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SEASONALITY IN PRIVATE CONSUMER EXPENDITURES IN TURKEY, 1987.1 - 1994.3

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The goal of this paper is to calculate seasonal indices for private consumption expenditures in Turkey.

There are six consumption categories and the total:

1. Food, beverages
2. Durable consumer goods
3. Semi-durable and non-durable consumer goods
4. Energy, transportation, and communication
5. Services
6. Ownership of dwelling
0. total private consumption expenditures

All data are taken from SIS (1994a, 1994b, 1994c). They cover the period 1987.1 - 1994.3.

The ratio to moving average or multiplicative technique is used for seasonal adjustment (Hall, Lilien, Startz, pp. 177-178). A centered moving average of the series is computed (the moving average covers a whole year centered around the current observation). The ratio of the series to the moving average is calculated. The average of this ratio over all the years in the sample is calculated for each quarter separately. These are the seasonal effects. The seasonally adjusted series is computed by dividing the original series by the seasonal factors.

Seasonality is important in private consumption. Food expenditures and services are concentrated during the third quarter, while durables, semi-durables and energy, transportation and communication expenditures are concentrated on the last two quarters. Ownership of dwellings show a relatively smooth pattern during a given year. As a result of these total private expenditures show a seasonal pattern with weights on the third and fourth quarters.

Seasonal Indices

expenditure category	first quarter	second quarter	third quarter	fourth quarter
nominal series				
1.	0.8796	0.9389	1.2265	0.9873
2.	0.9557	0.9885	0.9377	1.1289
3.	0.9962	0.9710	0.9991	1.0348
4.	0.8572	0.9494	1.0366	1.1854
5.	0.7564	0.9750	1.2965	1.0458
6.	1.0051	0.9802	1.0107	1.0043
0.	0.8990	0.9554	1.1129	1.0462
real series				
1.	0.7998	0.9104	1.4092	0.9746
2.	0.9768	0.8962	0.9071	1.2594
3.	0.9777	0.9162	1.0471	1.0661
4.	0.8423	0.9660	1.0315	1.1916
5.	0.7399	0.9850	1.3634	1.0064
6.	0.9998	0.9991	0.9998	1.0013
0.	0.8644	0.9156	1.1869	1.0530

Data: Sources and Definitions:

All data are taken from SIS (1994a, 1994b, 1994c)

Private final consumption expenditure consists of outlays of households on new goods and services. It also includes the value of other goods produced for the household's own consumption such as crops, livestock products, firewood, and other non-marketed outputs (SIS, 1994a, pp. 57-60):

There are six categories:

1. Food, beverages
2. Durable consumer goods
3. Semi-durable and non-durable consumer goods
4. Energy, transportation, and communication
5. Services
6. Ownership of dwelling

1. Food, beverages

fruits, vegetables, milk, fish and husbandary products, processed food and beverages

2. Durable consumer goods

This group includes commodities which have an expected life-time of more than three years and with relatively high monetary values such as refrigerators, washing machines, furniture, and musical instruments.

Motor cars and other motor vehicles designed for the transport of persons (other than publictransport type vehicles), non-industrial

transport equipment (yachts and other vessels for pleasure or sports, row boats and canoes, caravan or housing or camping, bicycles and other cycles)

3. Semi-durable and non-durable consumer goods

Semi-durable consumer goods includes commodities which have an expected life-time of more than one year but less than three years and are not of high value such as footwear, jackets, dresses and skirts.

Non-durable consumer goods includes commodities which have an expected life-time of use of less than one year such as medicament, perfumery, cosmetics, soap, cleaning and polishing preparations, books, newspapers etc.

4. Energy, transportation, and communication

This item includes expenditure by households on energy for domestic heating, cooking and lighting, i.e. purchases of liquid petroleum gas, electricity, heating oil, kerosene, fire wood, coal and coke. Household outlays on passenger transportation.

5. Services

Consumption on services (hotel, restaurant, business and personal services)

6. Ownership of dwelling

The basic source consists of an estimation of the total stock of dwellings and gross rent value.

References:

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APPENDIX:

List of Variables:

N - nominal expenditures (billion TL), seasonally adjusted

R - expenditures in 1987 prices (billion TL), seasonally adjusted

P - implicit price deflator (1987=1)

W - budget share of expenditures

UNN - nominal expenditures (billion TL), seasonally unadjusted

UNR - expenditures in 1987 prices (billion TL), seasonally unadjusted

(Index 0-6 following these variables stand for expenditure categories given below)

1. Food, beverages
2. Durable consumer goods
3. Semi-durable and non-durable consumer goods
4. Energy, transportation, and communication
5. Services
6. Ownership of dwelling
0. total private consumption expenditures

period	UNN0	UNN1	UNN2	UNN3	UNN4	UNN5	UNN6	UNN0	UNR1	UNR2	UNR3	UNR4	UNR5	UNR6
1987.1	9875.3	4037.1	958.2	1894.6	1251.6	638.0	1095.8	10793.0	4176.9	1157.5	2114.4	1348.3	805.3	1190.7
1987.2	11257.2	4704.3	1092.5	1950.3	1443.6	921.4	1145.1	11492.8	4565.7	1207.5	2067.1	1501.6	954.8	1196.3
1987.3	14203.3	6426.6	1174.2	2287.3	1696.4	1399.7	1219.1	14644.3	6922.2	1150.8	2316.3	1695.2	1356.7	1203.2
1987.4	15682.7	5799.4	1100.3	3059.7	2040.8	1340.4	1342.2	14088.3	5302.6	1809.4	2694.1	1887.4	1182.8	1212.0
1988.1	15706.1	6013.9	1804.1	3263.9	1973.3	1221.2	1429.7	11429.2	4302.9	1335.3	2325.3	1397.6	877.5	1190.6
1988.2	18696.8	7133.5	1899.8	3638.2	2699.5	1808.3	1517.4	11888.0	4592.7	1135.5	2226.0	1593.8	1143.5	1196.6
1988.3	23779.1	10273.1	1889.2	3972.0	3285.2	2688.1	1671.5	15028.7	7198.3	968.3	2246.7	1775.4	1636.1	1203.8
1988.4	23868.2	8690.0	2516.7	4502.4	3976.9	2369.4	1812.9	13292.1	5230.6	1331.6	2326.0	1900.3	1201.2	1212.3
1989.1	25552.7	9952.2	2638.3	4915.6	3856.3	2204.5	1965.8	10592.8	4044.8	990.3	2149.5	1375.0	811.9	1221.3
1989.2	32209.9	12758.0	3203.1	5562.0	4812.0	3705.0	2169.9	11559.2	4623.6	983.4	1967.7	1624.5	1132.4	1227.8
1989.3	42568.3	18332.9	3549.0	6583.1	6208.9	5471.9	2422.6	15246.2	7249.0	1053.7	2380.6	1687.4	1639.8	1235.8
1989.4	48809.3	19238.2	5537.1	8561.2	7914.2	4856.5	2702.2	13706.9	5109.8	1643.3	2481.0	2010.2	1217.8	1244.3
1990.1	48781.7	18321.3	6113.7	11165.6	6220.1	3921.5	3039.4	12098.3	4283.0	1500.2	2517.6	1572.7	972.7	1252.2
1990.2	61729.8	25343.6	7437.4	11895.9	7811.4	5951.0	3290.6	13335.9	5079.5	1569.2	2253.6	1804.1	1371.4	1258.2
1990.3	77100.9	34300.8	8233.3	12586.4	9491.4	8608.6	3880.6	16940.1	7822.1	1635.7	2543.3	1905.0	1768.2	1265.8
1990.4	81950.0	29489.4	10204.8	15837.1	14245.8	7740.5	4432.4	15428.9	5400.4	2213.3	2881.0	2334.3	1325.1	1274.8
1991.1	76437.2	29701.2	8529.5	16196.4	10484.8	6231.6	5293.8	12373.8	4460.2	1622.2	2556.1	1535.4	917.8	1282.1
1991.2	95501.5	34966.2	11343.9	17873.3	14469.1	8947.8	5901.2	13325.3	5137.8	1566.6	2360.0	1808.2	1165.3	1287.4
1991.3	129999.0	53420.4	12858.0	24173.4	18304.9	14457.5	6784.6	17635.1	8124.5	1661.7	2892.7	1921.6	1739.2	1295.3
1991.4	134428.0	48506.0	16641.4	24975.2	23074.8	13373.5	7857.5	15579.1	5582.7	2294.8	2816.0	2273.3	1308.0	1304.4
1992.1	134526.0	50265.3	15584.5	26667.6	21235.5	11676.3	9096.5	13026.7	4614.6	1917.9	2501.0	1663.2	1016.2	1313.8
1992.2	158162.0	59205.5	17226.1	27714.5	27479.8	16366.6	10169.2	13726.8	5263.7	1560.7	2312.1	1925.5	1346.9	1318.0
1992.3	212440.0	84300.6	20188.1	36214.2	34191.7	25271.2	12274.6	18082.0	8166.9	1779.7	2758.5	2133.6	1913.2	1330.1
1992.4	229178.0	77320.7	27716.5	41104.7	45496.6	23936.6	13602.8	16027.5	5495.5	2559.9	2739.7	2516.0	1375.7	1340.7
1993.1	220096.0	81774.3	77632.9	43123.8	33558.6	19087.3	14918.9	13422.2	4573.5	2106.3	2510.1	1816.6	1067.7	1347.9
1993.2	277825.0	98220.6	33585.6	54324.5	43348.9	29982.9	16522.4	15227.5	5422.9	2127.4	2646.1	2168.1	1509.0	1354.0
1993.3	380983.0	167820.0	36508.4	59069.7	57947.6	43389.7	20248.0	19272.9	8201.3	2294.3	3001.6	2425.9	1988.0	1361.8
1993.4	410140.0	142854.0	53679.1	73977.9	74927.6	41789.2	22876.5	17245.5	5647.5	3102.0	2876.3	2705.0	1538.6	1376.1
1994.1	371620.0	131341.0	47719.0	74114.0	59654.0	34178.0	25124.0	14209.0	4877.0	2251.0	2676.0	1888.0	1130.0	1387.0
1994.2	508492.0	164552.0	48767.0	92360.0	108061.0	63959.0	30793.0	13690.0	5350.0	1172.0	2145.0	2142.0	1486.0	1395.0
1994.3	719564.0	297136.0	62754.0	96114.1	128902.0	96197.2	38460.5	17608.4	7940.3	1400.1	2303.2	2451.1	2112.0	1401.8
1994.4														

Source : State Institute of Statistics (1994a,1994b,1994c)

period	N0	N1	N2	N3	N4	N5	N6	R0	R1	R2	R3	R4	R5	R6
1987.1	10985.1	4389.8	1002.6	1901.8	1460.1	843.5	1090.2	12485.7	5222.5	1185.1	2152.6	1600.8	1088.3	1190.9
1987.2	11783.2	5010.7	1105.2	2008.7	1520.6	945.1	1168.2	12416.2	5015.3	1347.3	2256.1	1554.5	969.4	1197.4
1987.3	12761.9	5239.8	1252.3	2289.4	1636.5	1079.6	1206.2	12338.2	4912.1	1268.7	2212.0	1643.5	995.1	1203.4
1987.4	14990.3	5874.0	1860.5	2956.8	1721.7	1281.7	1336.5	13379.8	5440.6	1436.7	2527.1	1583.9	1175.3	1210.5
1988.1	17471.1	6837.1	1887.8	3276.5	2302.0	1614.3	1422.5	13221.6	5380.1	1367.1	2378.2	1659.3	1185.9	1190.8
1988.2	19570.4	7598.0	1921.9	3746.9	2843.5	1854.8	1548.0	12843.0	5044.9	1267.0	2429.6	1649.9	1160.9	1197.8
1988.3	21365.9	8376.1	2014.8	3975.6	3169.2	2073.3	1653.8	12662.0	5108.1	1067.5	2145.7	1721.3	1200.0	1204.0
1988.4	22814.4	8801.7	2229.3	4351.0	3355.0	2265.7	1805.2	12623.7	5366.7	1057.3	2181.8	1670.3	1193.6	1210.8
1989.1	28424.2	11314.5	2781.6	4934.4	4498.6	2914.1	1955.9	12254.0	5057.4	1013.9	2198.4	1632.5	1097.3	1221.5
1989.2	33714.9	13388.8	3240.3	5728.3	5068.6	3800.1	2213.7	12487.8	5078.8	1097.3	2147.7	1681.8	1149.7	1228.7
1989.3	38248.4	14947.5	3785.0	6589.1	5989.6	4220.4	2397.0	12845.2	5144.0	1161.7	2273.5	1635.9	1202.7	1235.9
1989.4	46654.4	19485.6	4904.8	8273.3	6676.5	4643.9	2690.7	13017.6	5242.7	1304.8	2327.3	1686.9	1210.0	1243.3
1990.1	54263.6	20829.2	6397.3	11208.5	7256.2	5184.0	3024.1	13995.6	5355.3	1535.9	2574.9	1867.2	1314.5	1252.4
1990.2	64614.1	26993.8	7523.8	12251.5	8227.9	6103.9	3357.0	14407.3	5579.6	1751.0	2459.7	1867.7	1392.3	1259.4
1990.3	69276.5	27966.7	8780.6	12598.0	9156.2	6639.6	3839.5	14272.5	5550.8	1803.2	2428.9	1846.9	1297.0	1266.0
1990.4	78331.9	29868.6	9039.5	15304.6	12017.9	7401.7	4413.5	14653.0	5541.0	1757.4	2702.5	1958.9	1316.7	1273.2
1991.1	85027.0	33766.8	8925.2	16258.5	12231.2	8237.7	5267.0	14314.4	5576.8	1660.8	2614.3	1822.9	1240.4	1282.3
1991.2	97870.2	37243.0	11475.7	18407.6	15240.7	9177.6	6020.2	14395.8	5643.6	1748.1	2575.8	1871.9	1183.1	1288.6
1991.3	116806.0	43555.7	13712.8	24195.6	17658.4	11150.8	6712.9	14858.0	5765.3	1832.0	2762.6	1863.0	1275.7	1295.5
1991.4	128493.0	49129.8	14741.1	24135.4	19466.2	12788.1	7823.9	14795.7	5728.0	1822.1	2641.5	1907.7	1299.7	1302.7
1992.1	149643.0	57145.8	16307.5	26769.9	24772.5	15435.3	9050.4	15069.5	5769.9	1963.5	2557.9	1974.8	1373.3	1314.0
1992.2	165552.0	63060.6	17426.2	28543.0	28945.2	16787.0	10374.4	14829.6	5782.0	1741.5	2523.5	1993.3	1367.5	1319.2
1992.3	190881.0	68733.6	21530.1	36247.5	32984.2	19491.3	12144.8	15234.5	5795.4	1962.0	2634.4	2068.5	1403.3	1330.3
1992.4	214060.0	78315.0	24551.5	39772.6	38381.5	22888.9	13544.7	15221.4	5638.5	2032.6	2569.9	2111.4	1367.0	1339.0
1993.1	248629.0	92967.8	28914.8	43289.2	39148.2	25232.2	14843.5	15527.1	5718.5	2156.4	2567.2	2156.9	1443.0	1348.2
1993.2	290806.0	104616.0	35796.7	55948.5	45660.6	30752.9	16896.6	16450.8	5956.9	2373.9	2888.1	2244.5	1532.0	1355.3
1993.3	342320.0	133568.0	38935.3	59124.0	55901.2	33465.7	20033.9	16237.9	5819.8	2529.3	2866.6	2351.9	1458.1	1362.0
1993.4	391998.0	144691.0	47549.3	71490.4	63209.9	39960.1	22778.9	16378.3	5794.5	2463.1	2698.0	2270.0	1528.8	1374.4
1994.1	413382.0	149319.0	49399.1	74398.4	69590.1	45181.2	24996.9	16437.3	6097.9	2304.5	2736.9	2241.6	1527.2	1387.2
1994.2	592251.0	175267.0	49333.5	95121.1	113824.0	65601.6	31414.4	14789.8	5876.8	1307.8	2341.2	2217.5	1508.7	1396.3
1994.3	646540.0	242266.0	66925.6	96202.4	124350.0	74195.3	38053.7	14835.5	5634.6	1543.5	2199.6	2376.3	1549.1	1402.0
1994.4														

Source : Calculated by us using data from State Institute of Statistics (1994a,1994b,1994c)

period	W1	W2	W3	W4	W5	W6	W0	P1	P2	P3	P4	P5	P6	P0
1987.1	0.41782	0.09127	0.17313	0.13292	0.07678	0.09925	1.0000	0.879	0.846	0.879	0.912	0.775	0.915	0.880
1987.2	0.42524	0.09379	0.17047	0.12905	0.08020	0.09914	1.0000	0.999	0.820	0.890	0.978	0.975	0.976	0.949
1987.3	0.41058	0.09813	0.17939	0.12823	0.08459	0.09452	1.0000	1.067	0.987	1.035	0.996	1.085	1.002	1.034
1987.4	0.39185	0.12411	0.19725	0.11485	0.08550	0.08916	1.0000	1.080	1.295	1.170	1.087	1.104	1.104	1.120
1988.1	0.39134	0.10805	0.18754	0.13176	0.09240	0.08142	1.0000	1.271	1.381	1.378	1.387	1.361	1.195	1.321
1988.2	0.38824	0.09820	0.19146	0.14530	0.09477	0.07910	1.0000	1.506	1.517	1.542	1.723	1.598	1.292	1.524
1988.3	0.39203	0.09430	0.18607	0.14833	0.09704	0.07740	1.0000	1.640	1.887	1.853	1.841	1.728	1.374	1.687
1988.4	0.38580	0.09772	0.19071	0.14706	0.09931	0.07912	1.0000	1.640	2.108	1.994	2.009	1.898	1.491	1.807
1989.1	0.39806	0.09786	0.17360	0.15827	0.10252	0.08881	1.0000	2.237	2.744	2.245	2.756	2.656	1.601	2.320
1989.2	0.40305	0.09611	0.16990	0.15034	0.11271	0.08566	1.0000	2.676	2.953	2.667	3.014	3.305	1.802	2.700
1989.3	0.39080	0.09896	0.17227	0.15660	0.11034	0.08267	1.0000	2.906	3.258	2.898	3.661	3.509	1.939	2.978
1989.4	0.41766	0.10513	0.17733	0.14311	0.09954	0.05767	1.0000	3.717	3.759	3.555	3.958	3.838	2.164	3.584
1990.1	0.38385	0.11789	0.20656	0.13372	0.09553	0.05573	1.0000	3.889	4.165	4.353	3.886	3.944	2.415	3.877
1990.2	0.41777	0.11644	0.18961	0.12734	0.09447	0.05195	1.0000	4.838	4.297	4.981	4.405	4.384	2.666	4.485
1990.3	0.40370	0.12675	0.18185	0.13217	0.09584	0.05542	1.0000	5.038	4.869	5.187	4.958	5.119	3.033	4.854
1990.4	0.38131	0.11540	0.19538	0.15342	0.09449	0.05634	1.0000	5.390	5.144	5.663	6.135	5.621	3.466	5.346
1991.1	0.39713	0.10497	0.19122	0.14385	0.09688	0.06194	1.0000	6.055	5.374	6.219	6.710	6.641	4.107	5.940
1991.2	0.38054	0.11725	0.18808	0.15572	0.09377	0.06151	1.0000	6.599	6.565	7.146	8.142	7.757	4.672	6.799
1991.3	0.37289	0.11740	0.20714	0.15118	0.09546	0.05747	1.0000	7.555	7.485	8.758	9.479	8.741	5.182	7.862
1991.4	0.38235	0.11472	0.18783	0.15150	0.09952	0.06089	1.0000	8.577	8.090	9.137	10.204	9.839	6.006	8.685
1992.1	0.38188	0.10898	0.17889	0.16554	0.10315	0.06048	1.0000	9.904	8.305	10.466	12.545	11.240	6.888	9.930
1992.2	0.38091	0.10526	0.17241	0.17484	0.10140	0.06267	1.0000	10.906	10.006	11.311	14.521	12.276	7.864	11.164
1992.3	0.36009	0.11279	0.18990	0.17280	0.10211	0.06362	1.0000	11.860	10.973	13.759	15.946	13.890	9.129	12.530
1992.4	0.35751	0.11208	0.18133	0.17521	0.10449	0.06183	1.0000	13.889	12.079	15.457	18.178	16.744	10.116	14.392
1993.1	0.37973	0.11810	0.17681	0.15990	0.10306	0.06063	1.0000	16.257	13.409	16.862	18.151	17.487	11.010	15.768
1993.2	0.35975	0.12310	0.19239	0.15701	0.10375	0.05810	1.0000	17.562	15.384	19.372	20.344	20.074	12.467	17.677
1993.3	0.36919	0.11374	0.17272	0.16330	0.09776	0.05852	1.0000	22.951	15.090	20.625	23.768	22.952	14.709	21.982
1993.4	0.36911	0.12130	0.18237	0.16125	0.10194	0.05811	1.0000	24.971	19.305	26.497	27.845	26.138	16.574	23.934
1994.1	0.36122	0.11950	0.17998	0.16834	0.10930	0.06047	1.0000	24.487	21.436	27.183	31.045	29.585	18.019	25.149
1994.2	0.32929	0.09269	0.17872	0.21385	0.12325	0.05902	1.0000	29.824	37.723	40.630	51.331	43.483	22.498	35.988
1994.3	0.37471	0.10351	0.14880	0.19233	0.11476	0.05886	1.0000	42.996	43.359	43.737	52.330	47.897	27.142	43.581
1994.4														

Source : Calculated by us using data from State Institute of Statistics (1994a,1994b,1994c)