reckoned as an interim arrangement. The data collection started in 1991 although the NBC was able to construct a CPI series from 1988 based on available data. The Base Period selected is March 1988. The items included in the market basket and their weights are given in Table A.1 of Appendix A.

Our Test of Reliability tells us that the CPI published by the National Bank of Cambodia has some important drawbacks. It is more appropriate to call it a 'Basic CPI' since the items covered are in the nature of basic goods although there are a few items (such as cigarettes, beer, battery and paracetamol) under the sub-group 'Daily Items' whose 'basic' character could be called into question. Moreover, the data is confined to Phnom Penh; as such it does not qualify to be used as a country-wide CPI. Therefore the main drawbacks of the CPI of the NBC are (i) limited number of items covered, (ii) the limited frequency of data collection, (iii) the use of weights not representative of Cambodia, and (iv) the limited applicability of the index. It should also be mentioned here that the final price reading recorded by the NBC was restricted to one market till November 1994 but it has since been expanded to three.<sup>7</sup>

These limitations notwithstanding, the NBC's CPI series is the widely used one because they were able to construct a series from 1988 and publish it regularly. At a time of difficult transition, when there was no indicator for the measurement of inflation in the economy, the NBC's attempt, though limited, should be viewed as an important contribution to the

<sup>6</sup> The markets where price data are collected by the staff of the NBC are Psar Thmey and Chhbar Ampeouv. In addition, the NBC receives price quotation lists from Oresey Market Committee.

<sup>7</sup> Prior to November 1994, the NBC collected data from only Psar Thmey. They checked the credibility of these price readings with price quotations from Oresey Market Committee but no averaging was done. Since November 1994, the final price reading has been based on an average of the prices of Psar Thmey, Chhbar Ampeouv (which was included since then) and the price quotations from Oresey.



monitoring of the performance of the macro economy of Cambodia.

### 3.2 Ministry of Economy and Finance (MOF)

The Ministry of Economy and Finance collects price data and constructs a CPI for its use as well as that of a few other government departments/institutions. Two sets of price data are collected: (i) twice a week to construct a weekly index, and (ii) end of the month to construct a monthly index. Prices are from one fixed shop in two markets in Phnom Penh (Russian and Central Markets). The market basket consists of 40 items and are classified into seven groups: Food Beverages and Tobacco, Clothing, Energy, Education, Health and Services. Table A.2 in Appendix A gives the details of the items and their weights. The weights used are a mix of Lao weights and the results of an informal consumption survey of Phnom Penh by the UNTAC in 1991.

Our Test of Reliability tells us that there are several drawbacks with the CPI of the MOF. The limited coverage of items, which makes it a 'Basic CPI' is not the major drawback. The weights used carry a large subjective element since they are a mixture of two sets of weights. The base period refers to a very narrow base of 23 July 1993. Its collection of price data is also confined to Phnom Penh markets and hence cannot claim representativeness to all Cambodia. These drawbacks may have, perhaps, contributed to the extremely limited use of this CPI.

### 3.3 Cambodia Development Resource Institute (CDRI)

The CDRI has been collecting price data from markets in Phnom Penh as well as those in the provinces, both in urban and rural areas. Its staff collects data for Phnom Penh directly and receives price data from various provinces from persons working in different NGOs. As we can see from Table A.3 in Appendix A, the coverage has neither been complete with respect to provinces nor adequate with respect to markets in rural areas. Moreover, out of sixteen provinces for which data collection was started at some point or another, continuous data are available only for seven urban markets and three rural markets covering ten provinces. The most comprehensive data collection is from Phnom Penh, twice a month, for forty items from three shops in each of the three markets (Psar Thmey, Olympics and Oresey). The list of items covered are given in Table A.4 in Appendix A. In the provinces, data collection is confined to a single market from a single shop covering twelve items of basic consumption. So far the CDRI has been publishing the price data for individual items with a simple price index showing the percentage change from one period to another.

As we shall see later, an attempt has been made here to construct a 'Basic CPI' (since



the items covered are basic consumer items) using the data collected so far. Using the price data for the limited number of items, we have also attempted a CPI for all Cambodia [referred to as CPI(CAM)] by using the data for selected provinces. The weights used are obtained from the consumer expenditure survey conducted by the National Institute of Statistics as part of its socio-economic survey carried out in 1993. The weights for Phnom Penh, Other Urban Areas and Rural Cambodia are separately available. The weights for 40 items in Phnom Penh account for 47.1 per cent of the total consumer expenditure of households whereas the weights for other urban areas account for 43.7 percent and rural Cambodia for 64.6 percent. Although the number of items covered for rural Cambodia is only twelve, the higher total weight indicates that a small number of essential commodities (e.g. rice, fish, meat and chicken) account for a high proportion of consumption in rural areas. The base period selected is July-September 1994, the same as the one selected by the National Institute of Statistics. The details of items covered and the weights used in the provinces are given in Tables A.5 in Appendix A.

### 3.4 Ministry of Commerce (MOC)

The Ministry of Commerce is another agency collecting price data. It covers forty-eight consumer items, on a daily basis, for five markets (Psar Thmei, Chbaom Peuv, Russian, Oresey and Kandal), all in Phnom Penh. It has five sub-groups: Food, Clothes, Fuel and Transport and Miscellaneous Items. Enquiries about the prices of individual items are made in a number of shops and the prices that sound more credible are recorded. Here there is an element of discretion exercised by the investigator. The daily prices are averaged for the week, month and quarter of the year. A simple price index showing percentage changes in the prices of individual items between two periods is worked out (and their movement plotted in certain cases) for use by the Ministry. No other exercise or analysis is carried out at present. The items covered and the weights used in our exercise (using NIS weights) for constructing a CPI are given in Table A.6 in Appendix A.

The MOC collects data from the provinces also which should be seen as an important and crucial activity for monitoring prices, especially its utility in the construction of a country-wide CPI and/or CPI for Provinces separately. Forty-seven items are covered. Price data are collected from one market in a province and weekly and monthly averages are worked out. The Department of Planning in the MOC in Phnom Penh keeps a record of the price data collected from the Phnom Penh markets as well as the provincial markets. However, there is a serious drawback with regard to the availability of time-series data for the provinces. Not all provincial departments send their data; those who send do so only irregularly with the result that we could not compile price data even for a single province for an unbroken period of more than a few months.



### 3.5 Groupe de Recherche et D'Echange Technique (GRET)

GRET is an international NGO working in the field of rural credit in two provinces, Prey Veng and Kompong Speu. To determine the interest rates for its credit, GRET needed a measure of inflation and this prompted them to construct a CPI for the Prey Veng Province. The CPI for Prey Veng are available from January 1993<sup>8</sup> and for Kompong Speu from January 1995. The market basket of GRET consists of 48 items classified into four groups (see Table A.7 in Appendix A). At the time of the survey, there were no weights available for Cambodia, hence GRET used the consumption weights derived by UNTAC in 1991. The prices are collected from a single shop in the Prey Veng town market, once a month, at the end of every month. Price data for individual items along with the CPI for all items and major groups are published on a monthly basis since March 1994.

Our Test of Reliability tells us that, like all the market baskets other than NIS, the CPI of GRET is a 'Basic CPI'. The main drawback is the use of consumption weights not really representative of Cambodia. It is now possible, as we have done here, to replace the currently used weights with that available from the NIS for Urban Areas Other Than Phnom Penh. The value of GRET price data is that it refers to a province (now covering two provinces) and that it would be valuable to maintain it until the NIS is in a position to establish its system of data collection in the provinces.

### 3.6 National Institute of Statistics (NIS)

Though the collection of price data by the National Institute of Statistics started only in 1993-94 and the publication of a CPI, computed on a monthly basis, started only from January 1995, this represents the widely practised (in most countries) scientific method of computing a CPI. The data are collected for a total of 206 items representing 91 per cent of the average expenditure of households in Phnom Penh. The periodicity of data collection varies: on a fortnightly basis for Food Items; on a monthly basis for Beverages and Tobacco, Clothing and Footwear, Fuel, Electricity and Water, Pharmaceutical and Medical Supplies, Posts, Telecommunication and Transport, Personal Care and Personal Services and, Household Utilities; on a quarterly basis for House Maintenance, Health Care, School Supplies and, Personal Effects; on a bi-annual basis for House Rent, Entertainment and Recreation, Educational Expenses and Furniture. The data collection covers four shops (with another four to serve as substitutes) in each of the five major markets (Central, Oresey, Russian, Danker

<sup>8</sup> Although GRET started publishing its CPI series for Prey Veng beginning from January 1993, it has been collecting price data since December 1989. Since January 1995, GRET has included the Province of Kompong Speu in its construction of CPI. It should be mentioned here that we have used the price data of GRET for constructing a CPI series for Prey Veng by using the NIS weights for Urban Areas Other Than Phnom Penh.



and Chaba Ompov), all confined to Phnom Penh. The weights used were obtained from a consumer expenditure survey conducted in 1993. The base period selected is July-September 1994.

The methodology and the system for collection of price data, their verification, processing and construction established by the National Institute of Statistics under a technical assistance provided through the Strengthening of Macroeconomic Management and Training Project (financed by UNDP/ADB) is by far the most scientific. Appendix B gives an account of the system and the procedures for constructing the CPI. The list of items covered and the weights used are given in Table A.7 in Appendix A.

Our Test of Reliability tells that the CPI by the NIS represents the most comprehensive for an entire population. However, its coverage is limited to Phnom Penh. This could be interpreted, at best, to represent Urban Cambodia. The frequency of data collection, the number of shops and markets covered are quite adequate. The weights used are generated scientifically through a consumer expenditure survey. The selection of the base period should be acceptable since July-September 1994 presented no abnormal change in prices. An important advantage of NIS data is that CPIs can be calculated for basic and non-basic items or any other combination of goods and services depending on the purpose of the user. However, there are a few questions which need to be subjected to critical examination. The weights indicate a twenty per cent share of consumer expenditure for rent and 5 percent for rice. This means that a Cambodian living in Phnom Penh spends, on an average, twenty per cent of his disposable income on house rent and only 5 percent on rice. Since nearly half the population of Phnom Penh was found to be migrants (as per the 1993 socio-economic survey of the NIS), this seems to suggest that those living as tenants pay, on an average, around forty per cent of their expenditure towards house rent.

While some of these specific questions could be verified in due course, we feel it important that the NIS be designated as the agency for constructing an official CPI for Cambodia. The absence of data for provinces should be rectified by extending the system established in Phnom Penh to the provinces. Our recommendations on this are given in Section 7.

#### 4 Consumer Price Index for Cambodia

Based on the price data and the CPI published by the NBC, MOF and NIS, we have generated five different sets of CPI for Phnom Penh. The CPI of each institution represent the varying baskets of goods and services. A summary of the methodologies and the number of items covered in different market baskets are given in Table 1. Since the group representing food items is the most basic in all consumer price indices, we have generated a separate Food



Index (henceforth referred to as FI). The CPI series along with that of the Food Index series are given in Table 2. As explained earlier, the CPI of NBC and MOF are the ones computed by them using weights different from the ones generated by the NIS. However, the CPIs have been normalised to the NIS base period of July-September 1994 for purposes of comparison. The CPI computed by the NIS are available only from January 1995. They are simply reproduced here for comparison. The CPIs of CDRI and MOC are computed by us using the price data collected from the Phnom Penh markets. The weights used are the same as generated by the NIS through its consumer expenditure survey conducted in 1993 and used in the computation of the CPI of NIS. Therefore, with a common base period, we have three series of CPI with same weights and two series with different weights. It should however be noted that the NBC and MOF series are available since January 1991 whereas the CDRI series is available from November 1992, MOC series from November 1993 and the NIS series only from January 1995.



index (historically referred to as FI). The CPI series along with that of the Food Index series are given in Table 2. As explained earlier, the CPI of NHC and MOC are the ones computed by them using weights different from the ones generated by the MIS. However, the CPIs have been normalized to the MIS base period of July-September 1994 for purposes of comparison. The CPI computed by the MIS are available only from January 1992. They are simply reproduced here for comparison. The CPIs of CGRI and NHC are computed by us using the price data collected from the Phnom Penh markets. The weights used are the same as generated by the MIS through its consumer expenditure survey conducted in 1992 and used in the computation of the CPI of MIS. Therefore, with a common base period, we have three series of CPI with same weights and two series with different weights. It should however be noted that the NHC and MOC series are available since January 1991 whereas the CGRI series is available from November 1992, MOC series from November 1993 and the NHC series only from January 1992.

Table 1(a): Comparison of different systems for collection of data on consumer prices (Phnom Penh)

Description	NBC	MOF	NIS	CDRI	MOC
1. Nature of price index	CPI	CPI	CPI	SPI	SPI
2. Periodicity	Monthly	Weekly/Monthly	Monthly	Weekly/Monthly	Weekly/monthly
3. Publication	Yes	No	Yes	Yes	No
4. Nature of Publication	Monthly bulletin	-	Monthly bulletin	Quarterly newsletter	-
5. Base Period	March 1988	23 July 1988	July-September 1994	-	-
6. Weights	Laos	Laos/UNTAC '91 Survey	CES (1993) of P. Penh	-	-
7. Frequency of data collection	Once a month	Twice weekly (end of month)	Fortnightly, Monthly...	Fortnightly in P. Penh & once a month in Province	Daily
8. Number of shop in each market	More than one	One	4 (fixed), 4 (alternates)	Two	Not known
9. Number of markets	Two	Two	Five	Three	Five
10. Number of items	58	-	206	40	48
11. Main Group (items in bracket)	Food (31) Clothes (6) Services (6) Daily items (15)	Food (15) Beverage & Tobacco (6) Energy (4) Clothing & Footwear (5) Medical supplies (4) Education (2) Service (4)	Food, beverage & tobacco (23) Clothing and Footwear (11) Housing and Utility (3) Furniture and household operation (7) Medical care (3) Transport and telecom. (4) Recreation & Education (4) Personal care & service (4)	Food (27) Clothing & Footwear (6) Fuel and Transport (5) Miscellaneous (2)	Food (37) Clothes (3) Fuel & Transport (4) Miscellaneous (3)
12. Treatment of specific problems					
a. Seasonal problems	None	None	Last price observation	None	None
b. Missing price	None	None	Last price observation carried until reappearance	None	None
c. Quality change	None	None	None	None	None
d. New problems	None	None	None	None	None
e. Shop substitution	None	None	Similar shop	No fixed shop	No fixed shop
13. Compilation Method					
a. Basic aggregate	Relatives of average	Relatives of average	Relatives of average	Relatives of average	Relatives of average
b. Group, Sub-group and all items indices	Laspeyres	Laspeyres	Laspeyres	-	-





Table 1(b): Comparison of different systems for collection of data on consumer prices  
(Province)

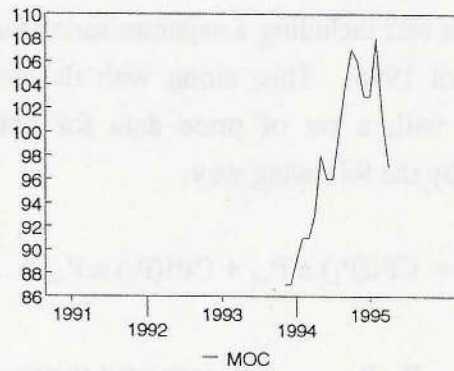
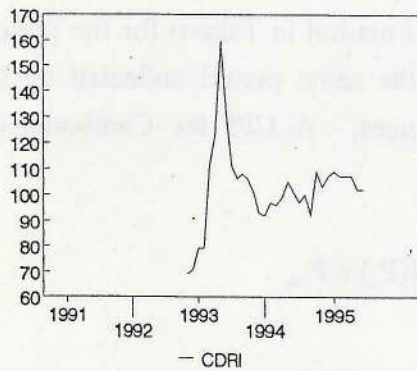
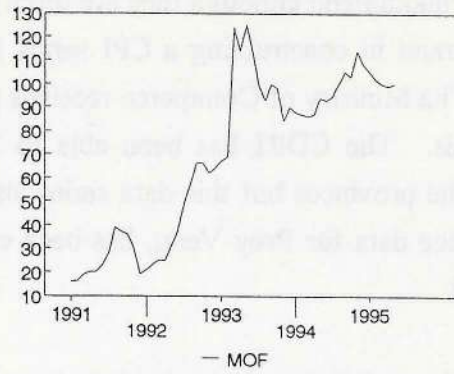
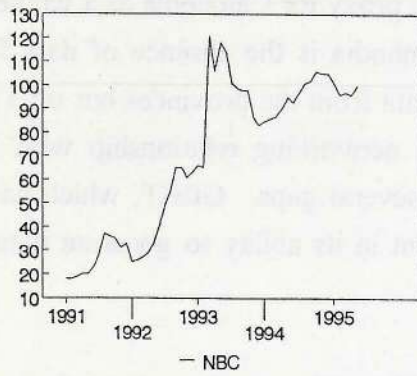
Decription	CDRI	GRET	MOC
1. Coverage	15 provinces (Urban) 5 provinces (Rural)	2 Provinces	All Provinces
2. Nature of Price Index	SPI	CPI	SPI
3. Periodicity	Monthly	Monthly	Monthly
4. Publication	Yes	Yes	No
5. Nature of Publication	Quarterly Newsletter	Monthly	No
6. Base Period	-	1 Jan. 1994	-
7. Weights	-	UNTAC	-
8. Frequency of data	One a month	One a month	Don't know
9. Number of Shops in each market	One	One	Don't know
10. Number of markets	One	One	One
11. Number of items	12	48	48
12. Main group	Food (8) Clothing (1) Fuel (2) Transportation (1)	Food (28) Clothing (5) Services (9) Daily items (7)	Food (37) Clothing (3) Fuel & Trans. (4) Miscellaneous (3)



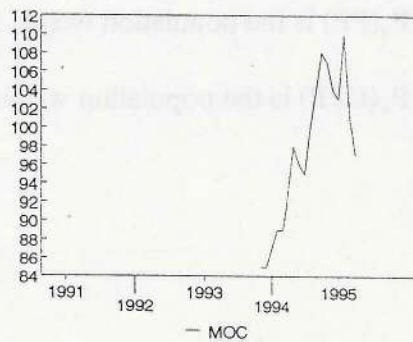
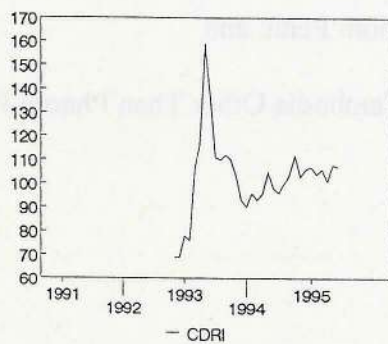
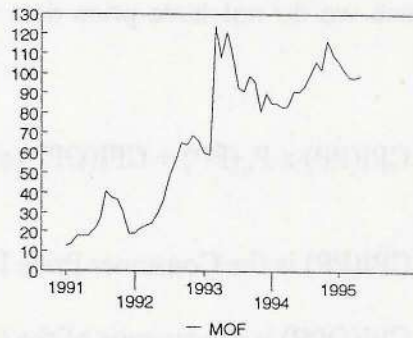
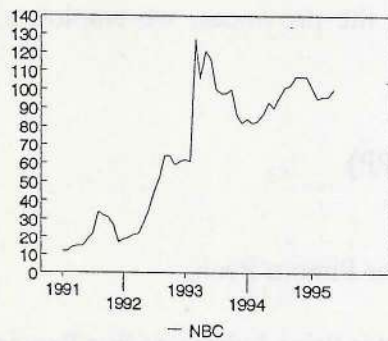
Table 2: Index based on price data from Phnom Penh markets collected by different institutions (Base: July-September 1994 = 100)

Year/Month	NBC		MOF		CDRI		MOC		NIS	
	CPI	FI	CPI	FI	CPI	FI	CPI	FI	CPI	FI
1991 Jan	18	12	16	13	-	-	-	-	-	-
Feb	18	12	16	14	-	-	-	-	-	-
Mar	19	14	19	18	-	-	-	-	-	-
Apr	20	15	20	18	-	-	-	-	-	-
May	20	15	20	18	-	-	-	-	-	-
Jun	23	18	23	21	-	-	-	-	-	-
Jul	28	22	28	27	-	-	-	-	-	-
Aug	37	34	39	41	-	-	-	-	-	-
Sep	36	32	37	38	-	-	-	-	-	-
Oct	35	31	36	37	-	-	-	-	-	-
Nov	31	27	30	30	-	-	-	-	-	-
Dec	33	17	19	19	-	-	-	-	-	-
1992 Jan	25	18	21	19	-	-	-	-	-	-
Feb	26	19	23	22	-	-	-	-	-	-
Mar	27	21	25	24	-	-	-	-	-	-
Apr	29	22	25	25	-	-	-	-	-	-
May	33	28	31	30	-	-	-	-	-	-
Jun	40	35	37	37	-	-	-	-	-	-
Jul	49	45	49	49	-	-	-	-	-	-
Aug	55	52	57	56	-	-	-	-	-	-
Sep	65	64	66	65	-	-	-	-	-	-
Oct	65	64	66	64	-	-	-	-	-	-
Nov	61	59	62	69	69	69	-	-	-	-
Dec	63	61	64	60	71	69	-	-	-	-
1993 Jan	66	62	67	60	79	78	-	-	-	-
Feb	65	61	69	59	79	76	-	-	-	-
Mar	121	127	124	124	111	107	-	-	-	-
Apr	106	106	114	108	123	116	-	-	-	-
May	118	121	125	121	160	159	-	-	-	-
Jun	114	116	113	109	131	136	-	-	-	-
Jul	101	100	99	93	111	111	-	-	-	-
Aug	99	98	93	91	106	110	-	-	-	-
Sep	98	98	100	99	108	112	-	-	-	-
Oct	98	100	98	104	116	110	-	-	-	-
Nov	87	86	84	81	101	103	87	85	-	-
Dec	83	82	90	90	93	93	87	85	-	-
1994 Jan	85	84	88	85	92	90	89	87	-	-
Feb	86	82	87	85	97	96	91	89	-	-
Mar	87	83	86	83	96	93	91	89	-	-
Apr	90	87	87	84	99	96	93	93	-	-
May	95	93	94	91	105	105	98	98	-	-
Jun	93	90	93	91	101	98	96	96	-	-
Jul	97	96	95	94	97	96	96	95	-	-
Aug	101	101	100	100	100	100	100	100	-	-
Sep	102	102	105	106	92	104	104	104	-	-
Oct	106	107	103	102	109	112	107	108	-	-
Nov	105	107	114	117	103	103	106	107	-	-
Dec	105	107	108	110	107	106	103	104	-	-
1995 Jan	101	101	105	106	109	107	103	103	101	103
Feb	96	95	102	102	107	104	108	110	102	102
Mar	97	96	100	98	107	106	101	101	100	100
Apr	96	96	99	98	107	101	97	97	99	99
May	100	100	100	99	102	107	-	-	99	104
Jun	-	-	-	-	102	108	-	-	-	-

Trend in Consumer Price Index - Phnom Penh (Base: July-September 1994 = 100)



Trend in Food Index - Phnom Penh (Base: July-September 1994 = 100)





As we have mentioned earlier, the price data collected by all these institutions are confined to Phnom Penh although they are often used as proxy for Cambodia as a whole. The crucial constraint in constructing a CPI series for Cambodia is the absence of data for the provinces. The Ministry of Commerce receives price data from the provinces but on a highly irregular basis. The CDRI has been able to form a networking relationship with NGOs working in the provinces but this data series also has several gaps. GRET, which has been collecting price data for Prey Veng, has been consistent in its ability to generate data since January 1993.

As a second best solution and to serve as an illustration we have been fortunate to secure time series data on consumer prices collected by CDRI Network for four provinces (but five data sets including a separate series for a rural market in Takeo) for the period July 1993 to April 1995. This, along with the data for the same period collected by GRET, provides us with a set of price data for five provinces. A CPI for Cambodia can be constructed by the following way.

$$\text{CPI(CAM)} = \text{CPI}(P_1) \times P_{w1} + \text{CPI}(P_2) \times P_{w2} + \dots + \text{CPI}(P_n) \times P_{wn}.$$

where  $P_1, P_2, \dots, P_n$  represent the number of provinces,

and  $P_{w1}, P_{w2}, \dots, P_{wn}$  represent the population weights.

In our case, since we do not have price data for all the provinces, we employ a truncated formula.

$$\text{CPI(CAM)} = \text{CPI(PP)} \times P_w(\text{PP}) + \text{CPI(OPP)} \times P_w(\text{OPP})$$

where  $\text{CPI(PP)}$  is the Consumer Price Index for Phnom Penh;

$\text{CPI(OPP)}$  is the average of the Consumer Price Indices of five Provinces (Other Than Phnom Penh);

$P_w(\text{PP})$  is the population weight for Phnom Penh; and

$P_w(\text{OPP})$  is the population weight for Cambodia Other Than Phnom Penh.

Table 3: CPI and FI series for selected Provinces (Base: July-September 1994)

Year	B. bang		Kpg Thom		Prey Veng		B. M. chey		Takeo (U)		Takeo (R)	
	CPI	FI	CPI	FI	CPI	FI	CPI	FI	CPI	FI	CPI	FI
1993 - Jul	105	109	112	105	94	82	-	-	106	105	106	105
Aug	95	95	97	99	93	92	-	-	103	107	102	105
Sep	99	103	89	87	94	93	-	-	102	106	102	106
Oct	93	98	96	95	95	93	-	-	102	106	102	106
Nov	90	98	93	92	86	85	-	-	92	92	92	92
Dec	83	84	88	87	83	79	-	-	89	88	89	88
1994 - Jan	82	81	87	82	84	80	98	93	83	79	84	82
Feb	87	89	83	79	83	79	102	100	82	78	82	78
Mar	89	90	90	87	86	83	102	100	84	80	84	80
Apr	92	93	96	99	93	93	104	104	88	87	88	87
May	100	99	101	103	95	93	105	108	95	95	95	95
Jun	97	96	96	96	98	98	99	100	101	102	101	102
Jul	97	95	99	98	95	94	101	101	98	100	98	100
Aug	101	102	107	109	100	100	102	103	100	101	100	101
Sep	101	103	94	92	104	106	96	95	100	99	100	99
Oct	101	103	98	99	104	104	107	106	106	107	106	107
Nov	95	96	106	107	106	107	104	104	105	105	105	105
Dec	91	90	99	100	101	101	104	106	104	105	104	105
1995 - Jan	97	93	106	106	104	101	112	113	101	99	101	99
Feb	92	86	109	106	100	95	103	99	99	91	99	91
Mar	93	88	105	102	100	96	109	104	101	96	101	112
Apr	92	88	-	-	104	104	99	91	106	105	102	101

Table 4: CPI and FI for Cambodia based on CDRI price data (Base: July-Sep. 1994 = 100)

Year/Month	CPI (Cam)	FI (Cam)
1993 - Jul	105	101
Aug	98	100
Sep	97	99
Oct	98	100
Nov	91	92
Dec	86	85
1994 - Jan	86	83
Feb	87	84
Mar	89	87
Apr	94	94
May	99	99
Jun	99	99
Jul	98	98
Aug	102	103
Sep	99	99
Oct	104	104
Nov	104	104
Dec	101	101
1995 - Jan	104	102
Feb	100	95
Mar	102	100
Apr	101	98



The results of this exercise are presented in Table 3 and 4. As in other cases, we have constructed a CPI as well as a Food Index for Cambodia. The quantity weights for the construction of CPI for 'urban areas other than Phnom Penh' and 'rural areas' are available from the NIS. These weights have been used in the construction of the CPI series for the provinces. Therefore, in addition to a CPI series for Phnom Penh and all Cambodia, we have also been able to provide a CPI series for five provinces since July 1993. The population weights are obtained from the National Institute of Statistics, presumably based on its estimates on the basis of the 1993 Socio-Economic Survey (World Bank 1995: 95). It should however be mentioned that these weights need to be seen as indicative figures rather than firm ones<sup>9</sup>.

## 5 Analysis and Discussion

Although the different institutions have different baskets of goods and services as well as varying number of price observations, the direction of movement of CPI for Phnom Penh is the same. All the series bring out the sharp increase in consumer prices between March and July 1993, a period of high political volatility. However, the CDRI series has registered a much higher increase during this period for both CPI and FI as compared with other series. In general, the Food Index has followed the same pattern as the CPI in all the series although the increase in FI has been somewhat less than that of the CPI with some exceptions (see Appendix C).

A comparison of the CPI series for Phnom Penh as between different institutions bring out some results which would cast doubt on the consistency of the method of data collection. Since the coverage of items, markets and weights used differ, it was expected that there would be some differences in the series of different institutions. But if the method of data collection is consistent, then the differences should also be more or less consistent assuming price differences between shops do not show erratic behaviour. However, there is a wide variation in the differences. For example, in Table 5 we present the percentage difference in CPI of different institutions with respect to the NBC series. Between the MOF and NBC difference is widely fluctuating from (-) 42 percent to (+)8 percent. Although the differences have narrowed since mid 1992, the range is still not insignificant i.e. from (-) 6 percent to (+) 9 percent. The picture is the same as between CDRI and NBC although the difference between MOC and NBC is narrower except for a single month. We could have attributed this to the differing nature of the basket of goods and services but for the fact that the Food Index also exhibits similar wide variations (see Table 6). The graphs presented bring out these differences in a sharp form. Our own hunch is that the differences are largely due to the fact

<sup>9</sup>While the NIS estimate shows Phnom Penh's share of population as only 7.2 percent (1993), it is widely held that this may be around 10 percent (i.e. around one million).

that price data were not collected from the same shops by these agencies. This is certainly true of CDRI and MOC data.

So far the CPI for Phnom Penh, constructed by the NBC was used as a proxy for CPI for Cambodia. Since we have generated a CPI for Cambodia using the Phnom Penh and provincial data it is instructive to see how representative was the Phnom Penh CPI. A comparison of CPI of NBC and CPI of CDRI for Cambodia as well as that of MOF and CDRI is given in Table 7. The percentage difference between the CPI of MOF for Phnom Penh and CPI of CDRI for Cambodia showed the maximum difference ranging from (-)9 percent to (+)8 percent which makes the CPI of MOF less reliable as a proxy for Cambodia. In the case of the CPI of NBC, the difference is smaller but still not insignificant ranging from (-)4 percent to (+)6.5 percent. The graphs provide the movement of these differences over time.



Table 5: Percentage difference in CPI between different institutions

Year/Month	MOF - NBC	MOC - NBC	CDRI - NBC	NIS - NBC
1991 Jan	-11.11			
Feb	-11.11			
Mar	0.00			
Apr	0.00			
May	0.00			
Jun	0.00			
Jul	0.00			
Aug	5.41			
Sep	2.78			
Oct	2.86			
Nov	-3.23			
Dec	-42.42			
1992 Jan	-16.00			
Feb	-11.54			
Mar	-7.41			
Apr	-13.79			
May	-6.06			
Jun	-7.50			
Jul	0.00			
Aug	3.64			
Sep	1.54			
Oct	1.54			
Nov	1.64		13.11	
Dec	1.59		12.70	
1993 Jan	1.52		19.70	
Feb	6.15		21.54	
Mar	2.48		-8.26	
Apr	7.55		16.04	
May	5.93		35.59	
Jun	-0.88		14.91	
Jul	-1.98		9.90	
Aug	-6.06		7.07	
Sep	2.04		10.20	
Oct	0.00		8.16	
Nov	-3.45	-2.30	16.09	
Dec	8.43	2.41	12.05	
1994 Jan	3.53	2.35	8.24	
Feb	1.16	3.49	12.79	
Mar	-1.15	2.30	10.34	
Apr	-3.33	3.33	10.00	
May	-1.05	3.16	10.53	
Jun	0.00	3.23	8.60	
Jul	-2.06	-2.06	0.00	
Aug	-0.99	-0.99	-0.99	
Sep	2.94	1.96	-9.80	
Oct	-2.83	1.89	2.83	
Nov	8.57	1.90	-1.90	
Dec	2.86	-0.95	1.90	
1995 Jan	3.96	1.98	7.92	0.00
Feb	6.25	14.58	11.46	6.25
Mar	3.09	4.12	10.31	3.09
Apr	3.13	1.04	11.46	3.13
May	0.00		2.00	-1.00

Table 6: Percentage difference in Food Index

Year/Month	MOF - NBC	MOC - NBC	CDRI - NBC	NIS - NBC
1991 Jan	8.33			
Feb	16.67			
Mar	28.57			
Apr	20.00			
May	20.00			
Jun	16.67			
Jul	22.73			
Aug	20.59			
Sep	18.75			
Oct	19.35			
Nov	11.11			
Dec	11.76			
1992 Jan	5.56			
Feb	15.79			
Mar	14.29			
Apr	13.64			
May	7.14			
Jun	5.71			
Jul	8.89			
Aug	7.69			
Sep	1.56			
Oct	0.00			
Nov	16.95		16.95	
Dec	8.20		13.11	
1993 Jan	-3.23		25.81	
Feb	-3.28		24.59	
Mar	-2.36		-15.75	
Apr	1.89		9.43	
May	0.00		31.40	
Jun	-6.03		17.24	
Jul	-7.00		11.00	
Aug	-7.14		12.24	
Sep	1.02		14.29	
Oct	-4.00		10.00	
Nov	-5.81	-1.16	19.77	
Dec	9.76	3.66	13.41	
1994 Jan	1.19	3.57	7.14	
Feb	3.66	8.54	17.07	
Mar	0.00	7.23	12.05	
Apr	-3.45	6.90	10.34	
May	-2.15	5.38	12.90	
Jun	1.11	6.67	8.89	
Jul	-2.08	-1.04	0.00	
Aug	-0.99	-0.99	-0.99	
Sep	3.92	1.96	1.96	
Oct	-4.67	0.93	4.67	
Nov	9.35	0.00	-3.74	
Dec	2.80	-2.80	-0.93	
1995 Jan	4.95	1.98	5.94	1.98
Feb	7.37	15.79	9.47	7.37
Mar	2.08	5.21	10.42	4.17
Apr	2.08	1.04	5.21	3.13
May	-1.00		8.00	4.00

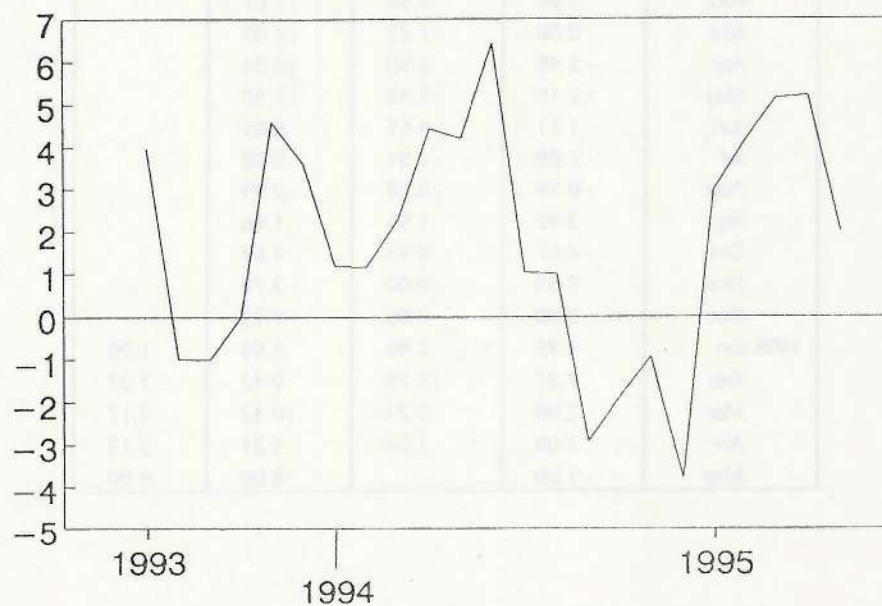


Table 7: Percentage difference between CPI for Phnom Penh and CPI for Cambodia

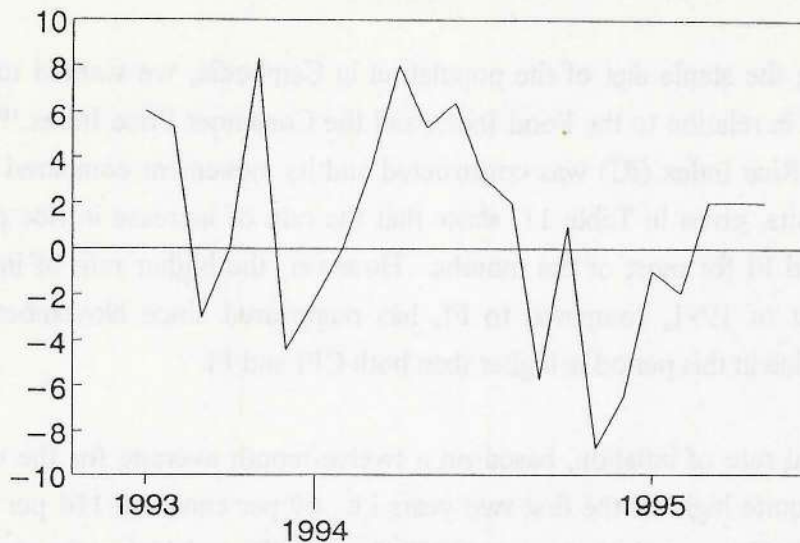
Year	NBC (PP)	MOF (PP)	CDRI (Cam)	Percentage Difference	
				NBC-CDRI	MOF-CDRI
1	2	3	4	5	6
1993 - Jul	101	99	105	3.96	6.06
Aug	99	93	98	-1.01	5.08
Sep	98	100	97	-1.02	-3.00
Oct	98	98	98	0.00	0.00
Nov	87	84	91	4.60	8.33
Dec	83	90	86	3.61	-4.44
1994 - Jan	85	88	86	1.18	-2.27
Feb	86	87	87	1.16	0.00
Mar	87	86	89	2.30	3.49
Apr	90	87	94	4.44	8.05
May	95	94	99	4.21	5.32
Jun	93	93	99	6.45	6.45
Jul	97	95	98	1.03	3.16
Aug	101	100	102	0.99	2.00
Sep	102	105	99	-2.94	-5.71
Oct	106	103	104	-1.89	0.97
Nov	105	114	104	-0.95	-8.77
Dec	105	108	101	-3.81	-6.48
1995 - Jan	101	105	104	2.97	-0.95
Feb	96	102	100	4.17	-1.96
Mar	97	100	102	5.15	2.00
Apr	96	99	101	5.21	2.02
May	100	100	102	2.00	2.00

Note:

1. NBC (PP): CPI as computed by National Bank of Cambodia for Phnom Penh
2. MOF(PP): CPI as computed by Ministry of Finance for Phnom Penh
3. CDRI (Cam): CPI as computed by Cambodia Development Resource Institute for Cambodia

Percentage difference in CPI for Phnom Penh and CPI for Cambodia  
NBC (PP) - CDRI (Cam)

MOF (PP) - CDRI (Cam)



The CPI and FI series constructed for the five provinces and their averages have been compared with the CPI and FI for Phnom Penh and given in Table 8. As expected from the above analysis, both the CPI and FI series for Phnom Penh show a faster movement than their counterparts in provinces. Our examination of the price data also revealed that the absolute level of prices for most commodities are also lower in the provinces than in Phnom Penh.

In the beginning, we mentioned that one of the main purposes of constructing a CPI is to measure the rate of inflation in an economy which then becomes a crucial input into several decisions. We present in Table 9 the monthly rate of inflation as calculated from the different sources. These are given for the CPI and FI separately. It should be remembered an average monthly rate of inflation of six percent will result in an annual rate of inflation of 100 percent. Both Table 9 and the figures bring out the periods of hyperinflation in the economy. During 1993 the hyperinflation period is restricted to the month of March as per the NBC and MOF series whereas the CDRI series show the period to be around three months beginning from March. All the series however show the relatively low and stable inflation since mid-1993. However, the stability achieved has been after a period of rapid inflation perhaps beginning from 1988. Therefore the recent price stability is at a higher level than experienced perhaps at any time since the independence of the country. It is also interesting to find that the monthly rate of inflation of food items follow basically the same pattern of movement as that of the CPI.

Monthly rates of inflation will show the seasonal and/or random movements in a sharp form. In order to capture the inflationary process over a longer period of time, we present the twelve-month moving averages of the CPI and FI in Table 10. This smoothens the curve but the results obtained show the inflationary process as a secular increase till the beginning of



1994; since then there has been a marginal reduction in the price level till early 1995.

Rice being the staple diet of the population in Cambodia, we wanted to find out the trend in rice price in relation to the Food Index and the Consumer Price Index.<sup>10</sup> An index of rice prices called Rice Index (RI) was constructed and its movement compared with the CPI and FI. The results, given in Table 11, show that the rate of increase in rice price was less than both CPI and FI for most of the months. However, the higher rate of increase in rice price during most of 1991, compared to FI, has reappeared since November 1994. The increase in rice price in this period is higher than both CPI and FI.

The annual rate of inflation, based on a twelve-month average for the calendar year, was found to be quite high for the first two years i.e., 69 per cent and 114 per cent between 1991-92 and 1992-93 respectively (as per NBC) for the CPI and higher for the FI at 95 per cent and 136 per cent. The results based on three main data sources are given in Table 12.

<sup>10</sup> Data on rice price analysed here are from the market basket of NBC.

Table 8: Percentage difference in CPI and FI between provinces and Phnom Penh (CDRI) - (Base: July -September 1994 =100)

Year	pp* - Opp*		PP-Battambang		PP - Kg Thom		PP - Pray Veng		PP - B. Meanchey		PP - Takeo[U]		PP - Takeo[R]	
	CPI*	FI*	CPI	FI	CPI	FI	CPI	FI	CPI	FI	CPI	FI	CPI	FI
1993	6.1	9.7	5.7	1.8	-0.9	5.7	18.1	35.4	-	-	4.7	5.7	4.7	5.7
	8.2	9.6	11.6	11.1	9.3	11.1	14.0	19.6	-	-	2.9	2.8	3.9	4.8
	11.1	13.1	9.1	8.7	21.3	28.7	14.9	20.4	-	-	5.9	5.7	5.9	5.7
	8.6	10.4	14.0	12.2	10.4	15.8	11.6	18.3	-	-	3.9	3.8	3.9	3.8
1994	11.5	12.2	12.2	5.1	8.6	12.0	17.4	21.2	-	-	9.8	12.0	9.8	12.0
	7.6	9.2	12.0	10.7	5.7	6.9	12.0	17.7	-	-	4.5	5.7	4.5	5.7
	6.6	8.7	12.2	11.1	5.7	9.8	9.5	12.5	-3.2	-3.2	10.8	13.9	9.5	9.8
	12.1	14.5	11.5	7.9	16.9	21.5	16.9	21.5	-4.9	-4.0	18.3	23.1	18.3	23.1
	7.7	7.3	7.9	3.3	6.7	6.9	11.6	12.0	-5.9	-7.0	14.3	16.3	14.3	16.3
	5.9	2.3	7.6	3.2	3.1	-3.0	6.5	3.2	-4.8	-7.7	12.5	10.3	12.5	10.3
	6.6	6.2	5.0	6.1	4.0	1.9	10.5	12.9	0.0	-2.8	10.5	10.5	10.5	10.5
	2.4	-1.0	4.1	2.1	5.2	2.1	3.1	0.0	2.0	-2.0	0.0	-3.9	0.0	-3.9
	-1.0	-2.0	0.0	1.1	-2.0	-2.0	2.1	2.1	-4.0	-5.0	-1.0	-4.0	-1.0	-4.0
	-1.6	-2.6	-1.0	-2.0	-6.5	-8.3	0.0	0.0	-2.0	-2.9	0.0	-1.0	0.0	-1.0
	-7.2	5.1	-8.9	1.0	-2.1	13.0	-11.5	-1.9	-4.2	9.5	-8.0	5.1	-8.0	5.1
	5.1	7.3	7.9	8.7	11.2	13.1	4.8	7.7	1.9	5.7	2.8	4.7	2.8	4.7
1995	-0.5	-1.0	8.4	7.3	-2.8	-3.7	-2.8	-3.7	-1.0	-1.0	-1.9	-1.9	-1.9	-1.9
	6.5	4.8	17.6	17.8	8.1	6.0	5.9	5.0	2.9	0.0	2.9	1.0	2.9	1.0
	5.3	5.1	12.4	15.1	2.8	0.9	4.8	5.9	-2.7	-5.3	7.9	8.1	7.9	8.1
	6.6	9.9	16.3	20.9	-1.8	-1.9	7.0	9.5	3.9	5.1	8.1	14.3	8.1	14.3
	5.4	6.4	15.1	20.5	1.9	3.9	7.0	10.4	-1.8	1.9	5.9	10.4	5.9	-5.4
	6.4	3.3	16.3	14.8	-	-	2.9	-2.9	8.1	11.0	0.9	-3.8	4.9	0.0

\* CPI : Consumer Price Index

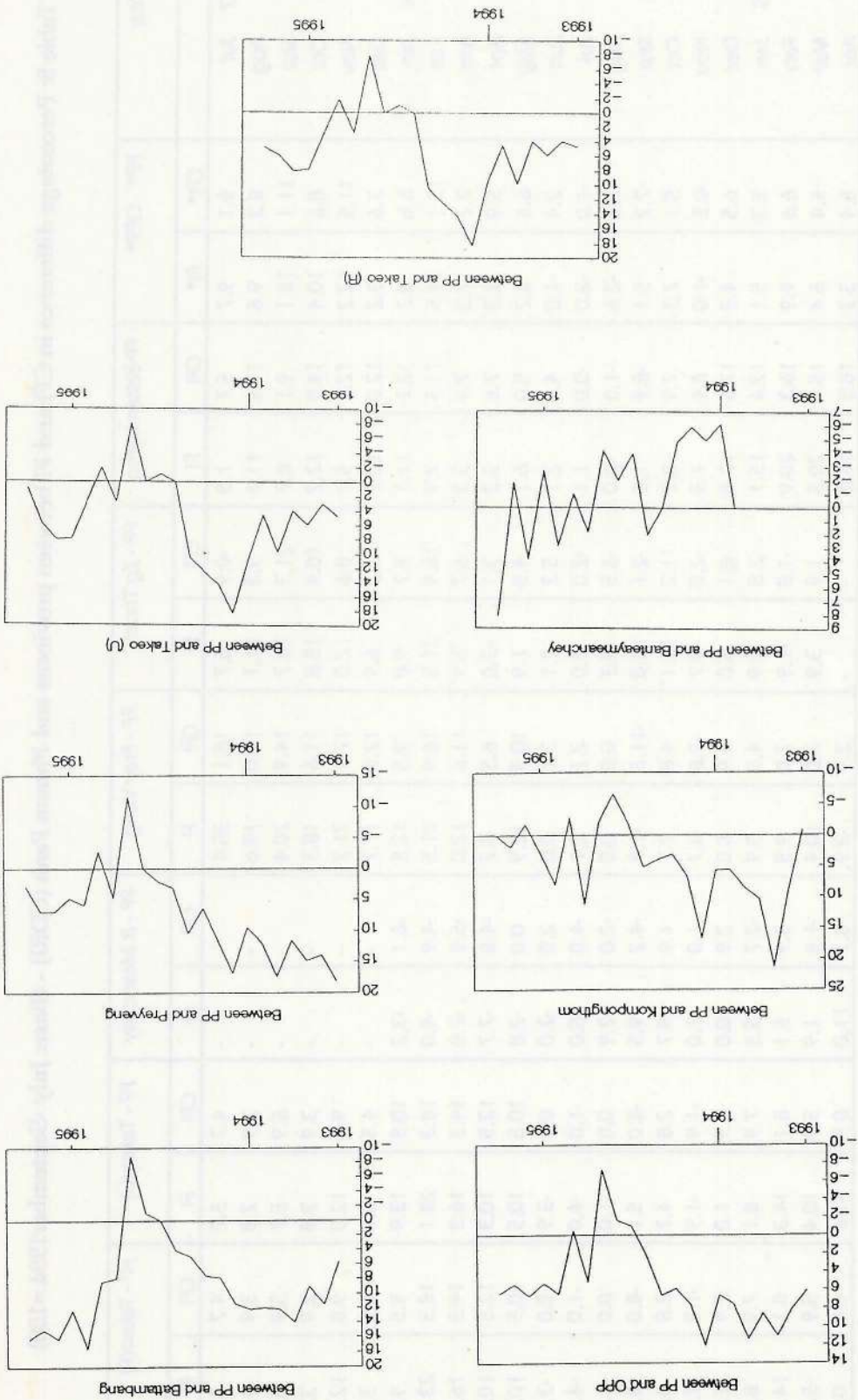
\* FI : Food Index

\* OPP : other than Phnom Penh

\* PP : Phnom Penh



Percentage difference in CPI between Phnom Penh and Provinces



Note: PP : Phnom Penh

OPP : Other than Phnom Penh

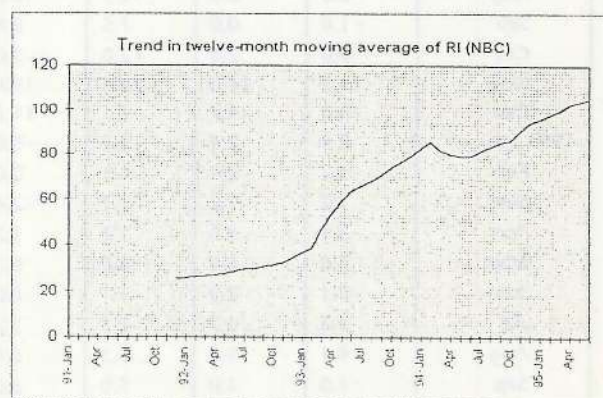
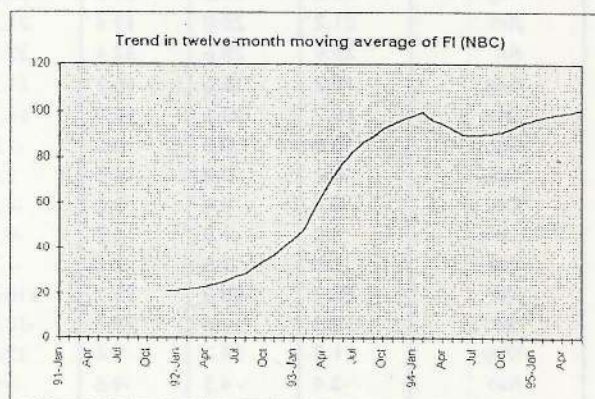
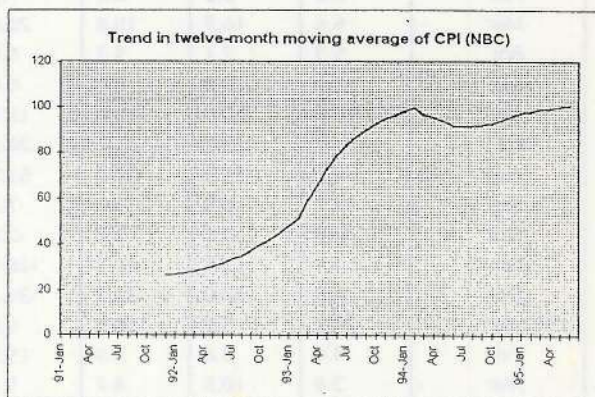
Table 9: Monthly inflation rate for CPI and FI of different institutions

Year/Month	NBC		MOF		CDRI		MOC		NIS	
	All Items	Food	All Items	Food	All Items	Food	All Items	Food	All Items	Food
1991 Jan	-	-	-	-	-	-	-	-	-	-
Feb	0.0	0.0	0.0	7.7	-	-	-	-	-	-
Mar	5.6	16.7	18.8	28.6	-	-	-	-	-	-
Apr	5.3	7.1	5.3	0.0	-	-	-	-	-	-
May	0.0	0.0	0.0	0.0	-	-	-	-	-	-
Jun	15.0	20.0	15.0	16.7	-	-	-	-	-	-
Jul	21.7	22.2	21.7	28.6	-	-	-	-	-	-
Aug	32.1	54.5	39.3	51.9	-	-	-	-	-	-
Sep	-2.7	-5.9	-5.1	-7.3	-	-	-	-	-	-
Oct	-2.8	-3.1	-2.7	-2.6	-	-	-	-	-	-
Nov	-11.4	-12.9	-16.7	-18.9	-	-	-	-	-	-
Dec	6.5	-37.0	-36.7	-36.7	-	-	-	-	-	-
1992 Jan	-24.2	5.9	10.5	0.0	-	-	-	-	-	-
Feb	4.0	5.6	9.5	15.8	-	-	-	-	-	-
Mar	3.8	10.5	8.7	9.1	-	-	-	-	-	-
Apr	7.4	4.8	0.0	4.2	-	-	-	-	-	-
May	13.8	27.3	24.0	20.0	-	-	-	-	-	-
Jun	21.2	25.0	19.4	23.3	-	-	-	-	-	-
Jul	22.5	28.6	32.4	32.4	-	-	-	-	-	-
Aug	12.2	15.6	16.3	14.3	-	-	-	-	-	-
Sep	18.2	23.1	15.8	16.1	-	-	-	-	-	-
Oct	0.0	0.0	0.0	-1.5	-	-	-	-	-	-
Nov	-6.2	-7.8	-6.1	7.8	-	-	-	-	-	-
Dec	3.3	3.4	3.2	-4.3	2.9	0.0	-	-	-	-
1993 Jan	4.8	1.6	4.7	-9.1	11.3	13.0	-	-	-	-
Feb	-1.5	-1.6	3.0	-1.7	0.0	-2.6	-	-	-	-
Mar	86.2	108.2	79.7	110.2	40.5	40.8	-	-	-	-
Apr	-12.4	-16.5	-8.1	-12.9	10.8	8.4	-	-	-	-
May	11.3	14.2	9.6	12.0	30.1	37.1	-	-	-	-
Jun	-3.4	-4.1	-9.6	-9.9	-18.1	-14.5	-	-	-	-
Jul	-11.4	-13.8	-12.4	-14.7	-15.3	-18.4	-	-	-	-
Aug	-2.0	-2.0	-6.1	-2.2	-4.5	-0.9	-	-	-	-
Sep	-1.0	0.0	7.5	8.8	1.9	1.8	-	-	-	-
Oct	0.0	2.0	-2.0	-3.0	-1.9	-1.8	-	-	-	-
Nov	-11.2	-14.0	-14.3	-15.6	-4.7	-6.4	-	-	-	-
Dec	-4.6	-4.7	7.1	11.1	-7.9	-9.7	0.0	0.0	-	-
1994 Jan	2.4	2.4	-2.2	-5.6	-1.1	-3.2	2.3	2.4	-	-
Feb	1.2	-2.4	-1.1	0.0	5.4	6.7	2.0	2.3	-	-
Mar	1.2	1.2	-1.1	-2.4	-1.0	-3.1	0.0	0.0	-	-
Apr	3.4	4.8	1.2	1.2	3.1	3.2	2.2	4.5	-	-
May	5.6	6.9	8.0	8.3	6.1	9.4	5.4	5.4	-	-
Jun	-2.1	-3.2	-1.1	0.0	-3.8	-6.7	-2.0	-2.0	-	-
Jul	4.3	6.7	2.2	3.3	-4.0	-2.0	0.0	-1.0	-	-
Aug	4.1	5.2	5.3	6.4	3.1	4.2	4.2	5.3	-	-
Sep	1.0	1.0	5.0	6.0	-8.0	4.0	4.0	4.0	-	-
Oct	3.9	4.9	-1.9	-3.8	18.5	7.7	2.9	3.8	-	-
Nov	-0.9	0.0	10.7	14.7	-5.5	-8.0	-9.0	-9.0	-	-
Dec	0.0		-5.3	-6.0	3.9	2.9	-2.8	-2.8	-	-
1995 Jan	-3.8		-2.8	-3.6	1.9	0.9	0.0	-1.0	-	-
Feb	-5.0	-5.9	-2.9	-3.8	-1.8	-2.8	4.9	6.8	1.0	-1.0
Mar	1.0	1.1	-2.0	-3.9	0.0	1.9	-6.5	-8.2	-2.0	-2.0
Apr	-1.0	0.0	-1.0	0.0	0.0	-7.7	-4.0	-4.0	-1.0	-1.0
May	4.2	4.2	1.0	1.0	-4.7	6.9	-	-	0.0	5.1
Jun	2.0	0.0	6.0	1.0	0.0	-0.9	-	-	1.0	1.0



Table 10: Twelve-month moving averages of CPI, FI and RI in Phnom Penh

Y/Month	NBC			MOF		CDRI	
	CPI	FI	RI	CPI	FI	CPI	FI
1991 Jan	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-
Jun	-	-	-	-	-	-	-
Jul	-	-	-	-	-	-	-
Aug	-	-	-	-	-	-	-
Sep	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-
Dec	27	21	25	25	25	-	-
1992 Jan	27	21	26	26	25	-	-
Feb	28	22	26	26	26	-	-
Mar	28	22	27	27	26	-	-
Apr	29	23	27	27	27	-	-
May	30	24	28	28	28	-	-
Jun	32	26	29	29	29	-	-
Jul	33	27	30	31	31	-	-
Aug	35	29	30	33	32	-	-
Sep	37	32	31	35	34	-	-
Oct	40	34	31	37	37	-	-
Nov	42	37	32	40	40	6	6
Dec	45	41	35	44	44	12	12
1993 Jan	48	44	37	48	47	18	18
Feb	52	48	39	52	50	25	24
Mar	59	57	47	60	59	34	33
Apr	66	64	53	67	66	44	43
May	73	71	59	75	73	58	56
Jun	79	78	64	81	79	69	68
Jul	83	83	66	86	83	78	77
Aug	87	87	68	89	86	87	86
Sep	90	89	71	91	89	96	95
Oct	93	92	74	94	91	105	104
Nov	95	95	77	96	92	107	107
Dec	96	96	79	98	94	109	109
1994 Jan	98	98	83	100	96	110	110
Feb	100	100	86	101	99	112	112
Mar	97	96	82	98	95	110	111
Apr	96	95	80	96	93	108	109
May	94	92	79	93	91	104	105
Jun	92	90	79	92	89	101	101
Jul	92	90	81	91	89	100	100
Aug	92	90	83	92	90	100	99
Sep	92	91	85	92	91	98	99
Oct	93	91	86	93	91	99	99
Nov	94	93	91	95	94	99	99
Dec	96	95	94	97	96	100	100
1995 Jan	97	96	96	98	97	101	101
Feb	98	97	98	99	99	102	102
Mar	99	99	100	101	100	103	103
Apr	100	99	102	102	101	104	104
May	100	100	104	102	102	103	104
Jun	101	101	106	103	103	104	105





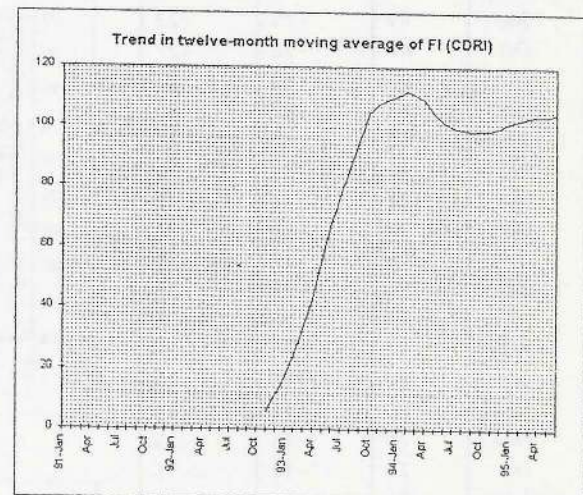
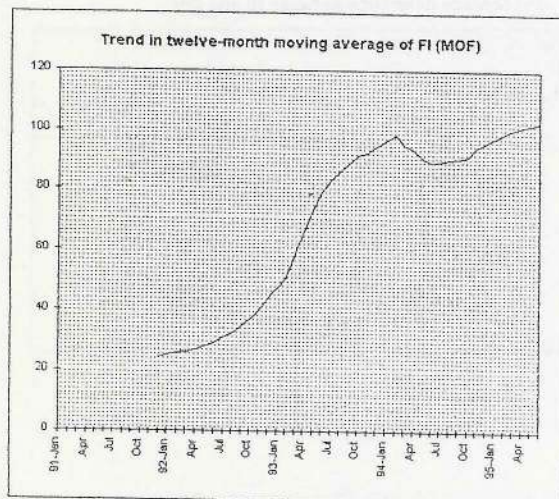
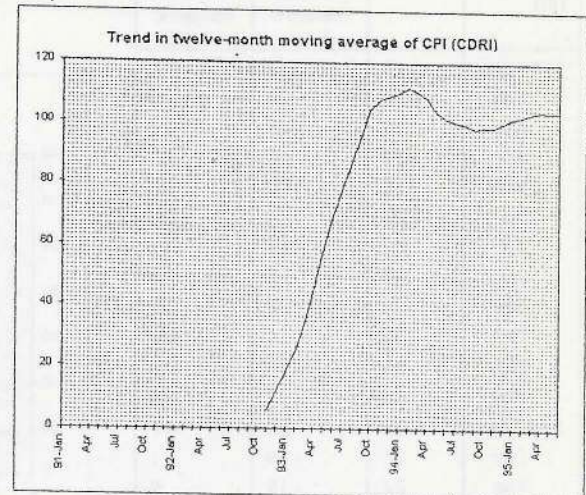
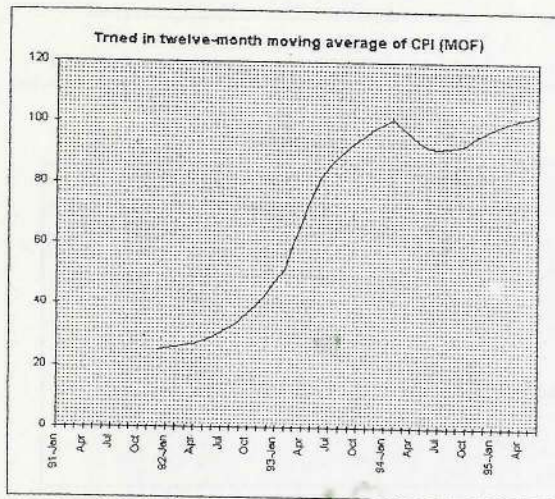




Table 11: Trend in RI and its difference with CPI and FI (NBC)

Year/Month	RI	Percentage difference between RI & CPI	Percentage difference between RI & FI
1991 Jan	13	-28	8
Feb	13	-28	8
Mar	18	-5	29
Apr	18	-10	20
May	18	-10	20
Jun	22	-4	22
Jul	31	11	41
Aug	47	27	38
Sep	39	8	22
Oct	39	11	26
Nov	31	0	15
Dec	16	-52	-6
1992 Jan	16	-36	-11
Feb	21	-19	11
Mar	22	-19	5
Apr	22	-24	0
May	27	-18	-4
Jun	34	-15	-3
Jul	43	-12	-4
Aug	49	-11	-6
Sep	49	-25	-23
Oct	47	-28	-27
Nov	43	-30	-27
Dec	43	-32	-30
1993 Jan	43	-35	-31
Feb	43	-34	-30
Mar	122	1	-4
Apr	98	-8	-8
May	98	-17	-19
Jun	86	-25	-26
Jul	73	-28	-27
Aug	73	-26	-26
Sep	80	-18	-18
Oct	86	-12	-14
Nov	73	-16	-15
Dec	73	-12	-11
1994 Jan	86	1	2
Feb	80	-7	-2
Mar	73	-16	-12
Apr	80	-11	-8
May	86	-9	-8
Jun	86	-8	-4
Jul	98	1	2
Aug	98	-3	-3
Sep	104	2	2
Oct	98	-8	-8
Nov	124	18	16
Dec	114	9	7
1995 Jan	106	5	5
Feb	104	8	9
Mar	102	5	6
Apr	100	4	4
May	110	10	10
Jun	110	8	10

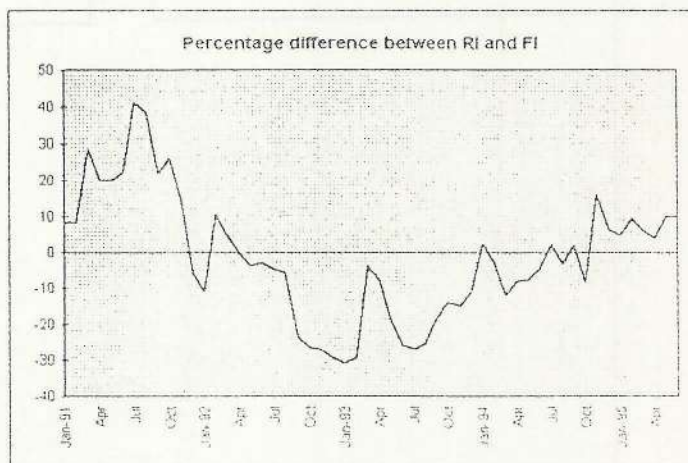
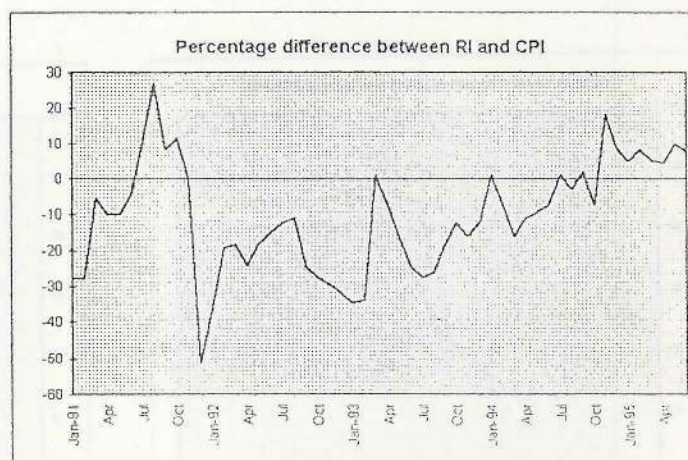
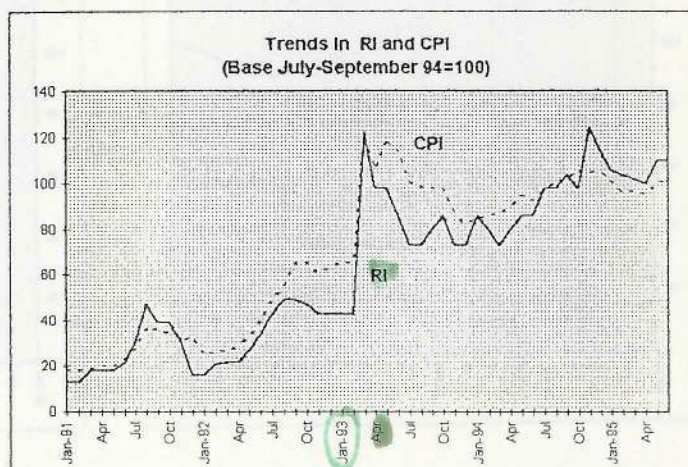




Table 12: Yearly average of CPI and FI and the rate of inflation

Year/Ending December	NBC		MOF		CDRI	
	CPI	FI	CPI	FI	CPI	FI
Year Average						
1991	26.5	20.8	25.8	25.0		
1992	44.8	40.7	43.8	43.8		
1993	96.3	96.4	98.0	94.3	109.0	109.3
1994	96.0	93.8	96.7	95.7	99.8	99.9
1995	99.3	98.5	100.6	100	102.8	103.1
Rate of Inflation (%)						
1991-1992	69.1	95.7	69.8	75.2		
1992-1993	115.0	136.9	123.7	115.3		
1993-1994	-0.3	-2.7	-1.3	1.5	-8.4	-8.6
1994-1995*	3.4	5.0	4.0	4.5	3.0	3.2

\* Ending June 1995

## 6 Summary of Findings

We have seen that in the context of the transition of the Cambodian economy from a command system to that one driven by market principles, a number of institutions were engaged in the collection of price data on selected consumer goods and services. Of these, two institutions - the National Bank of Cambodia and the Ministry of Economy and Finance - were constructing CPI for purposes of macroeconomic management. Since January 1995, the National Institute of Statistics of the Ministry of Planning started publishing a monthly series on CPI after establishing a scientific system of data collection and processing. This represents by far the most scientific system for the construction of CPI in Cambodia. It is important that the establishment of this system should be seen as an important step in capacity development (both in the sense of establishing a formal organization as well as transfer of knowledge) with regard to the construction of national statistics. The main draw back of the NIS series is that it is based only on data from Phnom Penh.

Using the data collected by CDRI and MOC, we have been able to construct alternative CPI series for Phnom Penh. A comparative analysis of the different series showed that there are significant differences between them although the direction of change is similar. Except the CPI of NIS, all other CPI series should be seen as 'Basic CPI' since the items covered are limited and, by and large, essential commodities.

The challenge of constructing CPI for provinces was constrained by the absence of price data on a time series basis. However, the data collected by CDRI and that by GRET for one province enabled us to construct CPI series since July 1993 for five provinces. A simple average of these was presented as CPI for "Other Than Phnom Penh".



Using the CPI for Phnom Penh [CPI(PP)] and that for Other Than Phnom Penh [CPI(OPP)], a CPI series for all Cambodia [CPI(CAM)] was constructed since July 1993 as a weighted average of the above two; the weights being population shares in Phnom Penh and outside Phnom Penh. This series showed that there are differences between CPI(CAM) and CPI(PP) of both NBC and MOF and that the use of the latter two as proxy for CPI(CAM) overestimated the CPI for most of the months and underestimated for some. Since, at the provincial level, prices of individual commodities in general and the rate of change of CPI in particular are lower than that in Phnom Penh, there is an upward bias in using the CPI(PP) as proxy for CPI(CAM).

Apart from the CPI, which represent all the items covered in the market basket, separate Food Index series was also constructed. The direction of change of the FI series was the same as that of CPI but its level, in general, was lower. A comparison of the rice price index showed that the rate of increase was less than that of both CPI and FI for most of the period. However, the faster increase in rice price compared to both CPI and FI since November 1994 should be viewed as a matter of concern by the authorities.

Analysis of the monthly rate of inflation showed the hyper inflationary period till the middle of 1993. Since then there has been relatively stable level of prices although this stability has been reached at a high level. There is need to bring down the prices to levels which are comparable in the neighbouring countries.

## 7 Recommendations

Our recommendations are in the nature of suggestions for improvement in the construction of CPI for Cambodia as well as its dissemination. These are given in the following order.

1. Based on our examination of all relevant factors, it would seem appropriate that the NIS be designated as the sole official institution for the collection of data on consumer prices and construction of an official CPI for Cambodia. Since the NIS covers only Phnom Penh, future efforts may be directed to extend the NIS system to the provinces since price data in the provinces are crucial for the construction of a CPI for Cambodia as well as for individual provinces.
2. Since the Ministry of Commerce has the responsibility to monitor market prices of selected goods on a daily basis, collection of such data may be continued since it is meant to serve purposes other than construction of CPI. Interested academic/independent institutions



goods on a daily basis, collection of such data may be continued since it is meant to serve purposes other than construction of CPI. Interested academic/independent institutions may use this data to monitor the movement in CPI along with that of NIS for research and academic purposes.

3. There is no need for the CDRI to continue with the collection of price data from Phnom Penh markets. Instead, the CDRI should concentrate its efforts in establishing its system of data collection from provinces. The aim should be to collect price data for all provinces even if it is limited to a few basic items. This may be continued until the NIS is in a position to establish its system in the provinces. The CDRI would then be in a position to construct a monthly CPI series for provinces which could also be used to construct an all Cambodia CPI.
4. GRET is rendering a valuable service in systematically collecting price data for Prey Veng province. We understand that they have started collecting price data for another province, Kompong Speu. It would be desirable that the number of main groups covered and the list of items in the market basket for the provinces follow a common format.
5. The dissemination of the monthly CPI is as important as its construction. It would be highly desirable if the NIS is in a position to release the monthly CPI within fifteen days from the last day of the month. Since the number of copies of its monthly bulletin is limited, release of the CPI within the abovementioned period might enable organisations with publications on economic affairs to disseminate CPI as quickly as possible. It may be underlined here that investors, business, banks and a number of persons and institutions dealing with economic matters keenly watch the movement of CPI. The information on CPI is also crucial for employers in determining monetary compensation for inflation. Therefore the dissemination of such a vital economic statistic as the CPI may also be seen as an attempt in building confidence in the economy.



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# APPENDICES



## Appendix A

Table A.1: List of items and their weights in the CPI of NBC

Groups	Items	Unit	Weight
I. Food	1. Pork 1	Kg	0.6500
	2. Pork 2	Kg	0.0300
	3. Pork fat	Kg	0.0040
	4. Beef	Kg	0.0300
	5. Buffalo meat	Kg	0.0100
	6. Fish 1	Kg	0.0320
	7. Fish 2	Kg	0.0300
	8. Dried fish 1	Kg	0.0100
	9. Dried fish 2	Kg	0.0100
	10. Fermented fish paste	Kg	0.0090
	11. Live chicken	Unit	0.0060
	12. Dressed chicken	Unit	0.0080
	13. Live duck	Unit	0.0050
	14. Watercress	Kg	0.0150
	15. Cabbage	Kg	0.0200
	16. Chicken egg	Unit	0.0100
	17. Duck egg	Unit	0.0150
	18. Tomato	Kg	0.0150
	19. Bean	Kg	0.0150
	20. Rice 1	Kg	0.1400
	21. Rice 2	Kg	0.0700
	22. Fish sauce	Litre	0.0400
	23. Salt crystal	Kg	0.0050
	24. Salt granulated	Kg	0.0060
	25. Sugar	Kg	0.0020
	26. Palm sugar	Kg	0.0020
	27. Seasoning	Kg	0.0300
	28. Garlic	Kg	0.0130
	29. Dried prawn	Kg	0.0130
	30. Cucumber	Kg	0.0150
	31. Green bean	Kg	0.0100
II. Clothes			0.0700
	1. White cotton	Metre	0.0100
	2. Trouser	I	0.0250
	3. Long sleeve-shirt	I	0.0200
	4. Slippers	Pair	0.0050
	5. Sarong	I	0.0050
III. Services	6. Scarf	I	0.0050
			0.1800
	1. Lamp oil	Litre	0.0100
	2. Gasoline	Litre	0.0400
	3. Electricity	kw/h	0.0700
	4. Haircut	Head	0.0100
IV. Daily Items	5. Water	M3	0.0300
	6. Hairdressing	Head	0.0200
			0.1000
	1. Cigarette, Cambodian	Carton	0.0050
	2. Soap, Cambodian	Bar	0.0100
	3. Battery, 555	Pair	0.0030
	4. Notebook	Unit	0.0100
	5. Pen	Unit	0.0070
	6. Ink	Bottle	0.0030
	8. Vitamin C	Tablet	0.0030
	9. Anagin	Tablet	0.0030
	10. Aspirin	Tablet	0.0030
	11. Paracetamol	Tablet	0.0030
	12. Beer	Can	0.0100
	13. Detergent powder	Kg	0.0100
	14. Tooth paste	Bottle	0.0050
	15. Tooth brush	I	0.0050
	16. Coal	Sack	0.0200

Table A 2: List of items and their weights in the CPI of MOF

COMMODITY	WEIGHT
TOTAL	0.10
FOODSTUFF	0.68
Rice	0.30
Pork	0.08
Chicken	0.025
Beef	0.02
Fresh fish	0.04
Dried fish	0.03
Duck egg	0.02
Water convolvulus	0.02
Cabbage	0.02
Banana	0.02
coconut	0.02
Fish sauce	0.03
Seasoning sauce	0.02
White sugar	0.02
Other sweet materials	0.01
BEVERAGE AND CIGARETTE	0.04
Drinking water	0.005
Coca	0.005
ANGKOR Beer	0.005
TIGER Beer	0.005
Rodas-brand cigarette	0.01
Fine-brand cigarette	0.01
ENERGY	0.09
Firewood	0.02
Diesel	0.01
Gas	0.04
Kerosine	0.02
TEXTILE & CLOTHING	0.08
Clothe Tetarong	0.02
White cotton	0.02
Khmer scarf	0.02
Sarong	0.01
Plastic sandal	0.01
SANITATION AND HYGIENE	0.03
Serum	0.005
Aspirin	0.005
Balm	0.01
Soap	0.01
EDUCATION	0.04
Book	0.02
Ink/ball pen	0.02
SERVICES	0.04
Barber	0.01
Motor taxi	0.01
Journal	0.01
Movie	0.01



Table A3: Sources and nature of price data collected by CDRI from urban and rural markets

Province	Periodic city/m	N° of markets	N° of shops	Expected observations*	N° of visits in 1994	N° of commodities	Agency	Date of starting	Current status
1	2	3	4	5	6	7	8	9	10
<b>URBAN</b>									
1 KANDAL									
(a) Phnom Penh	2	3	2	12	24	40	CDRI	10/91	Continuing
(b) Takumao	2	1	1	2	2	12	CARITAS	9/94	Discontinued in 10/94
2 Battambang	2	2	1	4		12	OXFAM	6/93	Discontinued in 6/94
3 Kompong Thom	2	2	1	4		12	WFP	6/93	Discontinued in 6/94
4 Prey Veng	2	1	1	2	14	12	WFP	8/93	Discontinued in 7/94
5 Kompot	2	1	1	2	14	12	DRD	6/94	Continuing
6 Kompong Chhang	2	1	1	2	10	12	WFP	8/93	Discontinued in 9/94
7 Sway Rieng	2	1	1	2	10	12	SAMAKHEE	7/94	Discontinued in 7/94
8 Banteay Meanchey	2	1	1	2	10	12	ARC	10/94	Continuing
9 Kompong Speu	2	1	1	2	2	12	KBS	9/93	Discontinued in 1/94
10 Rattanakiri	2	1	1	2	2	12	CIDSE	12/94	Continuing
11 Pursat	2	1	1	2	3	12	CCDI	3/95	Continuing
12 Siem Reap	2	1	1	2	2	12	Redd Bama	2/95	Continuing
13 Kompong Cham	2	1	1	2	3	12	SCF(A)	2/95	Continuing
14 Sihanouk Ville	2	1	1	2	7	12	CARITAS	7/93	Discontinued in 2/94
15 Takeo	2	1	1	2	24	12	OXFAM	7/93	Continuing
16 Kratie									
17 Koh Kong									
18 Preas Vihear									
19 Steung Treng									
20 Monduliri									

NIL

Note: \* Per month

1. The names of the urban markets are: Kandal Province Phnom Penh city market (Psar Thmey, Orsey, Olympic); Takeo outside Phnom Penh Battambang (Psar Nat); Kompong Thom; Prey Veng; Kompong Chhnang (Psar Leu); Sway Rieng (Veal Yun); Kompong Speu; Rattanakiri (Ban Lung and Takumao); Siem Reap (Psar Leu) ; Kompong Cham ; Sihanouk Ville.

(Table A3: Continued)

Province	Periodic city/m	N° of markets	N° of shops	Expected observations	N° of visits in 1994	N° of commodities	Agency	Date of starting	Current status
1	2	3	4	5	6	7	8	9	10
<u>RURAL</u>									
1 Kandal	2	1	1	2	2	12	CARITAS	9/94	Discontinued in 10/94
2 Takeo	2	1	1	2	24	12	OXFAM	7/93	Continuing
3 Kompong Chhang	2	1	1	2	10	12	WFP	8/93	Discontinued in 9/94
4 Banteay Meanchey	2	1	1	2	10	12	ARD	10/94	Continuing
5 Kratie	2	1	1	2	2	12	SCF(UK)	3/95	Continuing
6 Kompot									
7 Kompong Chhang									
8 Svay Rieng									
9 Banteay Meanchey									
10 Kompong Speu									
11 Ratanakiri									
12 Pursat									
13 Siem Reap									
14 Kompong Cham									
15 Sihanouk Ville									
16 Koh Kong									
17 Preas Vihear									
18 Steung Treng									
19 Mondulakiri									

NIL

Note: 1. Except Kratie and Takeo, all the other rural markets can be characterised as both rural and urban.

2. The name of rural markets are: Kien Svay in Kandal, Remenh in Takeo Sala lek 5 in Kompong Chhnang Sisophon in Banteay Meanchey Kratie.

3. Column 5 refer to expected number of observations per item per month.



Table A4: List of items and their weights in the CPI of CDRI for Phnom Penh

No	ITEM	UNIT	Weight
I-	FOODSTUFF		
1	Rice (Phkar Khnhey)	R/kg	0.10718
2	Chinese noodle	R/bowl	0.02892
3	Bread	R/loaf	0.00911
4	Fresh fish (Trey Ros)	R/kg	0.11300
5	Dried fish (with bone)	R/kg	0.02443
6	Smoked fish (Kesh 2nd)	R/kg	0.00295
7	Prahock (Kampleanh)	R/kg	0.00847
8	Pork 1st quality	R/Kg	0.06853
9	Pork 2nd quality	R/Kg	0.02966
	Beef	R/kg	0.02943
10	Beef 1st quality	R/kg	
11	Beef 2nd quality	R/kg	
12	Chicken	R/kg	0.02565
13	Duck egg	R/egg	0.02774
14	Soya sauce (local)	R/bot.	0.00830
15	Fish sauce (local)	R/bot.	0.00782
16	Fine salt	R/Kg	0.00354
17	Sugar	R/Kg	0.01048
18	Palm sugar	R/Kg	0.00900
19	MSG (Bicheng)	R/kg	0.00862
II-	VEGETABLES		0.06631
20	Cucumbers	R/kg	
21	Cabbage	R/kg	
22	Water convul.	R/kg	
23	Wax gourd	R/w.g.	
24	Egg plant	R/eplt.	
III	FRUITS		0.08060
25	Oranges	R/dzn.	
26	Bananas (Namiva)	R/hand	
27	Ripe mangoes	R/dzn.	
IV-	CLOTHING & FOOTWEAR		0.08861
28	Cloth-Tetarong	R/m	
29	Thai sarong	R/s.rng.	
30	Shirts-Tomato Bnd.	R/shts.	
31	Trousers-Golfers Bnd.	R/trs.	
32	Scarf-local	R/scf.	
33	White slippers-Thai	R/pair	
V-	FUEL		0.03914
34	Charcoal-Kratie	R/sack	
35	Firewood	R/m3	
36	Kerosene	R/l	
VI-	TRANSPORT		0.14900
37	Gasoline	R/l	
38	Diesel	R/l	
VII-	OTHERS		
39	Detergent (Thai)	R/kg	0.01062
40	Cigarettes (Fine)	R/pack	0.04275
	- All Items		0.99986

Table A5: List of items and their weights in the CPI of CDRI for Provinces

N°	ITEM	UNIT	WEIGHT	
			Urban	Rural
I	FOODSTUFF			
1	Rice (Phkar Knhey)	R/kg	0.16274	0.21724
2	Meat, Poultry, Fish		0.30756	0.33851
a-	Fresh fish (Trey Ros)	R/kg		
b-	Pork 1st quality	R/kg		
c-	Beef 1st quality	R/kg		
3	Vegetable		0.09707	0.10967
a-	Cucumbers	R/kg		
b-	Wax gourd	R/l		
4	Fruit		0.06055	0.07066
a-	Bananas (Namva)	R/hand		
5	Miscellaneous food		0.0692	0.12021
a-	Palm sugar	R/kg		
II	CLOTHING		0.05721	0.07123
6	Thai sarong	R/l		
III	FUEL		0.2245	0.01519
7	Charcoal	R/sack		
8	Kerosene	R/L		
IV	TRANSPORTATION		0.21968	0.05730
9	Gasoline	R/L		



Table A6: List of items and their weights in the CPI of MOC

Group		ITEM	UNIT	WEIGHT (*)	MODIFIED WEIGHT (**)
(1)		(2)	(3)	(4)	(5)
I. FOOD ITEMS	1	Rice 1st quality	R/kg	0.015080	0.03363
	2	Rice 2nd quality	R/kg	0.034920	0.07787
	3	Green bean	R/kg	0.003000	0.00669
	4	Peanut	R/kg	0.000780	0.00174
	5	Garlic	R/Kg	0.002360	0.00526
	6	Beef	R/kg	0.013960	0.03113
	7	Pork 1st quality	R/kg	0.032510	0.07249
	8	Pork 2nd quality	R/kg	0.014060	0.03135
	9	Fresh fish (Ros)	R/kg	0.053610	0.11954
	10	Chicken	R/kg	0.012170	0.02714
	11	Smoked fish	R/kg	0.014030	0.03128
	12	Dried fish	R/kg	0.009940	0.02216
	13	Chicken egg (fresh)	R/10 e.	0.001020	0.00227
	14	Duck egg	R/10 e.	0.009390	0.02093
	15	Prahock (with bones)	R/kg	0.004020	0.00896
	16	Thai MSG	R/pack	0.004090	0.00912
	17	White sugar	R/kg	0.004970	0.01108
	18	Palm sugar	R/kg	0.004270	0.00952
	19	Fine salt	R/kg	0.001680	0.00375
II. VEGETABLES				0.031460	0.07015
	1	Water convulvolus	R/kg		
	2	Tomatoes	R/kg		
	3	Cabage	R/kg		
III. FRUITS	4	Cucumbers	R/kg		
	1	Bananas	R/hand	0.038240	0.08527
	2	Pine apple	R/pine		
IV. CLOTHING	3	Orange	R/dozen		
	1	Cloth Tetarong (Thai)	R/metre	0.042040	0.09374
	2	Sarong	R/sarong		
V. FUEL	3	Kroma	R/kroma		
	1	Kerosene	R/litre	0.018570	0.04141
VI. TRANSPORT	2	Chacoal	R/sack		
	1	Gasoline	R/litre	0.069240	0.15440
	2	Diesel	R/litre		
VII. OTHERS	1	Thai detergent (average of 2&3)	R/5kg	0.005040	0.01124
	2	Notebook	R/book	0.008010	0.01786
	3	Bic	R/bic		
		All Items		0.448460	0.99998

Note:

(\*) These weight are the actual weights in a basket of goods and services covered in the consumer expenditure of 1993 by the National Institute of Statistics

(\*\*) These are the percentage distribution of items taking the total of column #4 as 100

Table A7: List of items and their weights in the CPI of GRET

COMMODITY	Unit	WEIGHTS
FOOD		0.650
Paddy	kg	0.070
Rice (first quality)	kg	0.100
Rice (second quality)	kg	0.050
Fresh fish	kg	0.062
Prahock	kg	0.010
Pork	kg	0.064
Beef	kg	0.040
Chicken	kg	0.020
Egg	kg	0.025
String bean	kg	0.005
Bean sprout	kg	0.005
White cabbage	kg	0.005
Curly cabbage	kg	0.020
Tomato	kg	0.015
Sweet potato	kg	0.005
Cucumber	kg	0.013
Water convolvulus	Bundle	0.015
Orange	Dozen	0.005
Pine apple	Unit	0.005
Palm sugar (1st quality)	kg	0.025
Palm sugar (2nd quality)	kg	0.009
Garlic	kg	0.013
Grass lemon	Bundle	0.005
Salt	kg	0.011
Chinese noodle	Unit	0.010
Fish sauce	Litre	0.004
Brain (Ground rice)	kg	0.003
SERVICES		0.180
Serum (treatment)	Bag	0.010
Kerosine	Litre	0.020
Gas	Litre	0.030
Barber	Head	0.010
Diesel	Litre	0.030
Firewood	Sack	0.030
50 kva-battery charge	Unit	0.020
One patch of a bike	Patch	0.010
Labor fee	Day	0.020
CLOTHING		0.070
White cotton	Metre	0.015
Sarong	Unit	0.010
Scarf	Unit	0.010
Trousers	Unit	0.020
Shirt	Unit	0.015
DAILY ITEMS		0.100
Cigarette - liberation brand	Pack	0.020
Soap	Unit	0.010
Dry cell 555	Unit	0.010
Paracetamol	Tablet	0.020
Tetracycline	Tablet	0.010
Serum	Bottle	0.010
Wine SKD	Bottle	0.020





Table A8: Items and their weights in the CPI of NIS

Serial No.	Items	Weight
0	All items	1.0000
1	<b>Food, Beverage and Tobacco</b>	0.4980
11	Food	0.4627
1111	Cereal and processed cereal	0.0678
11111	Rice	0.0532
111111	Rice 1st quality	0.0210
111112	Rice 2nd quality	0.0322
11112	Bread	0.0039
111121	Bread (30cm)	0.0039
11113	Noodles	0.0089
111131	Fermented rice noodle	0.0028
111132	Chinese noodle	0.0019
111133	Thai instant noodles	0.0041
11114	Biscuits	0.0004
111141	Biscuits. 1.6Kg	0.0004
11115	Traditional cake	0.0013
111151	Rice cake	0.0013
1112	Meat, poultry and fish	0.0793
11121	Pork	0.0493
111211	Pork without fat	0.0317
111212	Pork with fat	0.0175
11122	Beef	0.0140
111221	Fresh beef 1st	0.0140
11123	Chicken	0.0108
111231	Fresh chicken 1st quality	0.0108
11124	Locally processed meat	0.0053
111241	Roasted pork	0.0040
111242	Roasted/Fried chicken	0.0013
1113	Fish	0.0675
11131	Fresh fish	0.0478
111311	Fresh fish (Ros)	0.0197
111312	Fresh fish (ptoak)	0.0180
111313	Fish, chlang-andeng	0.0068
111314	Sea fish	0.0009
111315	Fresh prawn	0.0014
111316	Crabs	0.0010
11132	Processed fish	0.0197
111321	Smoked fish (Trey ri-el-small)	0.0016
111322	Prahok	0.0035
111323	Dried fish (chdor)	0.0123
111324	Three-lady canned fish (250g)	0.0011
111325	Dried prawn (medium-Kampot)	0.0012
1114	Egg	0.0117
11141	Fresh egg	0.0096
111411	Fresh chicken egg	0.0008
111412	Fresh duck egg	0.0088
11142	Processed egg	0.0021
111421	Fermented egg	0.0021



1115	Milk products	0.0070
11151	Milk	0.0070
111511	Sweetened milk	0.0052
111512	Powdered milk	0.0018
1116	Oil and Fats	0.0065
11161	Cooking oil	0.0019
111611	Vegetable oil	0.0019
11162	Fat	0.0054
111621	Pork fat	0.0054
1117	Vegetables	0.0381
11171	Fresh vegetables	0.0144
111711	Water convolvuluses 1st quality	0.0047
111712	Cabbage leaves	0.0061
111713	Spinach (Salad)	0.0028
111714	Onion leaves (slek kuchai)	0.0007
11172	Fruit as vegetables	0.0123
111721	Tomatoes	0.0028
111722	Turnip (chai thao)	0.0025
111723	Cucumber	0.0038
111724	Bitter gourd (mreas)	0.0014
111725	Ridge gourd (no noang)	0.0011
111726	Sweet pepper	0.0006
11173	Other vegetables	0.0036
111731	Onion	0.0013
111732	Cauliflower	0.0022
11174	Tubers	0.0017
111741	Taro (trao)	0.0005
111742	Sweet potatoes (Domlong chvea)	0.0007
111743	Potatoes	0.0004
11175	Bean	0.0004
111751	Sprout bean	0.0016
111752	String bean	0.0018
111753	French string bean	0.0005
111754	Green bean	0.0006
11176	Preserved vegetable	0.0016
111761	Cucumber pickle	0.0016
1118	Fruits	0.0437
11181	Fresh fruits	0.0406
111811	Banana (namva)	0.0151
111812	Orange	0.0144
111813	Pineapple	0.0017
111814	Lime	0.0026
111815	Papaya	0.0018
111816	Apple	0.0028
111817	Grape	0.0020
11182	Dried and preserved fruit	0.0032
111821	Dried tamarind with nut	0.0032
1119	Other products	0.0031
11191	Ripe coconut	0.0031
111911	Peanut	0.0022
111912	Sugar, salt, spices and seasoning	0.0009

1120	Candy, sugar produce	0.0282
11201	Sugar	0.0099
112011	White sugar	0.0052
112012	Thai white sugar 1st quality	0.0047
11202	Palmsugar	0.0006
112021	Sugar produce	0.0006
11203	Hard candy	0.0014
112031	Salt	0.0014
11204	Granulated salt	0.0163
112041	Spices and seasoning	0.0024
112042	Vietnam garlic	0.0046
112043	Thai MSG	0.0039
112044	Soy sauce	0.0041
112045	Fish sauce	0.0007
112046	Ground black pepper	0.0005
1121	Ginger	0.0047
11211	Coffee, cocoa and tea	0.0031
112111	Tea	0.0031
11212	Tea leaves and dust(Vietnam)	0.0016
112121	Coffee	0.0016
1122	Instant coffee	0.0091
11221	Other food products	0.0091
112211	Crystal ice	0.0091
1123	Outdoor food	0.0956
11231	Meals at working place	0.0697
112311	Pork rice	0.0697
11232	Noodle	0.0088
112321	Chinese noodle	0.0088
11233	Daily food	0.0171
112331	Fried fish	0.0171
12	Beverages	0.0153
1211	Non-alcoholic drink	0.0031
12111	Drink	0.0020
121111	Canned soft drink	0.0020
12112	Fruit juice	0.0011
121121	Alcoholic beverage	0.0122
1212	Beer	0.0093
12121	Angkor beer	0.0028
121211	Tiger beer	0.0065
121212	Wine	0.0015
12122	Angkumh Kingkook	0.0015
12123	Royal whisky	0.0013
121231	Royal whisky	0.0013
13	Tobacco	0.0200
1311	Tobacco products	0.0200
13111	Cigarette	0.0190
131111	Chey Chomneas cigarette	0.0051
131112	Fine cigarette	0.0139
13112	Other tobacco	0.0009
131121	Strong fibrous tobacco	0.0009



2	Clothing and Footwear	0.0364
21	Clothing	0.0282
2111	Cloth	0.0035
21111	Cloth	0.0035
211111	Cloth - Cambodia	0.0004
211112	Cloth, Teterong - Japan	0.0005
211113	Scarf - Cambodia	0.0007
211114	Sarong - Thai	0.0019
2112	Clothing for men	0.0115
21121	Clothing for men	0.0115
211211	Shirt for men (Thai)	0.0053
211212	Trouser	0.0056
211213	T-shirt	0.0004
211214	Socks	0.0002
2113	Clothing for women	0.0111
21131	Clothing for women	0.0111
211311	Dress	0.0009
211312	Shirt for women	0.0041
211313	Skirt (Thai)	0.0032
211314	Paints (Thai)	0.0012
211315	Trouser (Thai)	0.0016
2114	Clothing for boy	0.0010
21141	Clothing for boy	0.0010
211411	Paints, size 6-18	0.0006
211412	T-shirt	0.0004
2115	Clothing for girl	0.0009
21151	Clothing for girl	0.0009
211511	Dress, size 10	0.0004
211512	Shirt for girl	0.0006
2116	Clothing for baby	0.0001
21161	Clothing for baby	0.0001
211611	Rag	0.0001
22	Footwear	0.0077
2211	Footwear for men over 10 years old	0.0047
22111	Footware for men over 10 years old	0.0047
221111	Sanders	0.0037
221112	Vinylsanders	0.0003
221113	Slippers	0.0006
2212	Footware for girl over 10 years old	0.0025
22121	Footware for girl over 10 years old	0.0025
221211	Sanders	0.0017
221212	Slippers	0.0008
2213	Footware for girl and boy	0.0005
22131	Footware for girl and boy	0.0005
221311	Horse-Brand slipper	0.0005
23	Service fees	0.0004
2311	Labor fee for cloth making	0.0004
23111	Labor fee for making cloth for women	0.0004
231111	Labor fee for women long-sleeved shirt	0.0004
24	Sewing accessories	0.0001
2411	Sewing accessories	0.0001
24111	Sewing accessories	0.0001
241111	Vietnam thread	0.0001

241112	Knitting needle	0.0001
3	<b>Housing and Utilities</b>	0.2400
31	Rent	0.1946
3111	Average monthly rent	0.1906
31111	Average monthly rent	0.1906
311111	Rent (2nd type)	0.1851
311112	Rent (1st type)	0.0055
3112	House maintenance and repair	0.0040
31121	Carpenter's materials	0.0010
311211	Nails	0.0005
311212	Sawn lumber	0.0005
31122	Masonry	0.0014
311221	Cement (Elephant)	0.0005
311222	Gravel	0.0005
311223	Sand	0.0005
31123	Pumping machine	0.0005
311231	Faucet	0.0005
31124	Electricals	0.0003
311241	Electric wire	0.0003
31125	Paint, varnish and thinner	0.0004
311251	Paint (wood)	0.0002
311252	Thinner (Thai)	0.0002
31126	Labor fee	0.0003
311261	Daily wage for carpenter	0.0003
32	Water, Power and Fuel	0.0453
3211	Water	0.0132
32111	Water	0.0132
321111	Water charge	0.0132
3212	Electricity	0.0127
32121	Electricity	0.0127
321211	Electricity charge	0.0127
321212	Candle	0.0006
3213	Fuel	0.0193
32131	Fuel	0.0193
321311	Kerosene	0.0021
321312	Firewood	0.0089
321313	Charcoal	0.0082
4	<b>Furniture and Household goods</b>	0.0198
41	Furniture	0.0120
4111	Furniture and carpet	0.0051
41111	Furniture and carpet	0.0051
411111	Set of wooden sofa	0.0012
411112	Wooden chairs	0.0006
411113	Wooden beds	0.0012
411114	Wooden wardrobe and cabinet	0.0009
411115	Mat	0.0011
4112	House textiles	0.0021
41121	House textiles	0.0021
411211	Blanket	0.0007
411212	Nylon mosquito net	0.0009
411213	Pillow	0.0001



411214	Pillow case	0.0001
411215	Towel	0.0002
4113	Major appliances	0.0029
41131	Major appliances	0.0029
411311	Generator	0.0029
4114	Minor appliance	0.0007
41141	Minor appliance	0.0007
411411	On-table fan	0.0005
411412	Ironing device	0.0002
4115	Meal-served materials	0.0010
41151	Meal-served materials	0.0010
411511	Glass	0.0003
411512	Porcelain plate	0.0005
411513	Cooking pot	0.0000
411514	Tea pot	0.0000
411515	Kitchen knives	0.0001
4116	Household tools	0.0003
41161	Chicken-brand hoe	0.0002
41162	Screw driver	0.0001
42	Household utensils	0.0077
4211	Household utensils	0.0077
42111	Household utensils	0.0077
421111	Detergent	0.0045
421112	Insect killing spay	0.0012
421113	Fluorescent tube	0.0012
421114	Vietnam match	0.0004
421115	Broom	0.0004
5	<b>Health care</b>	0.0578
51	Medical service	0.0118
5111	Medical service	0.0118
51111	Medical service	0.0118
511111	Private doctor's fee	0.0090
511112	Dental fee	0.0028
52	Hospital admittance fee	0.0048
5211	Hospital admittance fee	0.0048
52111	Hospital admittance fee	0.0048
521111	Monthly hospital fee	0.0048
53	Prescribed drug	0.0412
5311	Cost of drug	0.0400
53111	Cost of drug	0.0400
531111	Vitamin C	0.0067
531112	Aspirin	0.0067
531113	Paracetamol	0.0067
531114	Diarrhea	0.0067
531115	Cough medicine	0.0067
531116	Ampiciline	0.0067
5312	Other medical supplies	0.0011
53121	Other medical supplies	0.0011
531211	Bondage	0.0000
531212	Plaster	0.0000
531213	Eyeglasses	0.0011

6	<b>Transportation and Telecommunication</b>	<b>0.0893</b>
61	Transportation	0.0847
6111	Personal transportation equipment	0.0267
61111	Personal transportation equipment	0.0267
611111	MiKi bike	0.0267
6112	Transportation operation	0.0264
61121	Transportation operation	0.0264
611211	Gasoline	0.0180
611212	Diesel	0.0010
611213	Lubricants	0.0027
611214	Cambodia bike tire	0.0034
611215	Cambodia motor tire	0.0013
6113	Transportation charge	0.0316
61131	Transportation charge	0.0316
611311	Cyclo charge Phsar Thmey-Oroeey	0.0048
611312	Motor charge Phsar Thmey-Chba ompov	0.0258
611313	Bus charge Phsar They-Takmao	0.0010
62	Communication service	0.0046
6211	Air service	0.0046
62111	Air service	0.0046
621111	Stamp Phnom Penh-Paris	0.0040
621112	Stamp Phnom Penh-Battambang	0.0006
7	<b>Entertainment and Education</b>	<b>0.0325</b>
71	Entertainment	0.0071
7111	Entertainment	0.0048
71111	Entertainment	0.0048
711111	Color T.V	0.0034
711112	Video cassette recorder	0.0009
711113	Radio	0.0005
7112	Other recreational expense	0.0018
71121	Other recreational expense	0.0018
711211	Rental of video tape	0.0007
711212	Film developing and printing	0.0011
7113	Recreational goods and supplies	0.0005
71131	Recreational goods and supplies	0.0005
711311	Bike for child	0.0003
711312	Cassette tape	0.0002
72	Education	0.0254
7211	Fee for private school	0.0159
72111	Fee for private school	0.0159
721111	Private school fee for English class	0.0159
7212	Books	0.0030
72121	Textbook	0.0030
721211	Textbook (100 pages)	0.0030
7213	School supplies	0.0051
72131	School supplies	0.0051
721311	Pencil	0.0017
721312	Ballpen	0.0017
721313	Paper	0.0017
7214	Other newspaper	0.0014
72141	Other newspaper	0.0014



7221411	Reaksmey Kampuchea	0.0014
8	<b>Personal consumption goods</b>	0.0262
81	Personal consumption goods	0.0128
8111	Personal consumption goods	0.0128
81111	Personal consumption goods	0.0128
811111	Soap	0.0015
811112	Shampoo	0.0031
811113	Toothpaste	0.0028
811114	Toothbrush	0.0006
811115	Powder-Peset	0.0012
811116	Perfume	0.0015
811117	Razor blade	0.0004
811118	Cambodia cologne	0.0015
811119	Sanitary napkin	0.0002
82	Personal service	0.0086
8211	Personal service	0.0086
82111	Personal service	0.0086
821111	Hairdressing - Women	0.0020
821112	Haircut - men	0.0052
821113	Haircut -women	0.0013
83	Personal effects	0.0048
8311	Personal effects	0.0048
83111	Personal effects	0.0048
831111	Man watch	0.0048

## Appendix B

**SYSTEM FOR THE CONSTRUCTION OF CONSUMER PRICE INDEX  
FOR CAMBODIA ESTABLISHED BY  
NATIONAL INSTITUTE OF STATISTICS OF MOP<sup>1</sup>**

**1.0 Introduction**

A Consumer Price Index measures the changes in the general level of prices of a specified fixed basket of goods and services over time in relation to a given base period. The consumer price index is defined as a fixed quantity price index, and is a ratio of the costs of purchasing a fixed set of items of constant quality and quantity in two different time periods.

**1.1 CPI of NIS**

The Consumer Price Index (CPI) of the National Institute of Statistics is based on weights that were derived from the Socio-Economic Survey of Cambodia (SESC). Although SESC has provided data on household expenditure weights for Cambodia, urban and rural sectors in order to ensure adequate supervision of weekly collection of prices from several markers, the geographic coverage of the index was restricted to the Municipality of Phnom Penh. The price of 206 items in the market basket are collected according to the scheduled frequency, principally from 5 markets in Phnom Penh by trained staff of NIS. The CPI is compiled monthly and it is released at the beginning of the following month.

**1.2 Technical assistance**

The SESC and CPI were established with technical assistance provided through the Strengthening Macroeconomic Management and Training Project which was financed by UNDP and ADB. The introduction of CPI was one of the principal activities of the Project and work on CPI was started in April 1993 and the index was released for the first time in September 1994. The Statistical System Development Project which is financed by ADB sponsors the collection of data and compilation of CPI.

**1.3 SESC objectives**

The primary project of the SESC was to obtain expenditure weights to construct a Consumer Price Index. The consumer price indices constructed hitherto were not based on weights derived from a survey conducted in Cambodia, (based on Laos and Thai weights). The other objectives of SESC were to ascertain household expenditure patterns in rural and urban sectors; obtain data on urban and rural incomes, and living conditions of the population; derive preliminary demographic and labour force data; obtain data needed to compile national accounts; derive nutritional status of households; analyse important WID issues.

**1.4 Scope of the survey**

The survey was designed to cover all private households including one person households in the truncated frame (primarily because of security considerations) used for the survey. All households in the Phnom Penh Municipality area were included in the frame. But

<sup>1</sup> This is given as a Technical Appendix to the monthly bulletin on CPI published by the National Institute of Statistics and the Ministry of Planning.



the survey excluded those people who lived in institutional or collective households.

### 1.5 Survey design

The SESC was the first survey of consumer expenditure conducted in Cambodia. The information on household expenditure was supplemented with other information which included demographic disability, migration, labour force, housing and income conditions of the population.

### 1.6 Sampling design

In the SESC, Cambodia was divided into 3 domains namely Phnom Penh, Other Urban and rural and a stratified two-stage sampling design was used with villages as PSU's. The total sample for the 4 rounds amounted to 5792 households of which 1708 were in the Phnom Penh stratum.

### 1.7 Concepts

The survey investigated information on the expenditure of households which was defined as expenses for disbursements for purposes of keeping the household during the survey period. The household expenditure comprised both household consumption expenditure and certain items of non-consumption expenditure. The following items were included in the concept of expenditure on goods and services as a part of the total consumption of households:

- i. Goods and services which households acquire on the market for cash or on credit.
- ii. Goods and services that households produce (Home grown and produced goods) or acquire (goods received free of charge) and which are consumed by the households.
- iii. An estimation of rental value of dwelling occupied by the owner.
- iv. Imputed value of goods and services given as payments in kind.

The goods and services were grouped into the following major categories.

1. Food, Beverages and Tobacco.
2. Clothing and Footwear.
3. Housing and Utilities
4. House furnishings and Household operations
5. Medical Care
6. Transportation and Communication
7. Recreation and Education
8. Personal Care and Effects
9. Miscellaneous Expenditures

### 1.8 Field survey operations

The field work of the survey was carried out from October 1993 to September 1994. Thus seasonal variations in consumption patterns have been incorporated in the index weights. The interview method was used in canvassing survey data by trained survey interviews under the supervision of trained supervisors.



## 1.9 Weights

The results of all 4 rounds of the SESC on household expenditure were used to derive the weights of the CPI. All sampled households in the Phnom Penh municipality area numbering 1708 were used in deriving these weights. Ordinarily 400 to 500 appropriately sampled households is considered adequate to construct a CPI. Thus the sample of households used is large and representative of the household consumption patterns of the population covered.

## 2.0 Market basket

The sum total of goods and services which are included as pricing items in the CPI is referred to as the market basket. The SESC canvassed data on 459 expenditure items and it was necessary to select a manageable number of items for pricing. Further, it is possible to select items in such a manner so that the selected item could represent other related items the prices of which will behave in a manner similar to that of the selected items.

2.1 The market basket of items for inclusion in the CPI were selected in 2 stages. At the first stage the probability proportional to size (pps) method was used and all items were selected. These items covered 85.5% of all expenditure. At the next a further 125 items were selected using the pps method which raised the total weight to 96.7%. After careful examination and editing of items from the second list the market basket was established which comprised 206 items of goods and services representing 91.8% of the average expenditure of households in Phnom Penh.

## 2.2 Scope and coverage of the index

The items included in the index are grouped at 4 levels. At the first level the index is divided to 8 major groups which are then subdivided in to 58 sub-group. At the 3rd level the sub-groups are disaggregated to 174 commodities and services. Selected commodities and services are further disaggregated into price collection items making a total of 206 such items. This classification enables the monitoring of price movements at the different levels of sub-divisions. This grouping of items is shown in the Table 1 and the items are coded in terms of this classification in the CPI.

Table 1. Major groups, number of sub-groups and items covered in the Consumer Price Index (CPI).

Major Group	Sub-Group Level 2	Number of Commodities and Services level 3	Price Collection Items level 4
1. Food, Beverages and Tobacco	23	72	87
2. Clothing and Footwear	11	19	27
3. Housing and Utilities	03	16	18
4. House furnishings and Household operation	07	23	25
5. Medical Care	03	11	12
6. Transportation and Communication	04	09	11
7. Recreation and Education	04	13	13
8. Personal Care and Effects	03	11	13
Total	58	174	206



## 2.3 Outlet survey

The outlets from which prices are to be collected were decided by conducting a survey which listed all permanent price outlets in Central, Oresay, Russian, Dankor, and Chaba Ompov markets in September 1993. From the results of the survey - 8 fixed outlets were selected for each group of items, 4 to price the items on a regular basis, and 4 to serve as substitute outlets. The popularity of the establishment, consistency and completeness of the stock, permanency of the outlet, cooperativeness of the respondent, and geographic location were considerations which were used in the selection of price outlets.

In all 1752 price outlets were chosen to price the items in the market basket.

## 2.4 Periodicity of price collection

The periodicity of price collection is given in the following table.

### Periodicity of price collection

Items	Frequency
1. a) Food items	twice a month 1st 3 consecutive working days of the month; 3 consecutive working days at the middle of the month
b) Beverage and Tobacco	Monthly
2. Clothing and footwear	Monthly
3. Housing	
a) Rental	Bimonthly
b) Maintenance	Quarterly
4. Fuel, Light and Water	Monthly
5. Services	
a) Medical services Medical Care and Hospital Charges	Quarterly
Pharmaceutical Product / Medical supplies	Monthly
b) Transportation and Communication Transportation fares	Monthly
Operation and Transport Equipment	Monthly
Communication service	Quarterly
c) Recreation	
Recreational Equipment and Supply	Bi-monthly
Other Recreational Expenses	Bi-monthly
d) Education	
School Supplies & other Educational supplies	Quarterly
School fees	Bi-monthly
e) Personal Services	
Beauty pallor, Barbershop and Household services	Monthly
Miscellaneous	
a) Housefurnishing and Equipment	Bi-annually
Furniture and Floor Coverings	Bi-annually
Major and Minor Appliances	Bi-annually
Household tools	Monthly
Household Textiles	Monthly
Glassware and Tableware	
a) Household operation (items)	Monthly
Personal Care (items)	Monthly
Personal Effects	Quarterly



## 2.5 Price collection

The items specifications were prepared for the commodities and services which were included in the market basket. The specifications were kept simple and so that the staff could easily understand the specifications. It will be necessary to tighten some of the specifications later on. The NIS staff were trained in the use of the specifications. The prices are collected from selected outlets in the Central, Oresay, Russian, Dankor and Chaba Ompov markets by 10 trained data collectors from the Bureau of Prices of NIS. The work of data collectors is supervised by 2 supervisors. In all about 5080 price quotes are collected each month.

## 2.6 Computation processing

The data on retail prices of commodities and services are captured in computer readable form through the CPI system, a software tailor-made for the computation and generation of consumer price indices for Phnom Penh. Then the survey data undergoes 100% key verification to ensure data integrity. After key verification, machine validation is also performed where a listing of comparison of prices by market is generated to allow meticulous validation.

2.7 The CPI system computes the consumer price indices using the Laspeyres' formula. This is done after the machine validation. The system also allows generation of indices in database format which may be exported to formats of popular software such as EXCEL to allow printing of texts and descriptions in Khmer language. Useful reports are also generated by the CPI system such as the following :

- » Forms 1, 2, 3 and 4 with current prices
- » Monthly average prices by market
- » Bi-monthly prices by market
- » Average prices by month

The CPI system was designed by the UNDP / ADB Project staff and NIS staff were trained in data entry, key verification, machine validation and compilation of CPI.

## 2.8 Computation

The consumer price index is defined a fixed quantity price index, and is a ratio of cost of purchasing a fixed set of items of constant quality and quantity in two different time periods. In this form of the consumer price index the Laspeyres formula is used in the computation of the index. The formula is

$$L_{t,o} = \frac{\sum_{i=1}^n P_{it} Q_{io}}{\sum_{i=1}^n P_{io} Q_{io}} \times 100$$

Where

- $P_{it}$  : is the price of the  $i^{th}$  item in comparison period
- $P_{io}$  : is the price of the  $i^{th}$  item in the base period
- $Q_{io}$  : is the quantity of the  $i^{th}$  item consumed in expenditure base period



The above formula can be transformed as

$$L_{t,0} = \frac{\sum_{i=1}^n P_{io} Q_{io} \times \frac{P_{it}}{P_{io}}}{\sum_{i=1}^n P_{io} Q_{io}} \times 100$$

$$= \frac{\sum_{i=1}^n \text{Value of item in base period} \times \text{price relative}}{\sum_{i=1}^n \text{Value of item in base period}} \times 100$$

In computing the index, the base period value for each item is multiplied by the price relative and these are aggregated and divided by the base period weight and the resulting value is multiplied by 100 to arrive at the index figure.

## Appendix C

## Percentage difference between CPI and FI

Year	Month	NBC	MOF	CDRI	MOC	NIS
		%difference	%difference	%difference	%difference	%difference
1991	January	-33.33	-18.75			
	February	-33.33	-12.50			
	March	-26.32	-5.26			
	April	-25.00	-10.00			
	May	-25.00	-10.00			
	June	-21.74	-8.70			
	July	-21.43	-3.57			
	August	-8.11	5.13			
	September	-11.11	2.70			
	October	-11.43	2.78			
	November	-12.90	0.00			
	December	-48.48	0.00			
1992	January	-28.00	-9.52			
	February	-26.92	-4.35			
	March	-22.22	-4.00			
	April	-24.14	0.00			
	May	-15.15	-3.23			
	June	-12.50	0.00			
	July	-8.16	0.00			
	August	-5.45	-1.75			
	September	-1.54	-1.52			
	October	-1.54	-3.03			
	November	-3.28	11.29	0.00		
	December	-3.17	3.13	-2.82		
1993	January	-6.06	-10.45	-1.27		
	February	-6.15	-14.49	-3.80		
	March	4.96	0.00	-3.60		
	April	0.00	-5.26	-5.69		
	May	2.54	-3.20	-0.62		
	June	1.75	-3.54	3.82		
	July	-0.99	-6.06	0.00		
	August	-1.01	-2.15	3.77		
	September	0.00	-1.00	3.70		
	October	2.04	-2.04	3.77		
	November	-1.15	-3.57	1.98	-2.30	
	December	-1.20	0.00	0.00	-2.30	
1994	January	-1.18	-3.41	-2.17	-2.25	
	February	-4.65	-2.30	-1.03	-2.20	
	March	-4.60	-3.49	-3.13	-2.20	
	April	-3.33	-3.45	-3.03	0.00	
	May	-2.11	-3.19	0.00	0.00	
	June	-3.23	-2.15	-2.97	0.00	
	July	-1.03	-1.05	-1.03	-1.04	
	August	0.00	0.00	0.00	0.00	
	September	0.00	0.95	13.04	0.00	
	October	0.94	-0.97	2.75	0.93	
	November	1.90	2.63	0.00	0.94	
	December	1.90	1.85	-0.93	0.97	
1995	January	0.00	0.95	-1.83	0.00	1.98
	February	-1.04	0.00	-2.80	1.85	0.00
	March	-1.03	-2.00	-0.93	0.00	0.00
	April	0.00	-1.01	-5.61	0.00	0.00
	May	0.00	-1.00	5.88		5.05