CORE INFLATION AND THE ESTIMATION OF CORE INFLATION

1. *What is core inflation?*

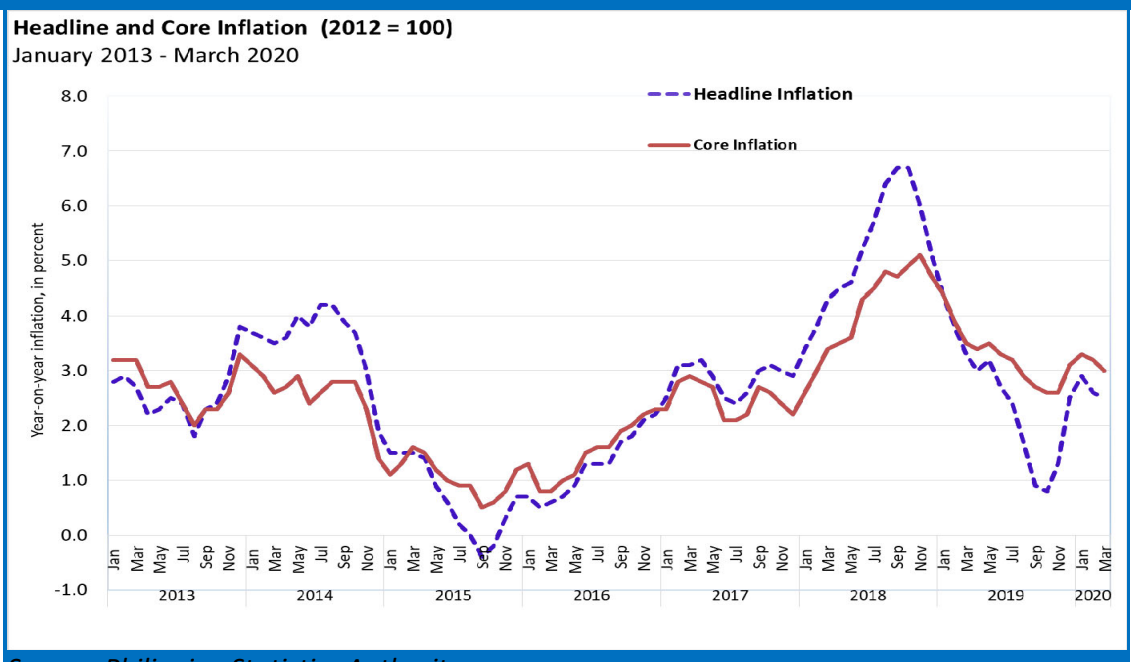
Core inflation is a widely used measure of the underlying trend or movement in the average consumer prices. It is often used as a complementary indicator to what is known as "headline" or Consumer Price Index (CPI) inflation.

2. *How is core inflation different from CPI or "headline" inflation?*

Headline inflation refers to the rate of change in the CPI, a measure of the average price of a standard basket of goods and services consumed by a typical family. In the Philippines, the CPI basket is composed of various consumer items as determined by the nationwide Family Income and Expenditure Survey (FIES), which is conducted every three years by the Philippine Statistics Authority (PSA).

Headline inflation thus captures the changes in the cost of living based on the movements of the prices of items in the basket of commodities and services consumed by the typical Filipino household.

On the other hand, core inflation measures the change in average consumer prices after excluding from the CPI certain items with volatile price movements. By stripping out the volatile components of the CPI, core inflation allows us to see the broad underlying trend in consumer prices. Core inflation is often used as an indicator of the long-term inflation trend as well as future inflation. The long-term inflation trend is primarily affected by demand conditions which, in turn, can be influenced by monetary policy.



Source: Philippine Statistics Authority

3. ***Why do we need to measure core inflation?***

In many countries, CPI inflation is often influenced by factors beyond the control of economic policy and has tended to be historically volatile. Shocks or disturbances in certain areas of the economy may cause inflation to temporarily move away from its long-term trend.

In the Philippines, the volatility of inflation has been caused by factors such as disturbances in agricultural food supply or movements in international oil prices. As a result, the headline inflation rate may reach double-digit levels, even though the prices of other CPI components show only mild increases.

Core inflation is an indicator of the underlying movement in consumer prices since it takes out the effect of temporary disturbances and shocks that cause prices to surge or decline, independent of economic and monetary policy. Measuring core inflation helps policymakers determine whether current movements in consumer prices represent short-lived disturbances or are part of a more permanent trend. Such knowledge is important in the formulation of economic policy, particularly monetary policy, which responds mainly to broad-based pressures on prices.

4. ***How is core inflation measured or computed?***

There are several methods used to compute core inflation. The most common approach used in many countries is the **exclusion method**, which computes core inflation by taking out the prices of a fixed, pre-specified set of items from the CPI basket. The excluded components are considered to be either volatile or susceptible to supply disturbances and typically consist of food and energy items. This is based on the notion that the markets related to these goods are prone to supply shocks.

Some economists advocate the use of **statistically-based methods** that remove extreme or outlier price changes (both positive and negative) from the overall inflation rate. The set of excluded items changes each month, depending on which particular items exhibit extreme price movements. The most common statistical measures of core inflation are the trimmed mean and weighted median. Both measures are derived from a highest-to-lowest (or positive to negative) ranking of individual price changes for each given month. The trimmed mean measure takes the average inflation rate after excluding a specified percentage of extreme positive and negative price changes, while the weighted median simply takes the median inflation rate which corresponds to a cumulative CPI weight of 50 percent from the highest-to-lowest ranking.

It is also possible to use **econometric techniques** to estimate core inflation by estimating or calculating a statistical relationship between inflation and other relevant economic variables. The estimated regression model is then used to generate monthly estimates of core inflation using actual data for the other variables in the model.

In the Philippines, the official core inflation measure is computed using the exclusion method. This approach was chosen for the following reasons: ease of construction; understandability by the general public; easy replication and verification by others; increased accountability and transparency of measurement; and timeliness. Answers to question nos. 9-10 provide a more detailed explanation on the choice of core inflation measures. Answer to question no. 12 provides a numerical example.

CROSS-COUNTRY EXPERIENCES ON CORE INFLATION

5. ***Do other countries monitor core inflation?***

Yes, most statistical authorities in other countries publish a measure of core inflation. Among central banks, it has become a common practice to monitor core inflation, irrespective of the monetary policy framework being used. For example, non-inflation targeting central banks such as the Bank of Japan and the Monetary Authority of Singapore also monitor core inflation.

6. ***How do other countries measure core inflation?***

Many countries employ the exclusion method and define core inflation as the overall price index net of the most volatile components, which commonly refers to food and energy. Other countries also exclude the effects of changes in interest rate in addition to food and energy items. Vietnam, for example, excludes food, energy, administered prices, indirect taxes, and interest (mortgage) payments, while the US only excludes food and energy items. Meanwhile, some countries, like Australia, Fiji, Sweden, and El Salvador, do not publish an exclusion-based core inflation measure but release analytical series which consist of trimmed mean and weighted median measures.

The following table summarizes the main core inflation measures (derived using the exclusion method) used in selected countries in terms of the excluded items and the share of the excluded items in the total CPI basket. The countries selected are among those which are known to operate a full-fledged inflation-targeting regime[1] and use core inflation measures derived from the exclusion method.

In the case of Canada, the Bank of Canada operates under a full-fledged inflation-targeting regime and until 2016 published the CPIX, a core inflation measure that was based on the exclusion method. However, starting in January 2017, Bank of Canada has stopped using the CPIX as its preferred core inflation measure and has replaced it with a trimmed mean, a weighted median, and the CPI-common which tracks common price changes across categories in the CPI basket.

[1] Selected among the 27 countries operating a full-fledged inflation-targeting regime (Gill Hammond, 2012. "State of the art of inflation targeting," Handbooks, Centre for Central Banking Studies, Bank of England, edition 4, number 29.)

Country	Excluded component from CPI basket	Share in the total CPI basket (%)
United States	Food and energy	20.7
Brazil	Food at home and administered prices (wholly or partially controlled by government which include public transportation, motor and household fuel and lubricants, land, water and sewage, taxes and telephone services	43.0
Chile	Food and Energy	27.8
	CPIX: Fuels and Fresh Fruit and Vegetables	8.5
	CPIX1: CPIX exc. products classified as fresh meat and fish, regulated tariffs, indexed prices, and financial services	26.3
Colombia	Food and non-administered goods	-
	Food	28.2
	Primary food, utilities, and fuel	-
Iceland	Core 1: CPI less agricultural products, vegetables, fruits, and petrol	11.1
	Core 2: Core index 1 less public services	20.0
	Core 3: Core index 2 less effects of changes in real interest rate	18.9
	Core 4: Core index 2 less imputed rent	37.2
Israel	Vegetables and fruit	2.9
	Housing	25.0
	Vegetables, fruit, and housing	27.9
	Energy	6.0
Peru	Food and beverages	14.8
	Fuels	2.8
	Transportation	8.9
	Public services	8.4
Poland	Items with administered prices	15.1
	Most volatile prices	22.1
	Food and nonalcoholic beverages	24.9
	Energy	16.2
Korea	Agricultural products and oils	11.3
Thailand	Fresh or raw food and energy	27.4
Malaysia	Most volatile items of fresh food, administered prices of goods and services	33.0

Source: Central bank websites and national statistical agencies

7. ***How do policymakers use core inflation in other countries?***

Most statistical agencies in other countries use core inflation as a supplementary indicator to headline inflation and publish it alongside the headline rate. Meanwhile, some inflation-targeting central banks—such as Australia, Canada, Czech Republic, Ghana, Hungary, Norway, Poland, Sweden and Turkey—publish forecasts of core inflation in addition to headline inflation.[2]

CORE INFLATION IN THE PHILIPPINES

8. ***Is there an official definition of core inflation in the Philippines?***

Yes. PSA Board Resolution No. 01, Series of 2017-096 (previously referred to as National Statistical Coordination Board Resolution No. 6, Series of 2003) approved the use of the exclusion method for the computation of the official definition of core inflation in the Philippines. Thus, while headline inflation is calculated as the year-on-year change in the overall CPI compiled by the PSA, the official core inflation measure is defined as the rate of change of headline CPI after excluding selected food and energy items.

Pursuant to PSA Board Resolution No. 01, Series of 2017-096, the excluded items from the CPI basket is reviewed whenever there is a change in the base year of the CPI. Using the 2012-based CPI series, the list of excluded items from the 2012-based official core inflation are the same food- and energy-related items as in the 2006-based core inflation series, with the exception of fruits and natural gas and the addition of fish.

9. ***How was the official definition of core inflation determined?***

The official definition was the result of inter-agency technical discussions in 2003 among the NSO, the NSCB, NEDA, the Statistical Research and Training Center (SRTC), the National Wage and Productivity Commission (NWPC), the Department of Trade and Industry (DTI), and the BSP. (Starting on 29 December 2013, per RA 10625 otherwise known as the Philippine Statistical Act of 2013, the NSO and NSCB, along with two other agencies, namely, the Bureau of Labor and Employment Statistics and Bureau of Agricultural Statistics, were reconstituted into the Philippine Statistics Authority. The same law created the Philippine Statistical Research and Training Institute to replace the SRTC.)

The list of excluded items from the official 2012-based core inflation measure is a result of discussions among members of the Interagency Committee on Price Statistics (IACPS). Following the approval by the PSA Board of the list of excluded items from the core inflation using 2012-based CPI series during its meeting on 9 May 2018, the PSA has started publishing the official core inflation series with 2012 as base year on 5 June 2018, alongside the release of the monthly headline CPI.

[2] Ibid.

10. ***Why was the exclusion method chosen for the official definition?***

The exclusion method was chosen because: (a) it is easier to understand compared to the other methodologies; (b) it is more transparent and can be easily computed by anyone from CPI data; (c) it can be produced by the PSA at the same time as the headline inflation rate; and (d) it is in accordance with the common international practice of excluding food- and energy-related components of the CPI. Given that core inflation is a relatively new concept for the Filipino public in general, policymakers believed that the simplicity of the exclusion method can facilitate greater understanding by the public and consequently, help build credibility in the use of core inflation.

11. ***What specific items were excluded in order to compute for core inflation?***

The items in the CPI that were excluded in the definition of core inflation components and their corresponding CPI weights (2012=100) are as follows:

- Rice (9.6 percent)
- Corn (0.6 percent)
- Meat, fresh, chilled or frozen (4.8 percent)
- Fish, fresh, chilled or frozen (4.3 percent)
- Vegetables, cultivated for their fruit (0.9 percent)
- Vegetables, cultivated for their roots (0.6 percent)
- Petroleum and fuels for personal (2.0 percent)

Together, the above excluded items account for **22.8 percent** of the CPI.

12. ***How exactly is core inflation computed based on the official definition?***

For illustration purposes, the following table presents a sample computation of core inflation for March 2019. The core inflation rate for a given month (in this case March 2019) is the sum of core items' inflation adjusted by the re-calibrated weights of these core items.

CONSUMER PRICE INDEX, PHILIPPINES (2012=100)
March 2019
in percent

COMMODITY	HEADLINE		Weights of Non-Core Items	CPI Weights Excluding Non-Core Items	CORE			
	Inflation Rate	Weights[1]			Weights in Core CPI	Mar 2018	Mar 2019	Core Inflation
	(1)	(2)	(3)	(4) = (2)-(3)	(5) = (4)/77.2	(6)	(7)	(8)=((7/6)-1)*100
ALL ITEMS	**3.3**	**100.0**	**22.8**	**77.2**	**100.0**	**114.1**	**118.1**	**3.5**
A. Food and Non-alcoholic Beverages	3.4	38.3	20.8[a]	17.5[a]	22.7	118.3	124.0	4.8
B. Alcoholic Beverages, Tobacco, and other Vegetable-based Tobacco Products	10.8	1.6	0	1.6	2.1	184.0	203.8	10.8
C. Clothing and Footwear	2.5	2.9	0	2.9	3.8	116.3	119.2	2.4
D. Housing, Water, Electricity, Gas and Other Fuels	3.4	22.0	0	22.0	28.5	109.6	113.3	3.4
E. Furnishings, Houshold Equipment and Routine Maintenance of the House	3.4	3.0	0	3.0	3.8	115.2	119.1	3.3
F. Health	3.9	3.9	0	3.9	5.0	114.7	119.2	3.9
G. Transport	3.3	8.1	2.0[b]	6.1[b]	7.8	106.7	109.1	2.2
H. Communication	0.3	2.9	0	2.9	3.8	101.0	101.4	0.4
I. Recreation and Culture	3.1	1.4	0	1.4	1.8	111.3	114.7	3.1
J. Education	-3.8	3.3	0	3.3	4.3	120.1	115.3	-4.0
K. Restaurants and Miscellaneous Goods and Services	3.7	12.6	0	12.6	16.3	112.0	116.1	3.6

n.b. - Figures may not add-up due to rounding off
[1] The CPI weights are derived from each component's percentage share to the total personal consumption expenditure of a typical family, based on data from the PSA's FIES.
[a] Non-core items are rice, corn, meat, fish, and vegetables
[b] Excluding petroleum and fuels for personal transport use

Source of basic data: Philippine Statistics Authority

13. ***Which government agency generates the official core inflation data?***

The PSA generates and publishes the official rate of core inflation, alongside the headline inflation rate.

14. ***Will core inflation replace the current CPI or headline inflation published by the PSA?***

No. Core inflation is not intended as a replacement for headline inflation, but as a complementary indicator of the general movement in prices of goods and services.

15. ***Where does core inflation fit into the BSP's inflation targeting framework?***

Under the BSP's inflation targeting framework, the annual inflation target is still defined in terms of the headline inflation rate. The BSP uses the official measure of core inflation as a complementary indicator of consumer price movements. Thus, it would serve as an additional input to monetary policy analysis.

16. ***In adjusting regional minimum wages in the country, should Regional Wage Boards use core inflation rather than headline inflation?***

No. Core inflation should not be used as basis for adjusting wages in the country. Since the intention is to factor into the wage-setting decisions the overall increase in the cost of living and losses in purchasing power, the Regional Wage Boards should still use headline inflation. Wage adjustments must consider the price changes in all the items in the CPI basket, including rice, corn and fuel-related items which are excluded in the computation of core inflation.