

## Econometrics

### Lecture 1: Introduction to Simple Regression

#### Solutions

#### Task 1: Understanding the relationship between variables

1.1. Table 1.2 gives data on the Consumer Price Index (CPI) for seven industrialized countries with 1982–1984 = 100 as the base of the index.

TABLE 1.2 CPI IN SEVEN INDUSTRIAL COUNTRIES, 1973–1997 (1982–1984 = 100)

Year	Canada	France	Germany	Italy	Japan	U.K.	U.S.
1973	40.8	34.6	62.8	20.6	47.9	27.9	44.4
1974	45.2	39.3	67.1	24.6	59	32.3	49.3
1975	50.1	43.9	71.1	28.8	65.9	40.2	53.8
1976	53.9	48.1	74.2	33.6	72.2	46.8	56.9
1977	58.1	52.7	76.9	40.1	78.1	54.2	60.6
1978	63.3	57.5	79	45.1	81.4	58.7	65.2
1979	69.2	63.6	82.2	52.1	84.4	66.6	72.6
1980	76.1	72.3	86.7	63.2	90.9	78.5	82.4
1981	85.6	81.9	92.2	75.4	95.3	87.9	90.9
1982	94.9	91.7	97.1	87.7	98.1	95.4	96.5
1983	100.4	100.4	100.3	100.8	99.8	99.8	99.6
1984	104.7	108.1	102.7	111.5	102.1	104.8	103.9
1985	109	114.4	104.8	121.1	104.1	111.1	107.6
1986	113.5	117.3	104.7	128.5	104.8	114.9	109.6
1987	118.4	121.1	104.9	134.4	104.8	119.7	113.6
1988	123.2	124.4	106.3	141.1	105.6	125.6	118.3
1989	129.3	128.7	109.2	150.4	108.1	135.3	124
1990	135.5	133	112.2	159.6	111.4	148.2	130.7
1991	143.1	137.2	116.3	169.8	115	156.9	136.2
1992	145.3	140.5	122.1	178.8	116.9	162.7	140.3
1993	147.9	143.5	127.6	186.4	118.4	165.3	144.5
1994	148.2	145.8	131.1	193.7	119.3	169.4	148.2
1995	151.4	148.4	133.5	204.1	119.1	175.1	152.4
1996	153.8	151.4	135.5	212	119.3	179.4	156.9
1997	156.3	153.2	137.8	215.7	121.3	185	160.5

- From the given data, compute the inflation rate for each country.
- Plot the inflation rate for each country against time (i.e., use the horizontal axis for time and the vertical axis for the inflation rate.)
- What broad conclusions can you draw about the inflation experience in the seven countries?
- Which country's inflation rate seems to be most variable? Can you offer any explanation?

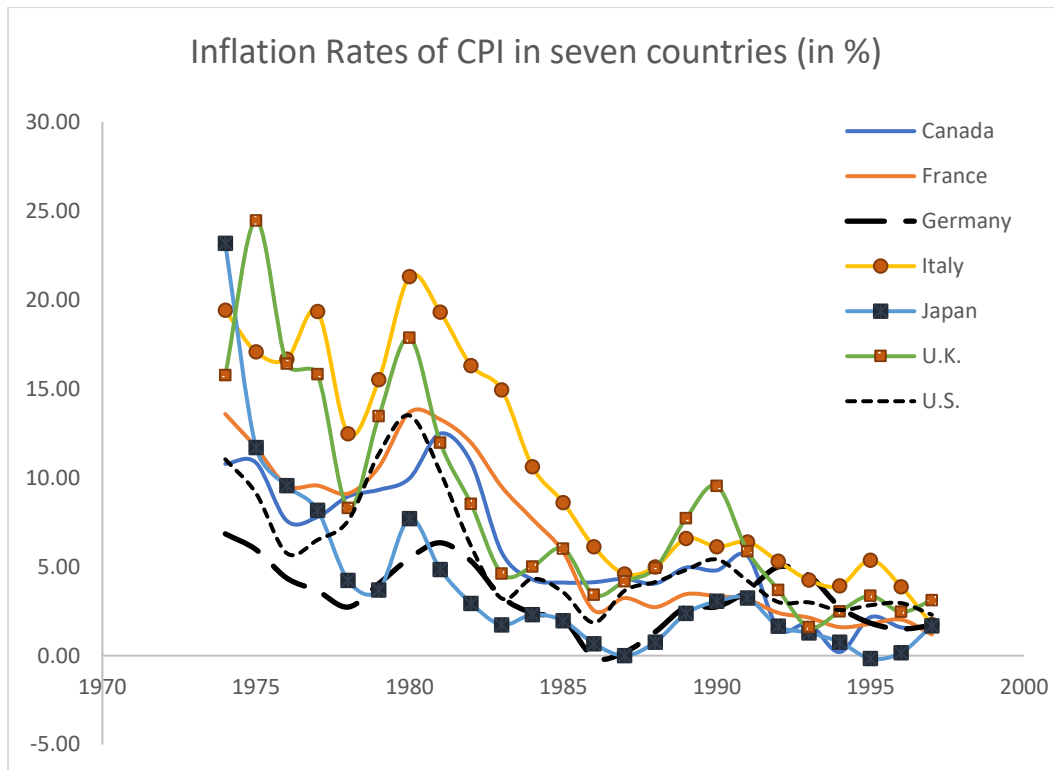
Solution:

- a. Subtract from the current year's CPI the CPI from the previous year, divide the difference by the previous year's CPI, and multiply the result by 100. Thus, the inflation rate for Canada for 1974 is  $[(45.2 - 40.8)/40.8] \times 100 = 10.78\%$  (approx.).

Inflation Rate of CPI in Seven industrial countries

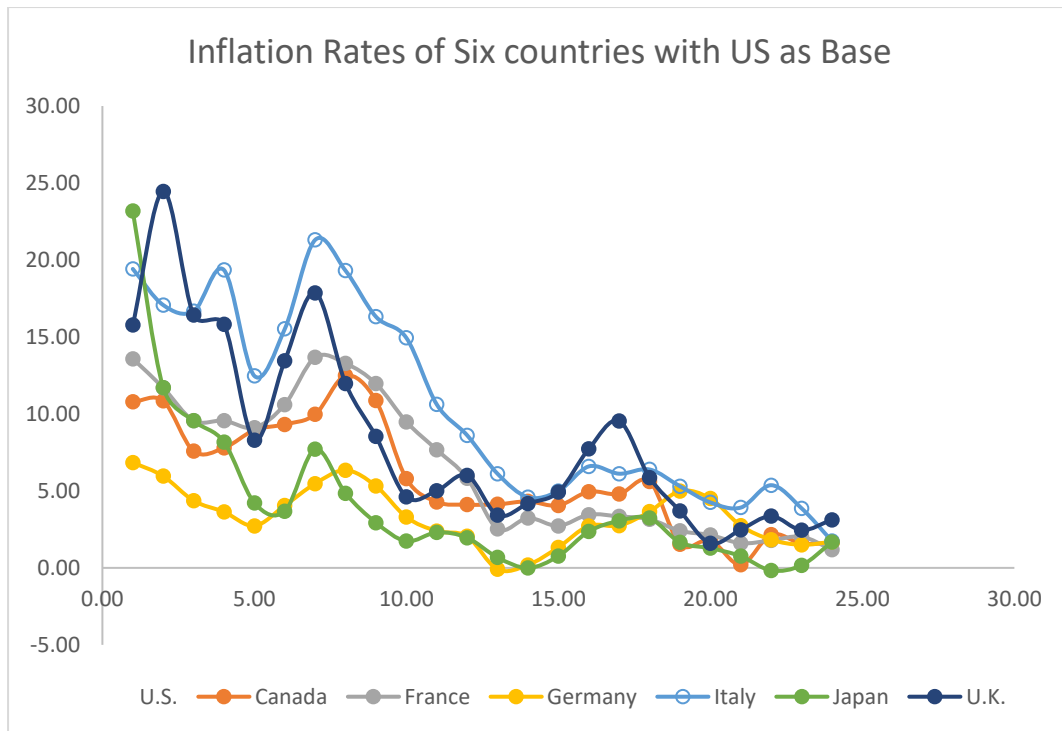
Year	Canada	France	Germany	Italy	Japan	U.K.	U.S.
1974	10.78	13.58	6.85	19.42	23.17	15.77	11.04
1975	10.84	11.70	5.96	17.07	11.69	24.46	9.13
1976	7.58	9.57	4.36	16.67	9.56	16.42	5.76
1977	7.79	9.56	3.64	19.35	8.17	15.81	6.50
1978	8.95	9.11	2.73	12.47	4.23	8.30	7.59
1979	9.32	10.61	4.05	15.52	3.69	13.46	11.35
1980	9.97	13.68	5.47	21.31	7.70	17.87	13.50
1981	12.48	13.28	6.34	19.30	4.84	11.97	10.32
1982	10.86	11.97	5.31	16.31	2.94	8.53	6.16
1983	5.80	9.49	3.30	14.94	1.73	4.61	3.21
1984	4.28	7.67	2.39	10.62	2.30	5.01	4.32
1985	4.11	5.83	2.04	8.61	1.96	6.01	3.56
1986	4.13	2.53	-0.10	6.11	0.67	3.42	1.86
1987	4.32	3.24	0.19	4.59	0.00	4.18	3.65
1988	4.05	2.73	1.33	4.99	0.76	4.93	4.14
1989	4.95	3.46	2.73	6.59	2.37	7.72	4.82
1990	4.80	3.34	2.75	6.12	3.05	9.53	5.40
1991	5.61	3.16	3.65	6.39	3.23	5.87	4.21
1992	1.54	2.41	4.99	5.30	1.65	3.70	3.01
1993	1.79	2.14	4.50	4.25	1.28	1.60	2.99
1994	0.20	1.60	2.74	3.92	0.76	2.48	2.56
1995	2.16	1.78	1.83	5.37	-0.17	3.36	2.83
1996	1.59	2.02	1.50	3.87	0.17	2.46	2.95
1997	1.63	1.19	1.70	1.75	1.68	3.12	2.29

- b. Pl. Use excel sheet  
 c. Pl. look at how each country's inflation rates behave over time visually. Observe and understand.



d. Pl. compare inflation rates of each of the country with US as the base, then draw inferences from the chart.

1.2. a. Plot the inflation rate of Canada, France, Germany, Italy, Japan, and the United Kingdom against the United States inflation rate.



b. Comment generally about the behaviour of the inflation rate in the six countries vis-à-vis the U.S. inflation rate.

c. If you find that the six countries' inflation rates move in the same direction as the U.S. inflation rate, would that suggest that U.S. inflation "causes" inflation in the other countries? Why or why not?