Lecture 9 - Inflation and You Calculating CPI

September 18, 2019

Inflation

- Inflation is a continuous increase in price over time.
- There are two main types of inflation:
  - **Demand Pull Inflation**: As demand for a good or set of goods increases, so does its price.
  - **Cost Push Inflation**: As prices rise, companies must protect their profit margin by raising prices.
- We will discuss the economic causes and implications of inflation in more detail in the next lecture.

Consumer Price Index

- Assuming that prices remain roughly proportional, prices can be converted between years.
- A consumer price index relates average prices to some base year. These are computed by tracking prices of a selection of goods between two years.
- The base year is assigned a price index of 100. The proportional relationship is:

$$\text{price in a given year} : \text{price in base year} :: \text{CPI for given year} : 100$$

- Discuss: What relationship does CPI have to percent?
- For convenience, CPI's are usually standardized to a base year. All prices are compared to prices on this year.
- The standard base year, as defined by the United States Bureau of Labor Statistics uses the average prices over the range 1982-1984 as the standard base year. (This is called a chained base year.)
- Given the CPI in year a and year b, the following proportion will hold:

$$\text{price in year a} : \text{price in year b} :: \text{CPI in year a} : \text{CPI in year b}$$

Problems and Discussion

1. Compute the beef index price based on the 1971 advertisement from A&P.
2. Convert the 1971 based beef index to a 1982-1984 based index. How does this compare to the actual Depart of Labor Statistics CPI for 1971?
3. If a college textbook has a list price of $12.95 in 1971, what should its price be in 2018?

4. Look up the list price of Hopcroft and Ullman's *Introduction to Automata Theory, Languages, and Computation*. This is the book from the previous question. Has it kept pace with inflation or has it outperformed it? What could account for this?

5. Examine the CPI chart for the years 1913-2018. How does the CPI compare to major events in US history?

Image Source: `https://www.flickr.com/photos/andrew-turnbull/3347776176`

Yearly Average Consumer Price Index

1913 - 2018

Year	CPI	Year	CPI	Year	CPI	Year	CPI
1913	9.9	**1940**	14	**1967**	33.4	**1994**	148.2
1914	10	**1941**	14.7	**1968**	34.8	**1995**	152.4
1915	10.1	**1942**	16.3	**1969**	36.7	**1996**	156.9
1916	10.9	**1943**	17.3	**1970**	38.8	**1997**	160.5
1917	12.8	**1944**	17.6	**1971**	40.5	**1998**	163
1918	15.1	**1945**	18	**1972**	41.8	**1999**	166.6
1919	17.3	**1946**	19.5	**1973**	44.4	**2000**	172.2
1920	20	**1947**	22.3	**1974**	49.3	**2001**	177.1
1921	17.9	**1948**	24.1	**1975**	53.8	**2002**	179.9
1922	16.8	**1949**	23.8	**1976**	56.9	**2003**	184
1923	17.1	**1950**	24.1	**1977**	60.6	**2004**	188.9
1924	17.1	**1951**	26	**1978**	65.2	**2005**	195.3
1925	17.5	**1952**	26.5	**1979**	72.6	**2006**	201.6
1926	17.7	**1953**	26.7	**1980**	82.4	**2007**	207.3
1927	17.4	**1954**	26.9	**1981**	90.9	**2008**	215.303
1928	17.1	**1955**	26.8	**1982**	96.5	**2009**	214.537
1929	17.1	**1956**	27.2	**1983**	99.6	**2010**	218.056
1930	16.7	**1957**	28.1	**1984**	103.9	**2011**	224.939
1931	15.2	**1958**	28.9	**1985**	107.6	**2012**	229.594
1932	13.7	**1959**	29.1	**1986**	109.6	**2013**	232.957
1933	13	**1960**	29.6	**1987**	113.6	**2014**	236.736
1934	13.4	**1961**	29.9	**1988**	118.3	**2015**	237.017
1935	13.7	**1962**	30.2	**1989**	124	**2016**	240.007
1936	13.9	**1963**	30.6	**1990**	130.7	**2017**	245.12
1937	14.4	**1964**	31	**1991**	136.2	**2018**	251.107
1938	14.1	**1965**	31.5	**1992**	140.3		
1939	13.9	**1966**	32.4	**1993**	144.5		

Base Year Chained 1982-1984 = 100

Compiled from the Department of Labor Statistics Data Releases