
Prices, Population and National Income in the Netherlands 1620-1978

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PREFACE

Research in the economic development of the Netherlands during the period 1770-1790 created a need for more knowledge about the movement of some economic data concerning this period. We have collected these data as far as possible and construed them as far as necessary. The results of this part of our research are presented in this article.

It refers to:

Column

- I: Index numbers of wholesale-prices (1620-1978)
- II: Index numbers of the cost of living (1871-1978)
- III: National Income (net, factor cost) in millions of guilders (1850-1978)
- IV: Price-index for the National Income (1850-1978)
- V: Real National Income (net factor cost) at 1900/10 prices, in millions of guilders (1770-1978)
- VI: Total Population of the Netherlands (x 1.000) (1770-1978)
- VII: Real National Income (net factor cost) per capita, in guilders of 1900/10 (1770-1978)

The calculations have been made on a base with the average of 1900/10 = 100. More detailed information is given in the explanation. The series of price-indices (Columns I, II and IV) presented in this article are made by linking of independent series. A changing pattern of weighting the individual price series

and changes in the base years mean that the series only give a general and somewhat rough view of price-movements during the described periods. The figures given for the real national income (Column 5) and the real National income per capita (Column 7) therefore have a general character as well.

A justification of our working-method is given in the explanation and we would welcome comments upon these procedures. Finally, we thank Ben T.J. Bakker for his appreciated assistance.

EXPLANATION

COLUMN I: INDEX OF WHOLESALE-PRICES (BASE 1900/10 = 100) FOR THE YEARS 1620-1978

Period 1620-1849

Source: N.W. Posthumus, *Nederlandsche Prijsgeschiedenis*, Leiden, 1943, part 1, indexcijfers Staat III, p. CV, column E.

Procedure: As a point of departure we have chosen Posthumus' series of weighted price-index numbers, which refer to the produce exchange at Amsterdam. Until 1810-1814 the series is based on the prices of 44 goods, however afterwards being limited to the prices of 21 goods in 1864. We thought this to be too narrow a base for the period 1815-1864. For that reason we have, to justify our use of Posthumus' series, formed some correlation-equations with German and English price series.

Indices of prices in Germany¹ were available from 1792 on, in England² from 1790 on and in the Netherlands³ from 1620 on. These Dutch index numbers are divided into three series: 1. "not weighted", 2. "weighted", 3. "quantities x prices". The correlation between the German, the English and the first two Dutch series appears to be good [$r > 0,88$, significance at 95%-level]. The poor correlation with the third Dutch series is probably brought about by the fact that the quantities are derived from foreign trade statistics for the Netherlands, that is, from a problematic source. Likewise available were

¹ A. JACOBS und H. RICHTER, *Die Grosshandelspreise in Deutschland von 1792 bis 1934*; in: Sonderheft des Instituts für Konjunkturforschung nr. 37, Berlin, 1935, p. 78 ("Gesamt").

² B.R. MITCHELL and PH. DEANE, *Abstract of British Historical Statistics*, Cambridge, 1971, p. 470 ("Domestic and Imported").

³ N.W. POSTHUMUS, *Nederlandsche Prijsgeschiedenis*, Leiden, 1943, part. 1, p. CV (1: "ongewogen"; 2: "gewogen"; 3: "hoeveelheden maal prijzen").

singular price-indices for Germany⁴ and for the Netherlands⁵ (5-year periods). For the period 1792-1850 series for 15 goods are present for the Netherlands as well as for Germany. For 11 of these goods the correlation appears to be fair [$r > 0,84$, significance at 95%-level]. These goods are: wheat, rye, barley, sugar, coffee, pewter, hemp, wax, linseed oil, tea and tobacco. The correlation for iron, cow-hides, salpêtre and tallow is less good. The fairly good correlation can be seen as a support for the assumption that international trade caused almost equal price-movements in the Netherlands and in Germany. One may suppose that the singular index numbers of prices which were not available in common did not have a highly disturbing influence, because the composed indices correlate satisfactorily. The good correlation-results make it acceptable to assume that Posthumus's composed price-indices give a reasonable view on price-movement in the Dutch economy. For this purpose we have chosen for the weighted price-index of Posthumus⁶ (the second series).

Method: We have removed the base if this series from 1720-45 = 100 to 1900/10 = 100 by multiplying the series by the factor 0,67, after having joined it to the Sauerbeck-series described below.

Period 1846-1974

Sources: - B.R. Mitchell and Ph. Deane, Abstract of British Historical Statistics, Cambridge, 1971, p. 474
- Centraal Bureau voor de Statistiek, 75 Jaar Statistiek van Nederland, The Hague, 1975, p. 133

Method: For the period 1846-1938 has been used the Sauerbeck-price-index, based on wholesale and import prices in England (base 1867-77 = 100) and for the period 1901-1974 the index number of wholesale-prices of the Centraal Bureau voor de Statistiek (base 1948 = 100). The two series overlap in the period 1901-1938. A regression equation between the series has been formed for the periods 1901-1914 and 1923-1929, relatively normal periods [Results: $r = 0,992$, significance at 95%-level; coefficients: $b = 0,3769$, $\hat{a} = 7,5021$].

Because of this good correlation, the CBS-series has been extrapolated over the Sauerbeck-range. This results in a continuous series for the period 1846-1974 on base 1948 = 100. We removed this base to 1900/10 = 100 by multiplying the series by the factor 2,87.

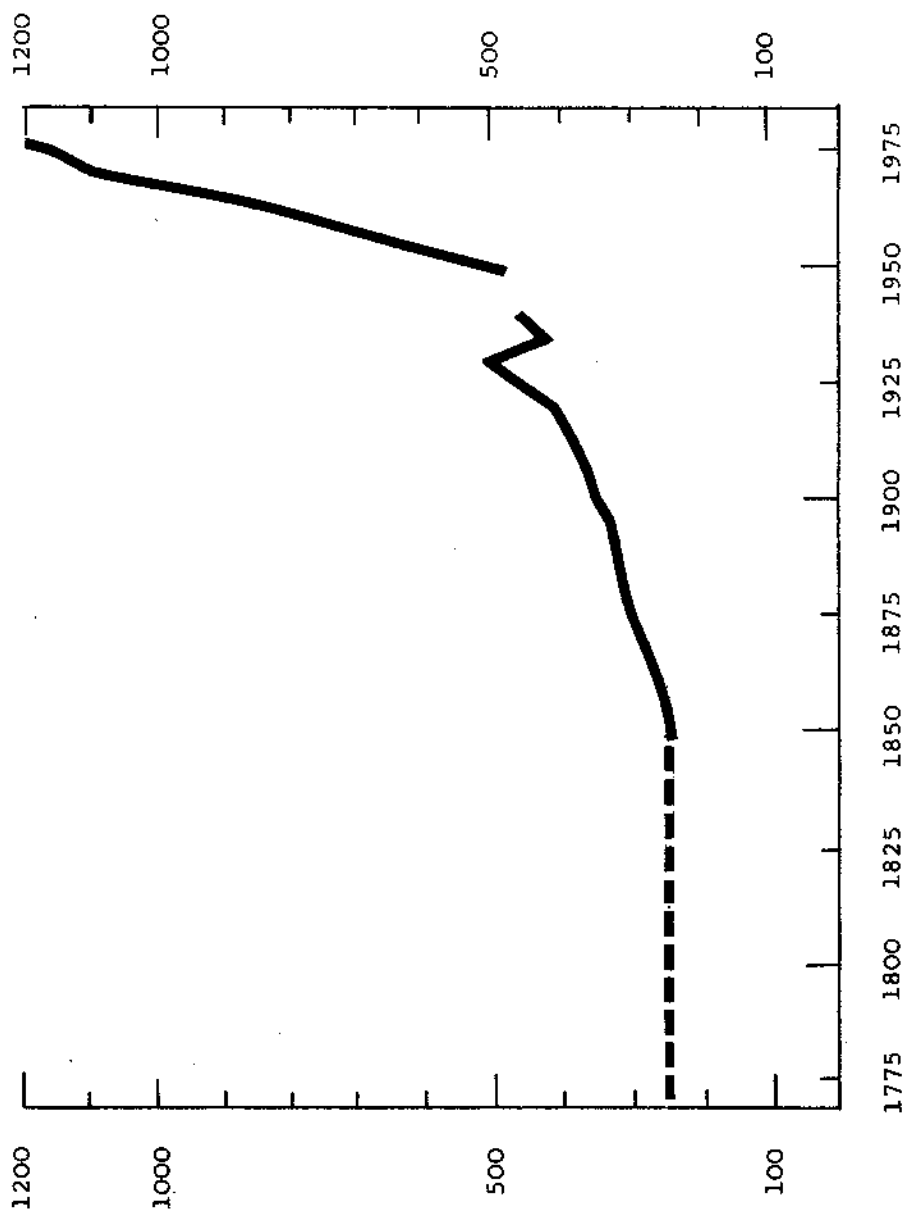
Period 1975-1978

Sources: - CBS, 75 Jaar Statistiek van Nederland, The Hague, 1975, p. 133:
Index of wholesale-prices, 1901-1974 (base 1948 = 100)

⁴ JACOBS und RICHTER, *o.c.*, pp. 74-77.

⁵ POSTHUMUS, *o. c.*, p. 497 ff.

⁶ POSTHUMUS, *o. c.*, p. CV, column E.



- CBS, Tachtig jaren Statistiek in tijdreeksen, The Hague 1979, p. 175, index number of producers' prices (domestic sale) of final products, 1926-1978 (base 1970 = 100)

Procedure: From 1974 on the CBS has not published an index of wholesale-prices. It has been replaced by some other index numbers, from which we have chosen the index of producers' prices (domestic sales) of final products.

The result of a correlation-equation which we have formed for the two series mentioned above appeared to be very good [$r=0,9977$, significance at 95%-level]. We thought these results offered sufficient justification for lengthening the series on the basis of this new price-index from 1975 up to 1978.

Method: The base of the new series is changed from 1970 = 100 to 1900/10 = 100 by multiplying it by the factor 5.0093.

COLUMN II: PRICE-INDEX OF THE COST OF LIVING FOR THE YEARS 1871-1978
(BASE 1900/10 = 100)

- Sources:* a) H.J. Scheffer, In vorm gegoten, Leiden, 1960, p. 129: price-index of the cost of living, period 1871-1900, provided by the C.B.S. (base 1926 = 100)
- b) C.B.S., Zestig jaren statistiek in tijdreeksen, Zeist, 1959, p. 125: price-index of the cost of living, period 1900-1957 (base 1938/39 = 100)
- c) C.B.S., Tachtig jaren statistiek in tijdreeksen, The Hague 1979, p. 176: consumer price indices, series for workers' families, period 1920-1978 (base 1975 = 100)

Procedure: The Centraal Bureau voor de Statistiek has already published a general price-index number (5-year averages) for the period 1620-1975¹. That series goes back much further than ours, which on the contrary gives indices per year. Until 1864 however the CBS-series is based not on the prices for the cost of living but on indices of wholesale prices. That is why we did not use it for constructing our cost of living series. The CBS ascribes only very rough significance to series a). Moreover, we have joined the three above-mentioned series without taking into account the changing pattern of weighting different prices.

Method: The series a) and b) overlap in the year 1900. Multiplying series a) by the factor 1.88 joins the two series. From 1920 on series c) has been joined to this series on base 1839/39 = 100 by multiplying by the factor 7.7537. The base of the entire series has been changed to 1900/10 = 100 by multiplying the series by the factor 1.23.

¹ C.B.S., Maandstatistiek van de prijzen 1976, The Hague, 1976, pp. 55-57.

COLUMN III: NATIONAL INCOME (NET FACTOR COST) IN CURRENT PRICES ($\times 1$ MILLION GUILDERS), PERIOD 1850-1978

Period 1850-1895

Sources: Columns IV and V

Method: The real national income (net factor cost) (column V) has been inflated by the price-index number for the national income (column IV).

Period 1900-1968

Source: C.B.S., *Zeventig jaren statistiek in tijdreeksen*, The Hague, 1970, p. 119

Period 1969-1978

Source: Centraal Plan Bureau, *Centraal Economisch Plan 1980*, The Hague, 1980, p. 201.

COLUMN IV: PRICE-INDEX OF THE NATIONAL INCOME, PERIOD 1850-1978 (BASE 1900/10 = 100)

Sources: a) C.B.S., *Maandstatistiek van de prijzen van 1976*, The Hague, 1976, p. 55-57: price-index, period 1620-1975, on base 1721-1745 = 100 (5-year averages)

b) C.B.S., *Zeventig jaren statistiek in tijdreeksen*, The Hague, 1970, p. 119: price-index of the national income (net market prices), period 1900-1968 (base 1963 = 100)

c) C.B.S., *Tachtig jaren statistiek in tijdreeksen*, The Hague, 1979, p. 144: price-index of the national income (net market prices), period 1920-1977 (base 1975 = 100)

d) C.B.S., *Statistisch Zakboek 1979*, The Hague, 1979, p. 231: price-index of the national income (net market prices), period 1976-1978 (base 1975 = 100)

Procedure: No index number of prices of the national income is available for the nineteenth century. There exists however a general price-index for this period (source a). We have already mentioned this series in the explanation of column IV. Until 1865 this series is based on wholesale prices, from 1870 on it is based on consumer price indices. The figures for the years 1865-1870 are estimated by the CBS. We have formed a correlation equation for this and the series from source b) for the periods 1900-1939 and 1950-1964. The correlation appears to be very good [$r = 0.999$, significance at level 95%; registration coefficients: $b = 0.153$, $a = -2.226$]. We consider this result to be enough justification for using series a). Finally, the fact that the price-index of the national

income (net market prices) can be applied to the national income (net factor-cost) without serious problems deserves noticing as well.

Method: We have extrapolated the series from source b) over the range of the series from source a) by means of the regression coefficients \hat{a} and \hat{b} . The series from series from source c) is lengthened to 1978 by adding to it a figure from source d) and then the base has been changed from 1975 = 100 to 1963 = 100 by multiplying by the factor 2.368.

This series has been joined to series b) (base 1963 = 100) from the year 1969 onwards. The base of the entire series is removed to 1900/10 = 100 by multiplying by the factor 4.60251.

COLUMN V: REAL NATIONAL INCOME (NET FACTOR COST) AT 1900/10 PRICES
($\times 1$ MILLION GULDERS), PERIOD 1770-1978

1770: see: explanation under column VII

Period 1850-1895

Source: J. Teijl, Nationaal Inkomen in Nederland in de periode 1850-1900; in: Economisch — en sociaal — historisch jaarboek 1971, The Hague, 1971, p. 262.

Procedure: The arithmetic average of two estimated series: the first was estimated according to the tax-quota method, the second according to the production-function method. Teijl used a price-index number on base 1900/10 = 100.

Period 1900-1978

Sources: Columns III and IV

Method: The National Income was deflated by the price-index for the National Income.

COLUMN VI: TOTAL POPULATION ($\times 1,000$), PERIOD 1770-1978

Sources:

1770: Estimates on basis of 1750 and 1795. J.A. Faber, H.K. Roessingh, and others: Population changes and economic developments in the Netherlands; a historical survey, in: AAG Bijdragen, Wageningen, 1965, p. 110

1795: J.A. Faber, H.K. Roessingh, and others: *op. cit.* p. 110.

1830 and 1840: H.W. Methorst, Resume Retrospectif de l'annuaire Statistique des Pays Bas, The Hague, 1911, p. 2

1850-1978: Population according to the registers.

1850-1883 Staatkundig en Staathuishoudkundig Jaarboekje 1849-1884, published by the Vereniging voor de Statistiek in Nederland. The figures for the years 1860 and 1861 are estimated (linear interpolation).

1884-1891 Jaarcijfers over 1884-1891 en vorige jaren, published by the Statistisch Instituut.

1892-1899 CBS, Jaarcijfers voor het Koninkrijk der Nederlanden, The Hague.

1900-1974 CBS, 75 jaar Statistiek van Nederland, The Hague, p. 9.

1975-1977 CBS, Statistical yearbook of the Netherlands 1978, The Hague, 1979, p. 16.

1978 CBS, Statistisch Zakboek 1979, p. 25.

COLUMN VII: REAL NATIONAL INCOME (NET FACTOR COST) PER CAPITA, IN GULDERS OF 1900/10

1770

Source: J.H. van Stuijvenberg: De economie in de Noordelijke Nederlanden 1770-1970, in: *Algemene geschiedenis der Nederlanden*, part 10, Haarlem, 1981.

Procedure: This figure is based on data for 1850. The calculation rests on two suppositions: 1. that productivity of inputs has risen by 6% during the period 1770-1850 and 2. that unemployment of the working population has risen by 3% during this period.

Period 1850-1978

Sources: Columns V and VI

Method: Column V \times 1000/Column VI

SUMMARY

Column

I : Index number of wholesale-prices (1620-1978)

II : Index number of the cost of living (1871-1978)

III : National Income (net factor cost) in millions of guilders (1850-1978)

IV : Price-index of the National Income (1850-1978)

V : Real National Income (net factor cost) at 1900/10 prices, in millions of guilders (1770-1978)

VI : Total Population of the Netherlands (\times 1.000) (1770-1978)

VII : Real National Income (net factor cost) per capita, in guilders of 1900/10 (1770-1978)

Prices, Population and National Income in the Netherlands 1620-1978

Years	I	II	III	IV	V	VI	VII
1620-24	82						
1625-29	82						
1630-34	85						
1635-39	80						
1640-44	84						
1645-49	82						
1650-54	86						
1655-59	—						
1660-64	83						
1665-69	79						
1670-74	73						
1675-79	69						
1680-84	62						
1685-89	66						
1690-94	85						
1695-99	—						
1700-04	78						
1705-09	76						
1710-14	92						
1715-19	70						
1720-24	64						
1725-29	71						
1730-34	65						
1735-39	65						
1740-44	75						
1745-49	72						
1750-54	72						
1755-59	77						
1760-64	80						
1765-69	88						
1770-74	89				490	1.950	250
1775-79	92						
1780-84	106						
1785-89	107						
1790-94	138						
1795-99	178					2.078	
1800-04	174						
1805-09	179						
1810-14	255						
1815-19	155						
1820-24	—						
1825-29	101						
1830-34	99					2.613	
1835-39	99						
1840-44	105					2.861	

Years	I	II	III	IV	V	VI	VII
1845-49	112						
1850	105		715	95	753	3.057	246
1851	103					3.119	
1852	106					3.168	
1853	124					3.203	
1854	132					3.239	
1855	131		816	102	800	3.261	245
1856	131					3.298	
1857	135					3.329	
1858	120					3.349	
1859	123					3.357	
1860	129		799	95	841	3.378	249
1861	128					3.398	
1862	131					3.419	
1863	133					3.455	
1864	135					3.491	
1865	131		838	90	931	3.530	264
1866	132					3.553	
1867	130					3.592	
1868	129					3.628	
1869	128					3.584	
1870	125		1.023	102	1.003	3.618	277
1871	130	120				3.637	
1872	139	125				3.675	
1873	142	127				3.716	
1874	132	134				3.767	
1875	125	125	1.136	99	1.147	3.810	301
1876	124	125				3.865	
1877	123	129				3.925	
1878	116	129				3.982	
1879	111	125				4.037	
1880	117	129	1.211	95	1.275	4.061	314
1881	113	132				4.114	
1882	112	127				4.173	
1883	110	123				4.225	
1884	104	118				4.278	
1885	99	106	1.214	88	1.379	4.336	318
1886	96	99				4.391	
1887	95	99				4.451	
1888	97	95				4.506	
1889	99	106				4.549	
1890	99	102	1.345	90	1.494	4.565	327
1891	99	106				4.622	
1892	95	120				4.670	
1893	95	102				4.733	

Prices, Population and National Income in the Netherlands 1620-1978

Years	I	II	III	IV	V	VI	VII
1894	90	95				4.796	
1895	89	95	1.494	94	1.589	4.859	327
1896	88	88				4.929	
1897	89	90				5.004	
1898	91	90				5.075	
1899	95	97				5.140	
1900	103	95	1.699	92	1.827	5.179	353
1901	95	100	1.761	101	1.744	5.263	331
1902	95	97	1.797	97	1.853	5.347	347
1903	95	97	1.845	97	1.902	5.431	350
1904	98	100	1.884	101	1.865	5.510	338
1905	100	100	1.948	101	1.929	5.591	345
1906	100	100	2.041	101	2.021	5.672	356
1907	103	101	2.080	101	2.059	5.747	358
1908	103	105	2.140	101	2.119	5.825	364
1909	106	103	2.202	101	2.180	5.858	372
1910	103	106	2.283	106	2.154	5.946	362
1911	115	107	2.384	110	2.167	6.022	360
1912	118	108	2.556	110	2.324	6.114	380
1913	109	109	2.670	110	2.427	6.213	391
1914	118	109	2.595	110	2.359	6.340	372
1915	158	125	3.093	124	2.494	6.449	387
1916	241	140	3.550	138	2.572	6.583	391
1917	273	149	3.593	147	2.444	6.725	363
1918	307	177	4.121	175	2.355	6.779	347
1919	310	193	5.453	189	2.885	6.831	422
1920	287	219	6.006	212	2.833	6.865	413
1921	224	191	5.480	179	3.061	6.977	439
1922	175	172	5.080	166	3.060	7.087	432
1923	164	162	5.008	156	3.210	7.213	445
1924	172	162	5.239	156	3.358	7.315	459
1925	172	162	5.394	156	3.458	7.416	466
1926	155	162	5.508	152	3.624	7.526	482
1927	149	162	5.603	147	3.812	7.626	500
1928	149	162	5.979	152	3.934	7.731	509
1929	146	162	6.108	152	4.018	7.832	513
1930	129	153	5.860	143	4.098	7.936	516
1931	109	143	5.129	133	3.856	8.062	478
1932	95	134	4.558	124	3.676	8.183	449
1933	92	134	4.391	124	3.541	8.290	427
1934	92	134	4.340	124	3.500	8.392	417
1935	89	124	4.251	120	3.543	8.475	418
1936	92	124	4.359	120	3.633	8.557	425
1937	109	124	3.802	124	3.873	8.640	448
1938	103	134	4.904	124	3.955	8.729	453

Years	I	II	III	IV	V	VI	VII
1939	106	124	5.207	129	4.036	8.834	457
1940	135	153				8.923	
1941	152	172				9.008	
1942	161	181				9.076	
1943	164	181				9.129	
1944	166	191				9.220	
1945	184	219				9.304	
1946	255	238				9.543	
1947	276	258				9.716	
1948	287	258	12.073	244	4.948	9.884	501
1949	298	277	13.515	262	5.158	10.027	514
1950	336	305	14.925	285	5.237	10.200	513
1951	410	343	16.917	327	5.173	10.328	501
1952	402	343	17.689	331	5.344	10.436	512
1953	385	343	19.110	327	5.844	10.551	554
1954	390	353	21.565	345	6.251	10.680	585
1955	393	362	24.525	359	6.831	10.822	631
1956	402	372	26.493	368	7.199	10.957	657
1957	413	391	29.044	391	7.428	11.096	669
1958	405	401	29.560	400	7.390	11.278	655
1959	408	401	31.444	405	7.764	11.417	680
1960	399	420	35.149	419	8.389	11.556	726
1961	396	420	37.045	428	8.655	11.721	738
1962	399	429	39.591	442	8.957	11.890	753
1963	408	448	43.130	460	9.376	12.042	779
1964	433	477	51.079	497	10.277	12.212	842
1965	448	505	56.949	525	10.847	12.377	876
1966	471	525	61.568	557	11.054	12.535	882
1967	471	544	67.560	575	11.750	12.661	928
1968	474	572	74.000	589	12.564	12.798	982
1969	476	610	84.230	643	13.100	12.958	1.011
1970	505	629	93.830	676	13.880	13.119	1.058
1971	511	677	104.910	741	14.158	13.270	1.067
1972	528	725	118.750	807	14.715	13.388	1.099
1973	594	792	137.830	872	15.806	13.491	1.172
1974	677	858	156.700	981	15.973	13.599	1.175
1975	691	954	169.060	1.090	15.510	13.734	1.129
1976	736	1.040	195.550	1.188	16.460	13.814	1.192
1977	776	1.106	212.200	1.264	16.788	13.898	1.208
1978	791	1.154	226.860	1.330	17.057	13.986	1.220

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