

The Population and Economy of the Preindustrial Netherlands

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Jan de Vries

The Population and Economy of the

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In the past two decades the application of family reconstitution techniques has deepened our knowledge of past demographic behavior in several European countries. The Dutch Republic is not one of these countries because the technique has only limited application to the recalcitrant Dutch parish registers. As a result, only fragmentary and indirect evidence is available on demographic behavior in the preindustrial Netherlands.

In contrast, Dutch research emphasizes the investigation of macrodemographic questions in a regional context. This literature impresses chiefly through its resourceful use of flawed and imperfect data. And one can hope that the adaptation of newly developed techniques like back projection will enable further progress in this direction. If parish records can be assembled to reconstruct Dutch population back to the early seventeenth century (the sixteenth century will, it appears, always remain beyond our reach), Dutch historical demography will be able to build upon its strong regional studies, adding a more detailed knowledge of the nuptiality, fertility, and mortality behavior that has long been the missing element in such studies.

Even so, it is relevant to identify the issues in Dutch demographic history most in need of further investigation, and to probe the limits to the applicability to the Dutch Republic of the dynamic model of demographic-economic interaction developed by Wrigley and Schofield.¹

THE POPULATION The size of the Dutch population before 1795, the date of the first national census, is thought to have followed the first three decades of the eighteenth century stands as an

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1 E. Anthony Wrigley and Roger S. Schofield, *The Population History of England, 1541–1871: A Reconstruction* (Cambridge, Mass., 1981).

Table 1 Dutch Population and Urbanization, 1500–1900
(in thousands)

YEAR	TOTAL POPULATION	POPULATION		PERCENTAGE URBAN		
		OF HOLLAND	RURAL POPULATION	>2,500	>10,000	>20,000
1500	900–1,000					
1525		275 ^a	800	27	15	5.5
1550	1,200–1,300				15	
1600	1,400–1,600	672 ^b			24	
1650	1,850–1,900				32	
1675		883	1,085	42		24.5
1700	1,850–1,950				34	
1750	1,900–1,950	783	1,150	39	30	21.8
1800	2,100	783	1,300	37	29	20.8
1815	2,292	764		35	26	17.5
1830	2,613	894		35	26	
1840	2,860	969		39	28	21.3
1850	3,049	1,039	1,830	39	29	
1860	3,309	1,143				24.7
1870	3,580	1,266	2,140			28.9
1880	4,013	1,484				30.5
1900	5,104	2,113				45.6

a In 1514.

b In 1622.

SOURCES: A. A. van der Woude, "Demografische ontwikkeling van de Noordelijke Nederlanden 1500–1800," in *Algemene Geschiedenis der Nederlanden* (Bussum, 1980), V, 102–168; W. P. Blockmans et al., "Tussen crises en welvaart," *ibid.*, IV, 42–60; de Vries, *Barges and Capitalism. Passenger Transportation in the Dutch Economy, 1632–1839* (Utrecht, 1981), 248–249; E. W. Hofstee, *De demografische ontwikkeling van Nederland in de eerste helft van de negentiende eeuw* (n.p., 1978), Table IA; M. C. Deurloo and G. A. Hoekveld, "The Population Growth of the Urban Municipalities in the Netherlands between 1849 and 1970," in H. Schmal (ed.), *Patterns of European Urbanisation since 1500* (London, 1981), 247–283.

the course shown in Table I. These estimates are based on regional studies pursued during the 1960s by Slicher van Bath and the members of the Institute of Rural History at the Agricultural University in Wageningen. The national estimates embody two distinct regional patterns: in the maritime provinces very rapid population growth in the sixteenth and early seventeenth centuries gave way, in the third quarter of the seventeenth century, to absolute decline; in the inland provinces the sixteenth-century growth was much slower and the period from 1650 to 1750 was one of continued growth. When compared to other Western European populations, the Dutch trends stand out in two respects: the high rate of sixteenth-century growth and the virtual absence of an upturn in the second half of the eighteenth century. Since

the publication of these total population estimates in 1965 no one has felt sufficiently dissatisfied with them to produce alternative estimates.²

City populations were not a primary object of attention in the 1965 study, and historical urban demography still awaits the attention it deserves. However, enough work has been completed to establish in broad outline the course of Dutch urbanization. The estimates of urban population, just like the total population estimates, are a composite of diverse trends among the numerous cities. The seventeenth-century growth of Amsterdam and the eighteenth-century growth of Rotterdam and The Hague compensated for the sharp decline of several other cities.

Table I displays the percentage of the total population resident in cities. The high level of urbanization attained by the mid-seventeenth century is well known; that this level formed a ceiling not to be broken through for two centuries is worth emphasizing here.

Research in Dutch demographic history has yielded estimates of total, regional, and urban population that are sufficiently well founded to provide a framework for further research. It is unlikely that the contours of population change displayed in Table I will need substantial revision. When we turn to the study of fertility, mortality, marriage, and migration, however, which jointly determined the observed course of population change, no such sanguine statement is possible.

Current views about vital rates in the early modern period are based largely on fragmentary and indirect evidence. Any general statements should be thought of as hypotheses awaiting confirmation rather than as the conclusions of systematic research. In a comprehensive survey of Dutch demographic history (of which he is the leading exponent), Van der Woude offered views about the likely course of events, which can be summarized as follows:

Mortality, in the short run, did not exhibit the sharp fluctuations associated with *crises de subsistance* and in the long run remained roughly constant. Only the persistently high mortality of

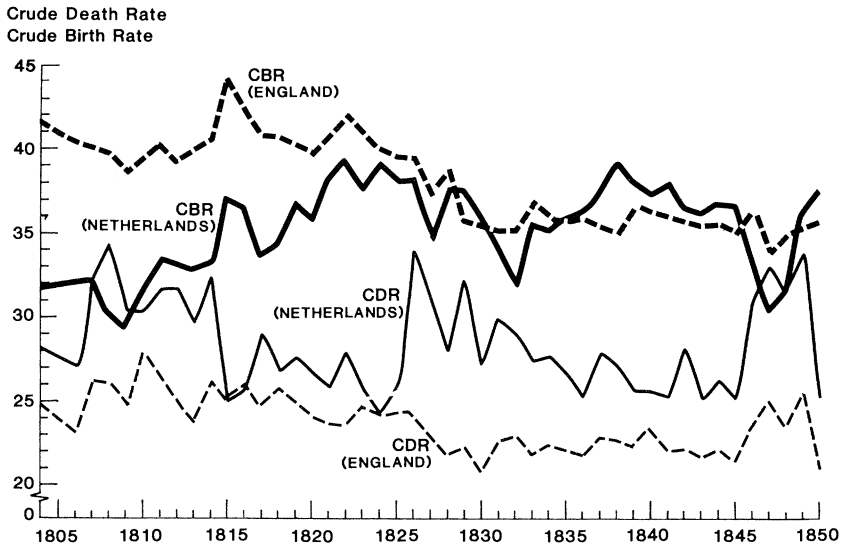
2 J. A. Faber, H. K. Roessingh, B. H. Slicher van Bath, A. M. van der Woude, and H. J. van Xanten, "Population Changes and Economic Developments in the Netherlands: A Historical Survey," *A. A. G. Bijdragen*, XII (1965), 47–110.

exception to this rule. The major changes in the rate of population growth were activated by *fertility*, which experienced two major turning points. The birth rate began to turn downward around 1650 and turned abruptly upwards around 1815 (see Figure 1). The *marriage age* and *celibacy rates* were the main regulators of total fertility.³

At present Van der Woude's views must be regarded as controlled conjectures. They are based on such data as the baptism and burial totals for several towns and villages, village baptism-marriage ratios, marriage ages and marriage rates in Amsterdam, and the comprehensive but crude data compiled in the first censuses of the early nineteenth century. For example, almost all that is known concerning the age at first marriage is summarized in Table 2.

If they could be sustained by further research, Van der Woude's views would be of special interest because they are

Fig. 1 Crude Birth Rates and Crude Death Rates in The Netherlands and England, 1804–1850



SOURCES: Hofstee, *De demografische ontwikkeling*, 196, 198; Wrigley and Schofield, *Population History*, Table A3.3

3 Van der Woude, "Demografische ontwikkeling," 139–156. This section of my article relies heavily on Van der Woude's work.

Table 2 Data on Nuptiality in the Netherlands

Percent married before the age specified, of those who ever married.

YEARS	MEN	WOMEN		MEAN AGE AT FIRST MARRIAGE
		25	30	
Amsterdam				
1578-1601	53%			
1626-27		60.9%	89.1%	24.5
1676-77		44.4	77.7	26.5
1726-27		36.5	71.0	27.2
1776-77		35.3	66.5	27.8
1801-06	30.2	44.8	80.0	
1809-10		42.2	76.4	26.3
The Netherlands				
1830	12.4	22.8		
1840	11.4	21.8	60.6	
1849	7.5	16.0	51.9	
1859	7.7	17.6	55.8	
MEAN AGE AT FIRST MARRIAGE (WOMEN)				
Maasland				
1747				25.4 (Protestant)
1747				25.9 (Catholic)
Duiven				
1711-30				28.1
1731-50				28.9
1751-70				26.9
1771-90				27.3

SOURCES: Leonie van Nierop, "De bruidgoms van Amsterdam van 1578 tot 1601," *Tijdschrift voor Geschiedenis*, XLVIII (1933), 337-359; Herman Diederiks, *Een stad in verval. Amsterdam omstreeks 1800* (Meppel, 1982), 93; Van der Woude, "Demografische ontwikkeling," 156; Hofstee, *De demografische ontwikkeling*; S. Hart, "Bronnen voor de historische demografie van Amsterdam in de 17de en 18de eeuw," *Historisch Demografische Kring* (Amsterdam, 1965).

broadly consistent with the findings of Wrigley and Schofield for England. However, the turning points of Dutch fertility differ substantially from the English pattern, although an exact comparison is possible only for a limited period. Figure 1 displays Dutch crude birth and death rates from the first years that they are known. The comparable English rates are also displayed. In this late period, it is evident—as evident as crude rates can allow—that the Dutch fertility rate began to rise within a few years of

the start of the decline of English fertility identified by Wrigley and Schofield.⁴

The mid-seventeenth-century turning point is more conjectural. The baptism-marriage ratios for the handful of places with records that go back far enough decline in the second half of the seventeenth century and the rather more abundant data on eighteenth-century household size and structure show clearly that families had become remarkably small. Nevertheless, any argument about fertility in this period must be regarded as highly tentative so long as we cannot control for possible changes in mortality or, in the case of marriage-baptism ratios, for changes in the frequency of remarriage.⁵

There remains one important respect in which the demographic processes governing Dutch population growth almost certainly differed substantially from the English model. That difference is in the pervasive role of migration in the Netherlands' highly urbanized society and open economy.

The population in cities of 10,000 and above nearly quadrupled between 1525 and 1650, at which date the urban population approached 40 percent of the total. The absolute size of the Republic's urban population exceeded that of England until 1700, at which date England's total population was nearly three times that of the Republic. So long as urban mortality exceeded rural mortality (and in Amsterdam alone the burial totals exceeded the recorded baptisms by an average of 1,000 per year throughout the eighteenth century), the presence of such a large Dutch urban sector was bound to influence the overall mortality rate and to make rural-urban migration an important regulator of rural population growth.⁶

4 Wrigley and Schofield, *Population History*, 230.

5 G. J. Mentink and Van der Woude, *De demografische ontwikkeling te Rotterdam en Cool in de 17e en 18e eeuw* (Rotterdam, 1965), 71–74; Van der Woude, "De omvang en samenstelling van de huishouding in Nederland in het verleden," *A. A. G. Bijdragen*, XV (1970), 202–440. A version of this article appeared in English in Peter Laslett (ed.), *The Comparative History of Household and Family: Studies in the Development of the Size and Structure of the Domestic Group over Time in Five Select Countries* (Cambridge, 1972), 299–318. In a study of over 4,000 households in North Holland, Van der Woude found average household size to be 3.74. A comparable study of England yielded an average size of 4.77.

6 See Wrigley, "A Simple Model of London's Importance in Changing English Society and Economy, 1650–1750," *Past & Present*, 37 (1967), 44–70; de Vries, *The Dutch Rural Economy in the Golden Age* (New Haven, 1974), 116. For another view see Allan Sharlin, "Natural Decrease in Early Modern Cities: A Reconsideration," *Past & Present*, 79 (1978), 126–138.

Even when local mortality rates remained unaltered, the growth of the urban sector could affect the national mortality rate, and when urban growth ceased, as it did in the Netherlands after 1675, the continuing inflow of rural migrants that made good the urban deficits acted to limit rural population growth. Those rural migrants can be thought to have had a demographic opportunity cost, the cost being the higher natural increase that could have been achieved had they remained in the countryside. Indeed, if current theories of protoindustrial demography are valid, the chief alternative to urban migration would have been rural proletarianization, bringing with it forms of demographic behavior that would have tended to secure high rates of natural increase. These considerations have application to many parts of Europe, but the compositional effects of urban migration will be more important in a society where urbanization rises from 20 to 40 percent than where the movement is from 6 to 12 percent.⁷

The second way in which migration plays a prominent role in the Dutch Republic's demographic history is in the international movement of people. The Republic differed from England in being a consistent net recipient of migrants. Tens of thousands of Flemings poured in between 1580 and 1620; thereafter immigrants came primarily from Scandinavia and Germany. The numbers are unknown, but immigrants were sufficiently numerous to account for one third of all persons marrying in Amsterdam in the seventeenth century and a quarter of all those marrying in the eighteenth century—183,000 immigrants in all.⁸

Many tens of thousands of immigrants entered the Netherlands during the 150 years after 1650, a period in which the

7 Among the many historical works illuminating the phenomenon of protoindustrial demographic behavior, see Franklin Mendels, "Protoindustrialization: The First Phase of Industrialization," *Journal of Economic History*, XXXII (1972), 241–261; Hans Medick, Jürgen Schlumbohm, and Peter Kriedte, *Industrialisierung vor der Industrialisierung* (Göttingen, 1977); David Levine, *Family Formation in an Age of Nascent Capitalism* (New York, 1977). Elsewhere I have written of an "urban safety valve" (*Dutch Rural Economy*, 117). In fact, little is known about rural-urban migration patterns, but it seems likely that the absence of populations devoted to rural industry except in the most remote districts near the borders of the Netherlands is related to the ongoing urban levees on the natural increase of the rural population. In 1795, the first national census revealed that the rural population density per cultivated hectare was much lower in the urbanized maritime provinces than in the outlying, more agrarian, provinces where soil quality was also generally poorer.

8 Hart, *Geschrift en getal* (Dordrecht, 1976), 136–143.

population of the western provinces fell absolutely and the national population was stagnant. It is not unreasonable to suppose that a population unable to grow despite persisting immigration suffers from particularly high mortality. Indeed, the combination of high urbanization and low-lying, marshy rural areas almost certainly kept the *level* of mortality above that of the surrounding countries, as was true in the first half of the nineteenth century when data are first available. What is uncertain, and appears to be denied by Van der Woude, is whether the cessation of population growth in the mid-seventeenth century was caused by a secular rise in the mortality rate.⁹

One particular kind of population loss—Wrigley and Schofield treat it as a form of migration rather than a form of mortality—undoubtedly played an important role in limiting Dutch population growth in the late seventeenth and eighteenth centuries. An analysis of the muster rolls of the Dutch East India Company (VOC) made by Bruijn uncovered the striking fact that during the life of the Company, from 1602 to 1795, one million sailors embarked from Dutch ports in 4,700 sailings, of whom at least 660,000 never returned. Almost all of them died en route or, more commonly, while stationed in Java. An average of some 3,000 men, mainly young, died in this way each year in the seventeenth century; in the eighteenth century the annual average was nearly 4,400.¹⁰

Until the 1720s about one quarter of VOC crews consisted of foreigners; after 1750 foreigners comprised fully half of all the Company's sailors embarking for Asia. Recruitment by the VOC must therefore have absorbed a substantial proportion of the male immigrants to the Dutch Republic. But consider the effects of this colonial enterprise on the native-born Dutch population. The absolute number of Dutch sailors employed by the VOC remained

9 For comparison with England, see Fig. 1; for comparison with Belgium, see Hofstee, *De demografische ontwikkeling*, 198–199. On infant mortality, see C. Vandenbroeke, F. Van Poppel, and Van der Woude, “De zuigelingen- en kindersterfte in België en Nederland in seculair perspectief,” *Tijdschrift voor geschiedenis*, XCIV (1981), 461–491. I say “appears to be denied” because Van der Woude elsewhere emphasizes the mortality problems of the eighteenth century. See his *Het Noorderkwartier* (Wageningen, 1972), I, 255–256.

10 J. R. Bruijn, “De personeelsbehoefte van de VOC overzee en aan boord, bezien in Aziatisch en Nederlands perspectief,” *Bijdragen en mededelingen betreffende de geschiedenis der Nederlanden*, XCI (1976), 218–248.

relatively constant throughout the eighteenth century and resulted in about 2,600 losses per year. The province of Holland contributed disproportionately to this ongoing drain of manpower: about 2,000 losses per year up to 1760 and 1,600 per year thereafter. Van der Woude reckons that if Holland's crude birth rate stood at about thirty-six per 1,000, and if the survivors to age twenty numbered fifty-five of each original 100, then the annual cohort of twenty-year-old men in Holland numbered about 7,000 to 8,000. In excess of 20 percent of this number were lost annually in the service of the VOC.¹¹

This phenomenon affected "demographically expendable" men, but it could hardly fail to have influenced the percentage of women who married, their age at marriage, and thereby the total fertility rate.¹²

Some surviving scraps of data from Amsterdam, by far the largest recruitment center of the VOC, help illustrate the process. In the 1730s the Amsterdam parish registers record an annual average of 6,800 baptisms. This figure is certainly an underestimate of the true number; in any event Jewish births were not included. About 3,500 of the recorded births were boys whereas 3,300 were girls. The city's marriage records show that twenty-five years after these births occurred, from 1756 to 1765, an annual average of 1,100 Amsterdam-born men and 1,410 Amsterdam-born women were wed.¹³

Nearly 45 percent of women born in the city survived and stayed on to marry in the city of their birth. Given the city's high infant and child mortality, and the likelihood of some out-migration and some celibacy, one could hardly expect the percentage to have been higher. In contrast, only 30 percent of Amsterdam-born men married in the city. The higher infant and child mortality of males can explain only a small portion of the yawning gap between the number of native men and native women marrying in the city.

11 Van der Woude, "Demografische ontwikkeling," 154–156.

12 The phrase "demographically expendable" is Eric Jones', used in *The European Miracle* (Cambridge, 1981), 35, in a discussion of a comparable loss of male population in Switzerland.

13 For baptisms, "Statistiek der bevolking in Amsterdam tot 1921," in *Mededelingen Bureau van Statistiek van de gemeente Amsterdam* (Amsterdam, 1923), no. 67, 136; for marriages, Hart, *Geschrift en getal*, 136.

The probable cause of this chronic demographic feature is that many men went to sea in their teens and early twenties—before marriage—never to return. The demographic “hole” created by their departure was filled by the thousands of migrants who accounted for 60 percent of all men marrying in seventeenth- and eighteenth-century Amsterdam.¹⁴

A sample of all Amsterdam marriages in 1801 and 1806 taken by Diederiks shows that fully 81 percent of Amsterdam-born grooms married Amsterdam-born women. But those grooms were so scarce that nearly 41 percent of all Amsterdam-born women marrying for the first time had to find grooms among migrants and widowers. What these data cannot tell us is how many found no husbands at all. But the ages at which brides married hint at the probability that spinsterhood was not unknown. Those brides who found fellow Amsterdam-born grooms married at the average age of 24.5 years; for brides marrying migrants the figure stood at 25.6 years. The few migrant women who married Amsterdam-born grooms did so at the average age of 26.6; the much larger number who married fellow migrants waited, on average, until the age of 28.4.¹⁵

This progression uncovered by Diederiks in the nuptiality behavior of turn-of-the nineteenth-century Amsterdam is of great interest because of its demonstration of a link between the incidence of migration and the age at first marriage, the key regulator of total fertility.

Wrigley and Schofield argue that English population change was driven by nuptiality, a demographic variable deeply embedded in economic and social life. The marriage rate was the major determinant of fertility and set the long-run course of population growth and decline. The limited data available for the study of Dutch historical demography is not incompatible with this mechanism of population change. But in the Dutch case a second variable, also highly sensitive to economic forces and social customs, complicates the analysis. Migration, in the form of rural-

14 Throughout the seventeenth and eighteenth centuries there was no 10-year period in which the number of Amsterdam-born grooms exceeded 73 per 100 Amsterdam-born brides. For the entire 200-year period the average was 69 per 100. *Ibid.*, 139.

15 Diederiks, *Stad in verval*, 77–79, 92. Hart presents evidence suggesting that both the marriage partner choice and the marriage age behavior described above for the end of the eighteenth century also applies to earlier periods. Hart, *Geschrift en getal*, 180–181, 205.

urban migration, immigration, and “emigration” to the merchant marine, apparently affected the mortality level, age structure, sex ratios, and marriage rates in ways that would have been unlikely in a larger, less urban, more closed economy.

REAL WAGES For most preindustrial economies, the proposition that the real wages of day laborers adequately reflect the trends in personal income must be regarded as dubious. However, in the case of the Netherlands, it is less dubious than elsewhere. The high level of urbanization and the commercial orientation of agriculture in many regions endowed Dutch society with a large wage labor force. In view of this fact it is ironic that hardly anything is known of Dutch wage trends. My Dutch Labor Market Project, now in progress, aims to rectify this state of affairs.¹⁶

Wage and salary data from many locations, representing a variety of occupations, have been compiled and are now being analyzed. Just as in other countries, the most abundant archival data refer to craftsmen and laborers in the building trades and related outdoor employments. Since Wrigley and Schofield’s study relied on real wages in the building trades—the famous Phelps Brown and Hopkins time series—to define the economic setting of English demographic history, it seems reasonable to confine myself here to analogous Dutch wage data. I have used two sources of data: one because it provides a long unbroken series; the other because it has wider coverage, but it is available only for certain groups of years.¹⁷

The first source, providing continuous wage records for common labor, carpenters, and masons from 1510 into the twentieth century, is drawn from the archives of the regional drainage authority of Rijnland (*Het Hoogheemraadschap van Rijnland*). This venerable institution employed, and continues to employ, scores of craftsmen and hundreds of laborers in the maintenance and

16 Support from the National Science Foundation (SOC 78-21078) for my Dutch Labor Market Project is acknowledged with gratitude. For further information, see de Vries, “The Decline and Rise of the Dutch Economy, 1675–1900,” in Gavin Wright and Gary Saxonhouse (eds.), *Technique, Spirit, and Form in the Making of the Modern Economies: Essays in Honor of William N. Parker* (Greenwich, Ct., 1984), 149–189.

17 E. Henry Phelps Brown and Sheila V. Hopkins, “Seven Centuries of Building Wages,” *Economica*, XXII (1955), 195–206; *idem*, “Seven Centuries of the Prices of Consumables, Compared with Builders’ Wage-rates,” *ibid.*, XXIII (1956), 296–314.

repair of sluices and dikes at several locations in central Holland. The series presented here refers to Spaarndam, a village near Haarlem. But laborers at nearby Halfweg, at Katwijk aan Zee, Bilderdam, and other places received essentially the same wages.¹⁸

The second source concerns wages in the building trades. These wages are available for many locations, but they do not all yield such long, continuous time series as do those for Spaarndam. Table 3 presents a summary of the (unweighted) mean daily summer wage paid to common labor and journeymen craftsmen in selected time periods. The number of observations per entry varies from seven to fourteen.

To calculate real wages I have constructed a basket of consumables index. It is comparable in form to the Phelps Brown and Hopkins index, although the weights and specific commodities reflect Dutch conditions. The index was compiled from price data published by Posthumus in two invaluable works, his general monograph on the history of Dutch prices, and his study of the Leiden textile industry. Unfortunately, Posthumus' work does not provide an adequate basis for a basket of consumables index before 1575 nor after 1800. An index of foodstuffs alone must serve from 1550 to 1575 and from 1800 to 1850. A peculiar lacuna

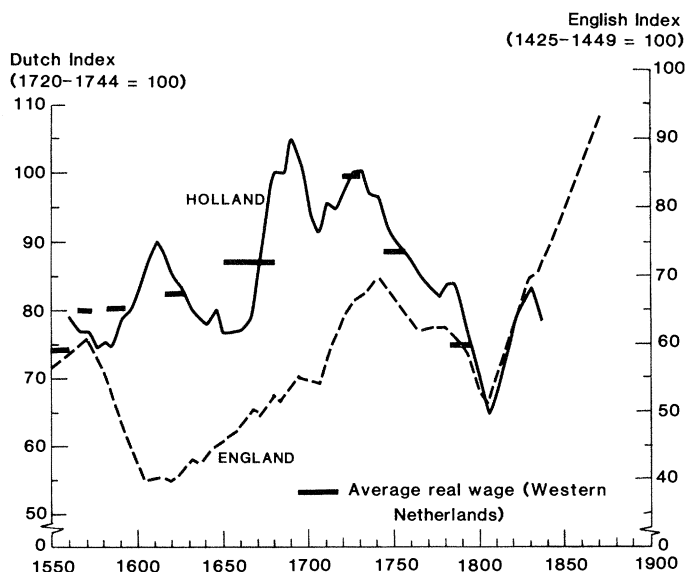
Table 3 Unweighted Mean Daily Summer Wages Paid to Common Labor and Skilled Labor in the Building Trades in the Western and Eastern Netherlands, 1550–1854, in Current Stuivers (20st = 1 guilder)

PERIOD	COMMON LABOR		SKILLED LABOR	
	WESTERN	EASTERN	WESTERN	EASTERN
1550–58	4.5	3.0	6.5	5.0
1583–92	9.0	6.9	11.5	10.5
1650–79	18.7	13.6	25.1	18.6
1745–54	18.1	13.6	25.2	18.9
1790–99	17.9	13.1	24.8	19.5
1820–29	17.8		25.2	
1840–54	18.0		26.2	18.0

SOURCES: Dutch labor market study, in progress.

18 Hoogheemraadschap van Rijnland, Oud Archief, nos. 9510–10263; Bijlagen tot de rekeningen; nos. 10917–10932, Werklijsten.

Fig. 2 Real Wage Indices for Southern England and Holland in 25-Year Moving Averages and Average Real Wage of Construction Labor in the Western Netherlands in Selected Periods.



SOURCES: Dutch labor market study, in progress; Wrigley and Schofield, *Population History*, Appendix 9.

in our knowledge of Dutch economic history is nineteenth-century prices. No comprehensive price index has ever been constructed to link Posthumus' voluminous pre-1800 data to the twentieth-century indices.¹⁹

Figure 2 displays the course of real wages in the Netherlands in the form of a twenty-five-year moving average of Spaarndam

19 My basket of consumables consists of the following items: rye (1050 kg.), yellow peas (143.5 kg.), stockfish (25 kg.), meat (100 kg.), cheese (50 kg.), butter (50 kg.), beer (621 liters)—for which coffee, tea, and gin are substituted in the second half of the eighteenth century—peat (100 turf tons), and a composite of industrial product prices weighted to equal 25% of the food sub-total in the period 1575–1599. Nicolaas W. Posthumus, *Inquiry into the History of Prices in Holland* (Leiden, 1946–64), 2 v.; *idem*, *De geschiedenis van de Leidsche lakenindustrie* (The Hague, 1908–1939), 3 v.

One attempt to construct a Dutch price index bridging the nineteenth century uses German and English wholesale price indices to fill the gap between the Dutch series: J. H. van Stuijvenberg and J. E. J. de Vrijer, "Prices, Population, and National Income in the Netherlands, 1620–1978," *Journal of European Economic History*, XI (1982), 699–712.

common laborers' real wages, and averages at selected periods of the more broadly based real wages of labor in the building trades.

For comparative purposes, Figure 2 also plots the twenty-five-year moving average of southern English craftsmen's real wages as calculated by Phelps Brown and Hopkins and adjusted by Wrigley and Schofield. The English and Dutch real wage curves are indexed to separate bases periods, but I have positioned them on the graph to reflect the fact that the silver values and exchange-rate values of these Dutch and English wages were roughly equal in the mid-sixteenth century and again, more briefly, around 1800. Although this exercise is not without its dangers, it does have the redeeming academic value of calling attention to important differences in the histories of Dutch and English real wages: it highlights the differing trends and the incidence of turning points in the two series.²⁰

The basic trends of Dutch real wages can be summarized as follows:

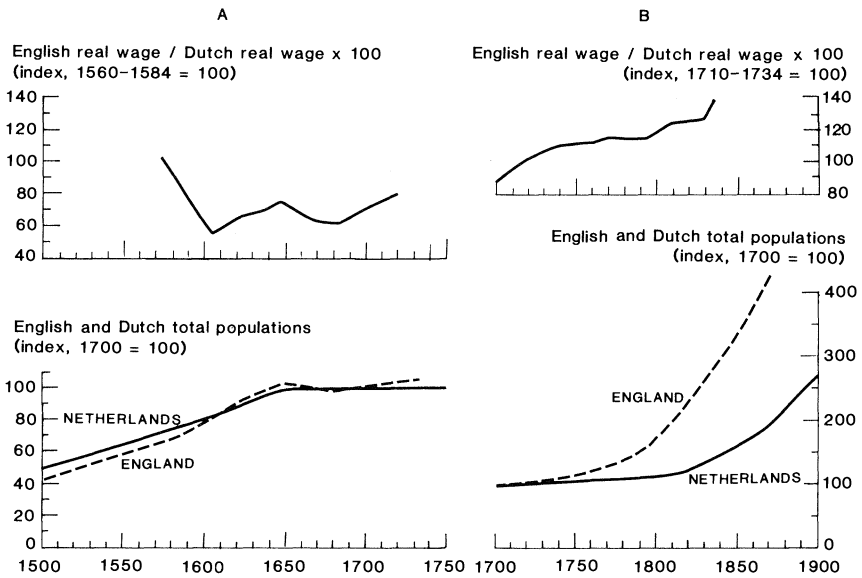
1. Real wages remained constant at best through the first three quarters of the sixteenth century. After 1575 they rose in a volatile manner to the 1680s, the rise being interrupted most notably by the many years of high prices during the wars of the 1650s and 1660s. Wage increases dominated the pattern to the 1640s; thereafter price movements generated the changes.
2. From the real wage peaks extending from the 1680s through the 1730s, a new trend of declining real wages set in that reached its nadir shortly after 1800. Price changes dominated this trend.
3. The partial recovery of real wages after the Napoleonic era was determined by price changes. Only after the 1860s did a combination of rising wages and falling prices push up the real wage to unprecedented levels. This breakthrough was concentrated in the 1870s and 1880s.

POPULATION AND REAL WAGES

1500–1720. Through the sixteenth and seventeenth centuries, the Netherlands experienced rapid population growth fol-

20 The prevailing southern English craftsmen's wage in the 1560s and the 1570s was 10 pence per day, or approximately 8 to 9 stuivers using exchange rates for Antwerp kindly furnished to me by Herman van de Wee of the Catholic University of Leuven. In the 1780s and the 1790s the southern English wage rate of 29 pence converts to about 26 stuivers at the exchange rates on Amsterdam published in Posthumus, *History of Prices*, I, 590–595.

Fig. 3 Comparisons of Dutch and English Population and Real Wage Trends in Two Periods.



lowed by stagnation; the tempo and timing was remarkably similar to that of England. Figure 3a displays indices of the crude estimates of Dutch population and the new refined estimates for England (excepting the extension back from 1541 to 1500). The population of what would later become the Netherlands stood at 43 percent of the English level in 1500, fell throughout the sixteenth century to 37 percent in 1600, and remained at that level into the early eighteenth century. These figures suggest that Dutch growth in the sixteenth century fell short of England's, but estimates for both countries are weakest in precisely this period. In the seventeenth century, the two populations move in sweet harmony, one with the other.

Did these two societies, with their similar population histories, also share similar demographic characteristics? Anyone nurturing the belief that they did must confront the fact that the economic setting in which the English and Dutch made their decisions affecting reproduction could hardly have been more different. The Dutch escaped the nearly universal plunge of real wages that accompanied the price revolution of the sixteenth

century. England felt its full force. In fact, the Dutch economy mustered a rise of real wages from 1580 to 1620, the very decades in which the Phelps Brown and Hopkins series registers the severest decline of English wage earners' well-being in the sixteenth century.²¹

The cause of this divergence is easily found. It was precisely from 1580 to 1620 that Dutch trade and industry expanded with the greatest vigor. The related increase in the demand for labor more than kept pace with the growth of the labor force. Moreover, throughout the century after the Dutch Revolt, urbanization was sufficiently rapid to hold down the rate of rural population growth to the modest overall level of 0.2 percent per annum, less than half the total rate of 0.46 percent. The agricultural sector proved more than capable of accommodating that modest rate of population growth without suffering a decline in labor productivity. In sixteenth-century England, however, an overwhelming majority of the additional population had to seek employment on the land with the consequence—common to most of Europe at the time—that labor productivity fell.

The Dutch population reached a peak in the third quarter of the seventeenth century, giving way in the densely populated maritime provinces to an absolute decline that was particularly

21 For the experience of other European countries, see Phelps Brown and Hopkins, "Wage-Rates and Prices: Evidence for Population Pressure in the Sixteenth Century," *Economica*, XXIV (1957), 289–305; *idem*, "Builders' Wage-Rates, Prices, and Population: Some Further Evidence," *ibid.*, XXVI (1959), 18–38; Wilhelm Abel, *Agrarkrisen und Agrarkonjunktur* (Hamburg, 1966; 2nd ed.). For the Netherlands the data are not abundant, but can be summarized as follows:

PERIOD	PRICE INDEX	SPAARNDAM		UTRECHT	
		COMMON		COMMON	
		LABOR	CRAFTSMEN	LABOR	CRAFTSMEN
1500–19	100	100	100	100	100
1583–92	294	300	273	280	261
% Change in Real Wage		+2	-7	-5	-11

For England, the Phelps Brown and Hopkins study shows the following:

PERIOD	PRICE INDEX	SOUTHERN ENGLAND
		CRAFTSMEN
1500–19	100	100
1583–92	331	200
% Change in Real Wage		-40

severe in centers of industrial production (Leiden, Haarlem, Delft, and Gouda) and in the commercial agricultural zones of North Holland and Friesland. Holland, the hardest hit province, lost about 10 percent of its peak population in the late-seventeenth and early eighteenth centuries. This demographic retreat has generally been interpreted as a reflection of the severe economic problems that the Dutch Republic began to face after 1650, problems that brought its “Golden Age” to an irrevocable close.²²

Restoration England, with an economy waxing fat on the contemporary misfortunes of the Dutch, also experienced an absolute decline in population of no less than 7 percent between 1655 and 1690. Once again, contrasting economic environments were accompanied by similar movements of total population.

1700–1820. During the eighteenth century the trends of real wages in the two countries were in close agreement. They differed in that English nominal wages rose at intervals throughout the century to catch up with the unchanging nominal wage level of the Republic.²³ But movements in the price level dominated the course of eighteenth-century real wages, so that, in contrast to the sixteenth and seventeenth centuries, the trends and turning points in the two countries were essentially the same (see Figure 2).

No such correspondence is evident in the demographic histories of the two societies in the eighteenth century. Whereas the Dutch population was 37 percent of the English in 1700, it amounted to only a quarter of the English total by 1800 and fell further to a sixth of the English level by 1870. (Thereafter the relative growth rates changed; today the Dutch population equals 30 percent of the English.)

Just as the Dutch economy had been exceptional in the first period, so the Dutch population was the exception in the eighteenth century; it failed to participate in the general European growth of population. The acceleration of population growth that began between 1730 and 1750 in most of Europe was delayed until after 1815 in the Netherlands.

22 This position is defended and elaborated in Van der Woude, *Het Noorderkwartier*, II, 608; Faber, *Drie eeuwen Friesland* (Wageningen, 1972), I, 391–393.

23 To be more precise, this statement should probably be confined to southern England. The more rapid growth of wages in northern England, particularly after 1750 (see Wrigley and Schofield, *Population History*, 432), calls for a separate analysis.

As noted earlier, the demographic explanation for this long era of population stagnation (c. 1650 to c. 1815) remains a topic for debate. The level of mortality was probably high in comparison with surrounding countries. But the fragmentary evidence of low fertility in the eighteenth century and the observation that the post-1815 growth of population was chiefly the product of increased fertility support the position that fertility changes were likely to have dominated Dutch population change in this era. If that is so, then it might seem that the Dutch population was controlling fertility from the mid-seventeenth century onward in an effort to protect living standards in an economy that was no longer expanding and, in some sectors, was absolutely declining. Yet, real wages reached their peak in the period from 1680 to 1740, after the population had peaked and begun to subside, and during two generations in which it is believed that the Dutch were marrying later and taking other steps to reduce fertility to or below the replacement level.

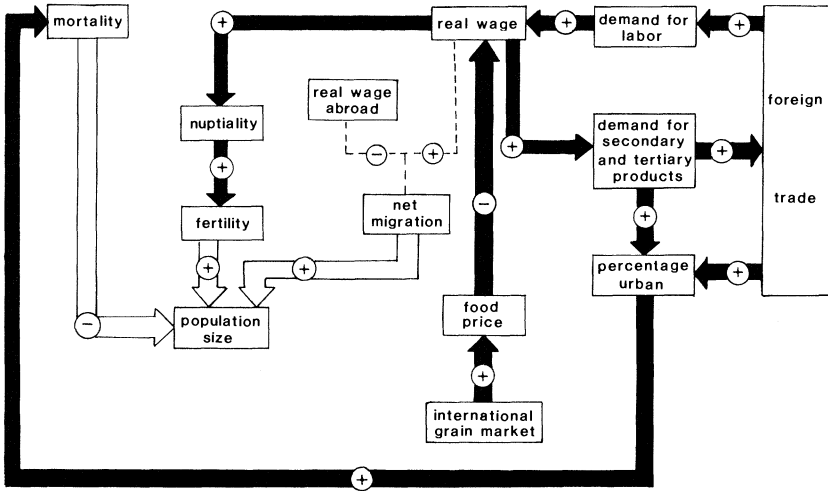
The rise in fertility after 1815 is no less puzzling, for the real wage evidence showed no sign of any sustained improvement in the preceding decades (the trend had been downward for seventy years).

The point of these last ruminations is simple: the reversals of trend in real wages do not appear to stand in any consistent relationship to the reversals of trend in fertility that are suggested by the available data.

	TROUGH	PEAK	TROUGH
Real Wage	1570s	1680–1740	1810s
Total Fertility (speculative)		1610–1630	1750–1800

A MODEL In light of the anomalous character of much of the evidence and conjecture reviewed here, is it possible to develop a model of the relationship between population and the economic setting in the Netherlands?

The model proposed by Wrigley and Schofield for early nineteenth-century England, suitably modified (Figure 4), seems an appropriate starting point, for it captures certain features of Dutch society throughout the period under discussion. We have already observed that net migration (immigration less emigration) was always important in the Netherlands and that the high level

Fig. 4 The Netherlands in the Seventeenth and Eighteenth Centuries.^a

^aAdaptation of Wrigley and Schofield, *Population History*, Fig. 11.8.

of urbanization attained by the mid-seventeenth century probably affected population size because of its impact on mortality. The strong negative relationship between population size and food prices characteristic of preindustrial populations generally, and an integral part of the Malthusian positive and preventive checks, was broken in England by the early nineteenth century. In the Netherlands this relationship had been weak, if not altogether absent, since the sixteenth century, because the growth of the international grain trade permitted the Dutch economy to depend for its food supply on the international market, and hence on prices determined by conditions outside the Netherlands.²⁴

I have portrayed the Dutch economy as one in which the Malthusian checks had been lifted. Only the mortality consequences of urbanization remained to limit the pace of population growth. To be more precise, only urbanization remained among *domestic* limitations on the growth of population. Food prices, the influence of which on the real wage remained great, were now received as an exogenous force in the Dutch economy. Rapid

²⁴ *Ibid.*, Fig. 11.8.

Dutch population growth (in the sixteenth century) did not necessarily bring about sky-rocketing food prices but, conversely, population stagnation (in the eighteenth century) could not prevent the importation of rising international price levels.

This characteristic of a small, open economy is of even greater moment in the positive feedback loop of industrial activity. A rise in the real wage increased the demand for non-agricultural products, but this increased demand did not necessarily have much impact on the demand for labor, since the product demand could be channeled abroad, increasing the volume of imports. Analogously, the foreign demand for Dutch goods and services, and hence for Dutch labor, may have been uncorrelated to prior changes in the real wage. Indeed, to the extent that real wage changes were a consequence of movements of the nominal wage rather than of food prices, the relationship linking wages to the (foreign) demand for labor might have been negative. In my model of the relationship between population and the economic setting modified to reflect Dutch conditions, there are no wholly domestic feedback loops, whether negative or positive.

Wrigley and Schofield applied the term “dilatatory homeostasis” to the English pattern of gradual, delayed compensatory fertility responses to changing economic conditions. The open character of the Dutch economy had the effect of further complicating the adjustment process. The link between domestic demographic behavior and the supply of labor was pervasively influenced by internal (rural-urban) migration and external migration, both temporary and permanent. At the same time, the proximate determinants of the real wage level—food prices and the demand for labor—both acted as carriers of exogenous shocks to the domestic economy. Viewed from this perspective, it is puzzling that the society sought to adjust to its rapidly changing economic environment—brought about by volatile international prices, shifts in the demand for labor, and exogenous shocks induced by diplomacy and trade policy—by relying on the slow-moving and blunt instrument of nuptiality and related fertility behavior. Dutch society, deeply involved in foreign trade and with a large proportion of its labor force dependent on wages, had at its disposal economic policy instruments that could have offered faster, more effective adjustments to changes in the economic environment. But these were left untouched.

When an economy is predominantly agrarian and is treated as a world unto itself, as Wrigley and Schofield's series of models treat England, the economic and demographic variables can be linked to each other in slow-moving feedback relationships. But for the more diversified and open Dutch economy this approach is unrealistic. Today the relations between a national economy and the rest of the world are mediated, however imperfectly, by tariffs and other trade controls, currency exchange rates, and tax and subsidy structures. These measures allow for a much quicker response to changes in the international environment than do demographic adjustments. Although eighteenth-century governments did not manipulate these policy instruments with the alacrity of modern states, they were all known and used. However, the governments of the Republic never used, or, more correctly, never altered significantly their policy with respect to these measures.

For this reason the Dutch Republic can be treated as a region of a larger international economy. Its demographic behavior bore the brunt of absorbing both external and internal economic changes. This situation, in turn, required that nuptiality, the slow-moving variable, needed to be supplemented by migration, the faster-moving variable. The large-scale immigration of foreigners, both temporary and permanent, the emigration (to sea) of Dutchmen, and rural-urban migration, in turn, directly affected nuptiality and mortality levels. That is, the demographic process was governed by two pre-eminently social, consciously made acts: marriage and migration.

The value of generalized models of the type shown in Figure 4 is not that they encapsulate reality so much as that they serve as a useful point of departure for further reflection and research. By identifying relationships which probably existed, they encourage attempts to measure their relative strengths at a point in time or as they changed over time. They represent a set of interconnected hypotheses which can be tested and examined with regard to their logical structure and implications. Inasmuch as they can be used in the study of different countries, with or without modification, they advance comparative knowledge, always a *desideratum* in economic, demographic, and social history.

The factual basis for the analysis of Dutch historical demographic processes still leaves much to be desired. But, in com-

paring what little we now know with the better documented experience of neighboring societies, fruitful questions arise about both the Dutch and their neighbors. In view of the apparent importance of migration for Dutch demographic adjustment mechanisms, it is worth considering the role that interregional migration played in England. The “national” demographic pattern projected by the work of Wrigley and Schofield may obscure a series of distinctive regional demographic processes that were linked together by migration.

The Dutch experience, when viewed in an international context, suggests that a modern, urban, commercial economy was continuing to rely on premodern, rural-agrarian techniques to adjust its population to its economic environment. The proto-modernity of the Dutch Republic has long intrigued historians at the same time that it has puzzled them. This inquiry into Dutch historical demography has revealed yet another dimension of the puzzle. But historical demography is one of the few branches of historical inquiry where recent developments hold out the promise of progress in understanding past social behavior.